The Inner Voice of the Athlete:

Exploring the Researched and Applied Nature of Self-Talk Directed and Undirected towards Sport Performance

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Declaration

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Submitted by: Philip Solomon-Turay

Date: 19/07/2024

Signed:

General Abstract

The present thesis explored sport self-talk and provided considerations within the growing self-talk literature. Self-talk is a cognitive process which encompasses the self-statements addressed to oneself. The value of athletes understanding and developing their use of self-talk lies in athlete's using self-talk to help better manage performance challenges and produce the desired performance outcome.

The advancement of the understanding of self-talk has recently occurred through the introduction of self-talk models, new research on the performance effects of self-talk inside and outside of sport performance and new self-talk intervention tools (Galanis et al., 2022; Latinjak et al., 2023; Latinjak et al., 2019). New self-talk research has provided a better understanding of how self-talk can be researched, packaged into intervention programs for athletes and how this all fits within a theoretical framework. Despite these advancements, further investigation is needed, as it is one thing to introduce these new models, research and tools and another thing to understand how these work in practice. Without exploring the application of new self-talk models, research and intervention tools, the value of athletes understanding and developing their self-talk may not translate from theory into practice.

The present thesis explored the workings of new research within the self-talk literature. This was conducted by investigating three perspectives within the self-talk literature. The present thesis explored (1) self-talk cue words and the self-regulatory strategies of two control groups when executing performance tasks. (2) The application of a new self-talk intervention tool to athletes of various ages, sports and levels of playing experience. (3) The performance impacts of the self-talk which does not relate to sport performance, and which occurs outside of sport performance, known as mind wandering. The present thesis provides value to present and future researchers and applied practitioners within the field of sport and exercise psychology, specifically when researching self-talk and applying self-talk intervention programs to athletes.

The study findings within the present thesis have made an original contribution to knowledge and has progressed the understanding of self-talk in sport. Study 1 revealed the self-regulation strategies attempted by participants within the experimental and control groups when executing the two performance tasks. In addition, the implication for these attempts to self-regulate in the context of a strategic self-talk study have been revealed. Study 2 progressed the knowledge of a new self-talk intervention by exploring the intervention's effects on athletes of various ages, sports and levels of playing experience and the application of a new intervention tool (RSTI board game). Lastly, study 3 progressed the understanding of self-talk that is not related to the present sporting task, revealing further information on the mind wandering tendencies of elite and amateur athletes and the subsequent performance impacts of mind wandering experiences.

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I would also like to thank the University of Suffolk and the University of East Anglia, who have supported me throughout my PhD journey. The classes, workshops and tutorials greatly benefited my understanding of completing the thesis. A special thank you to the University of Suffolk for awarding me a PhD scholarship.

Impact of the Covid-19 Pandemic on the Thesis

The time allocated to data collection was 2020 - 2022. During this time point, a considerable number of restrictions were placed on using sports halls and sports facilities within the United Kingdom due to the COVID-19 pandemic. These restrictions greatly impacted the resources available to conduct the data collection portion of the thesis. The COVID-19 pandemic greatly impacted data collection for Study 1 which caused changes to be made on the analysis of the data. Further information is provided within Chapter 5. I acknowledge that there may have been more extraneous variables than hoped for, which may have affected the results.

Chapter 1

Thesis Introduction

The inner voice. You often hear this voice. It's been there all your life. That voice in your head. The one that tells you what's right, what you should do. That voice that can also tell you that you are not good enough and that you will never measure up to a certain standard. Performance psychologist Dr. Jim Loehr, who studied a number of elite athletes over his career, stated in an interview that

> *"What really mattered in a really significant way (for sport performance development) was the tone and content of the inner voice no one hears. I came to understand that the ultimate coach for all of us in life is that private voice."* (Ferriss, 2020).

The inner voice of athletes derives from cognitive processes which can greatly impact the performance and lives of athletes. Cognitive processes are the mental operations of the brain and reveal the relationship between the internal and external experiences of individuals (Beck & Clark, 1997; Kolers & Roediger, 1984). This is through the brain interacting with the information around it, storing it and analysing it in order to make relevant decisions. Cognitive processes therefore are pivotal for the actions and behaviours which are adopted by individuals.

The understanding of cognitive processes derives from Piaget and Vygotsky (Piaget, 1957; Vygotsky, 1978) theories within the realms of cognitive psychology. There are cognitive processes more foundational in nature such as perception (processing information), attention (focus on a dedicated mental resource towards a stimulus) and memory (information retained in the brain). There are also more complex cognitive processes such as thinking (bringing together information for learning to occur), executive functions (planning, behavioural inhibition and decision-making), learning (combining new information with information stored in our memory), language (the vocalisation of communication) and motivation (devoting behaviour and energy to a specific topic) (Bandura, 1989; Smith & Kelly, 2016).

It could be argued that cognitive processes that are more complex in nature are the combination of various foundational cognitive processes. For example, motivation involves the combination of perception and attention (Wang, 2007). Furthermore, it could also be argued that there are cognitive processes which are more complex in nature that involve a combination of various foundational and complex cognitive processes. For example, thinking, which is a cognitive process which involves perception, memory and language to execute.

Cognitive processes are important within the field of sports. This is because cognitive processes and the development of these processes play an important part in the performance development of athletes. For instance, better abilities to think, learn, communicate and motivate oneself can enable athletes to perform at a higher and more consistent level (Moran, 2009).

The present thesis was created based on the understanding of how the use of cognitive processes fits into the wider performance development of athletes. The present thesis aimed to further understand how a specific complex cognitive process affected the sport performance of athletes. The complex cognitive process of focus in this thesis was thinking.

Within the sport and exercise psychology literature, the cognitive process of thinking can be referred to as self-talk. As stated by performance psychologist Dr. Jim Loehr, self-talk is a cognitive process which can be the inner coach for athletes and can impact sport performance and development in a significant way. Used appropriately, this can be the catalyst to produce the desired performance outcome (Hatzigeorgiadis & Galanis, 2017). Used inappropriately, this inner voice can betray an athlete when it is needed most within sport performance (Hatzigeorgiadis & Biddle, 2008).

Self-talk is a cognitive process which can be used to support the execution of other cognitive processes. For instance, self-talk can support the regulation of thoughts, emotions and behaviours in line with the demands of the situation and this is referred to as self-regulation

(McCormick et al., 2019; Zimmerman, 2000). The relationship between self-talk and self-regulation is evident in three ways: self-talk initiates self-regulatory processes, self-talk reinforces ongoing self-regulatory processes, self-talk confirms the use of self-regulation (Kolovelonis et al., 2012; Latinjak et al., 2020). Self-talk is the focus within the present thesis, however it is evident that the main way in which self-talk impacts athletes performance, is through self-talk supporting self-regulation (Latinjak et al., 2019). Therefore, self-talk is of focus within this thesis, but also what needs to be taken into consideration is the relationship between self-talk and self-regulation.

The understanding of the self-talk and self-regulation relationship is one aspect of the self-talk literature that has progressed due to recent developments. Additional developments within the self-talk literature include the introduction of new a conceptualisation of self-talk (Latinjak et al., 2019), new self-talk models and theories (Latinjak et al., 2023; Van Raalte et al., 2016) and new applied interventions (latinjak et al., 2020). These recent developments present a host of benefits, for instance that an updated account of the various performance impacts of self-talk's use are more clear, the self-talk research conducted in different disciplines can be synthesised and categorised and the introduction to new ways applied practitioners can work with athletes to develop their use of self-talk can occur. These recent developments of self-talk build on previous research and theory to progress the understanding of the researched and applied nature of self-talk in sport. It is the aim of the present thesis to continue this trend.

It can be suggested that with the introduction of new theories, research and interventions a progression from these recent developments can occur through exploring these developments in practice. For example, with the introduction of new self-talk interventions tools (Latinjak et al., 2020), it's application to athletes within a sport performance context would aid applied sport and exercise psychology practitioners in understanding the intricacies in the tools administration in an applied context. In addition, within the introduction of a new self-talk model (Latinjak et al., 2023), it's application within self-talk research would aid researchers in understanding how study findings can be contextualised within the broader self-talk literature.

Further discussion as to how the present thesis progresses the understanding of the self-talk literature and the gaps in research which the present thesis attempted to fill. is provided in Chapter 2 and 3, however what is revealed now is the rationale behind the thesis.

The present thesis aims to explore the recent developments within the self-talk literature by exploring the researched and applied nature of self-talk directed and undirected towards sport performance. The present study explores self-talk through investigating the ways in which self-talk is researched, how self-talk is applied to athletes within interventions and how the self-talk which occurs outside of the sporting environment impacts sport performance. The thesis begins by providing an introduction into the three foundational pieces of the thesis. The three foundational pieces of the thesis are the sport self-talk literature, the theoretical framework of the thesis and the research paradigm of the thesis. From these three foundational pieces, three studies were created and conducted within the present thesis. We first start with a review of the past and current landscape of the sport self-talk literature. From this, the aims of the present thesis are introduced.

Chapter 2

Literature Review

England and Italy put forth a match for the ages as they competed in the 2021 UEFA European Football Championship Final (Ogden, 2021). This final culminated in a thrilling match where a penalty shootout was needed to crown a champion. The penalty shootout was back-and-forth. England started well, however, Italy came back to lead the penalty shootout. With needing one penalty to win the match, Italy's number one penalty kick taker walks up to take the penalty. The camera panned to England's goalkeeper and we the viewers could see him repeating the same phrases to himself, "No problem, I can do this". The whistle was blown, the penalty was taken, and the penalty was saved as the supporting crowd cheered with excitement. Although the penalty shootout concluded with England's defeat, in that moment, England's goalkeeper displayed the potential use and benefit of self-talk.

Self-talk is a cognitive process that even on the brightest stage of elite sport performance can benefit athletes. However, self-talk can also be a cognitive process that can debilitate performance depending on the situation. For instance, an individual telling oneself to "calm down" but this having the opposite effect. Alternatively, a penalty kick taker telling himself "do not miss" only to produce the very outcome they did not want. With these performance differences evident, a better understanding of self-talk can more consistently facilitate the desired sporting outcome.

Chapter two of the thesis is a critical exploration of the literature that was important to understanding self-talk within the context of the thesis. The introduction section of the thesis established that self-talk was the cognitive process which this thesis primarily explored. An argument on the significance of self-talk in relation to athlete's performance development and organisational success was also discussed in the introduction. Progressing from the introduction section, what is explored in chapter two is past literature essential to understanding self-talk within a sports context. By doing so, the chapter further establishes why conducting a thesis centred around self-talk was important. Issues which could be further developed within the self-talk literature are highlighted, showcasing the rationale and aims of the thesis.

By the end of this chapter, the first of the three foundational pieces of the thesis will be introduced. These foundational pieces are the parts of psychological research that were pivotal in creating the thesis (seen in Figure 2.1). The three foundational pieces are

- The sport self-talk literature (introduced in Chapter 2)
- The theoretical framework of the thesis (introduced in Chapter 3)
- The research paradigm of the thesis (introduced in Chapter 4)

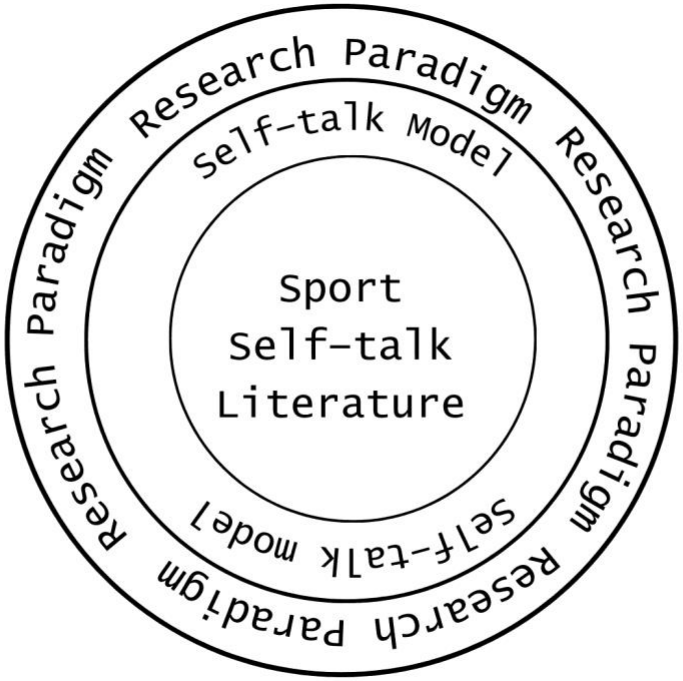


Figure 2.1: Foundational pieces that were pivotal in the creation of this thesis. The three foundational pieces are the sport self-talk literature, the theoretical framework and the research paradigm of this thesis.

First, the chapter identifies how self-talk fits into the wider field of sport and exercise psychology. Next, exploring the current landscape of self-talk in sport is conducted. From this, a specific stance within the self-talk literature which the thesis adopted is outlined. Next, the focus is on avenues where further research is warranted within the self-talk literature. By

establishing these avenues, the rationale behind the three study chapters conducted in this thesis are outlined. An introduction of the key paper for each study chapter is also introduced within the chapter. The chapter concludes by establishing the aims of each of the three study chapters and how these equate to achieving the overall aims of the thesis.

2.1 Locating Self-talk within Sport and Exercise Psychology

Sport and exercise psychology is a multidisciplinary area which combines multiple different fields of study. These disciplines include psychology, neuroscience, motor skills and sociology (Araújo et al., 2019; Holmes & Wright, 2017; Moore & Bonagura, 2017). The connection of these fields forms a perception of what sport and exercise psychology is about (Winter & Collins, 2016; Latinjak et al., 2021). Firstly, sport and exercise psychology is concerned with the performance and well-being formed through the interconnection of external factors (the athlete's environment), biopsychological descriptors (the athlete's descriptive states and traits) and psychological skills. Secondly, it is about how sport and exercise psychology practitioners use interventions to enable athletes to experience better harmony within external factors, biopsychological descriptors and psychological skills (Latinjak & Hatzigeorgiadis, 2021).

Athletes battle against external factors and biopsychological descriptors in an effort to produce the desired performance outcome. Within the previous example of England's goalkeeper, external factors (opponent penalty kick taker) and biopsychological descriptors (anxiety) needed to be managed in order to produce the desired outcome (save the penalty). Sport performance therefore occurs through the mixture of external factors and biopsychological descriptors (Araújo et al., 2019).

Performance has been classified by previous research as Type 1 and Type 2 performance (Furley et al., 2015). Type 1 performance involves performing through effortless control over external factors and biopsychological descriptors. Previous research has showcased the positives when Type 1 performance is produced, for instance, through enhancing fluidity of movement (Ruiz et

al., 2017; Wulf & Lewthwaite, 2010). In contrast, Type 2 performance is characterised by deliberate and conscious control over external factors and biopsychological descriptors. Type 2 performance occurs when there is a non-harmonious relationship between external factors and biopsychological descriptors. Previous research has also shown the benefit of Type 2 performance, as this exerts deliberate control over external factors and biopsychological descriptors (Swann et al., 2017).

Overall performance typically is a combination of both Type 1 and Type 2 performance. Whether a technique or a phase of play falls within Type 1 or Type 2 performance depends on the athlete's perception and appraisal of the current situation (Skinner & Brewer, 2004). The athlete's perception and appraisal of the current situation affects the athlete's biopsychological descriptors. In turn, these biopsychological descriptors influence the external factors produced through behaviour, equating to the observable performance of the athlete.

Self-talk fits into the wider field of sport and exercise psychology as the perception of the athlete and the biopsychological descriptors experienced can be revealed through self-talk (Fritsch & Jekauc, 2020). Self-talk can also be used to help produce Type 2 performance. Type 2 performance can be produced through the use of self-talk cue words which initiate the use of a psychological skill. Using a psychological skill subsequently exerts conscious control over the experienced biopsychological descriptors, enabling the athlete to produce the necessary actions for the desired outcome (Latinjak et al., 2020). For example, if a basketball player is fouled and receives two free throw shots, using the self-talk cue words "eyes on the hoop" could initiate the use of a psychological skill (e.g., concentration) and exert conscious control over the experienced biopsychological descriptors (e.g., pain or physical exertion). Exerting conscious control over biopsychological descriptors could subsequently aid the athlete in placing attentional focus on performance cues (e.g., basketball hoop) and producing the necessary actions for the desired outcome (e.g., scoring the freethrow). The example provided aligns with the previous research conducted by Galanis et al. (2022), where the application of a specific type of self-talk (strategic self-talk) assisted free throw shot performance under

conditions of physical excursion (type 2 performance). The use of self-talk can occur through the athlete generating self-talk cue words individually and through the assistance of a sport and exercise psychology practitioner.

Highlighting the various ways that self-talk could be used showcases how the self-talk literature aligns with the fundamental basis of sport and exercise psychology. It is suggested therefore that self-talk is a significant cognitive process within the performance of athletes and the wider field of sport and exercise psychology. Therefore, the rationale behind the thesis is that by progressing the understanding of self-talk, a broader understanding of sport and exercise psychology could also occur. For instance, additional self-talk studies could reveal more about the external factors, biopsychological descriptors and psychological skills of athletes. Furthermore, additional self-talk studies could reveal more about interventions focused on developing athletes' self-talk which could be administered by sport and exercise psychology practitioners; aiding the variety of ways practitioners could help athletes achieve their desired outcomes.

Exploring how self-talk fits into the wider field of sport and exercise psychology presents an argument that the present thesis could be noteworthy. In addition, locating self-talk within the wider field of sport and exercise psychology also reveals the target audience for the present thesis. The target audience for the thesis was researchers and applied practitioners who work within the field of sport and exercise psychology, who are or will conduct research and applied interventions which focus on self-talk. Having stated how self-talk fits into the wider sport and exercise psychology literature and the intended target audience of the thesis, the focus now shifts to the self-talk literature that was important to creating the thesis.

2.2 Exploring the Self-Talk Literature

Self-talk can be defined as:

> ‘Verbalisations addressed to the self, overtly or covertly, characterised by interpretative elements associated to their content; reflecting dynamic interplays between organic, spontaneous and goal-directed cognitive processes. Or activate responses through the use of pre-determined cues developed to achieve performance-related outcomes’ (Latinjak et al., 2019, p. 2).

The definition of self-talk provided was introduced within one of the most recent conceptualisations of self-talk. Providing an updated conceptualisation of self-talk was a point of focus, as a large amount of research has been conducted from the last widely known conceptualisation of self-talk (Hardy, 2006).

An early conceptualisation of self-talk was conducted by Hardy (2006). The foundational work conducted by Hardy et al. (2001) and Hardy (2006) provided a working definition of self-talk, which guided research into uncovering a greater understanding of self-talk in sport. Through this early conceptualisation, a better understanding of the valence (i.e. positive–negative), overtness (covert–overt), frequency, how self-determined the self-talk was, its motivational interpretations and the functions that self-talk could serve were recognised (Hardy, 2006).

The early conceptualisation of self-talk aided in the development of measurement tools which assessed the content and frequency of athletes' self-talk (Theodorakis et al., 2008; Zourbanos et al., 2009). In addition, the research conducted by Hardy et al. (2001) and Hardy (2006) enabled research to investigate how various factors impacted performance. For instance, previous research revealed that instructional strategic self-talk (cue words facilitating the desired technical movements) enhanced athletes' performance and could be an effective tool for skill acquisition (Perkos et al., 2002). Similarly, previous research revealed that motivational strategic self-talk (self-statements focused on regulating one's level of effort) significantly increased participants levels of self-efficacy and tennis performance (Hatzigeorgiadis et al., 2009; Hatzigeorgiadis et al., 2008).

The self-talk literature continued to expand as the self-talk and performance relationship was investigated. Hardy et al. (2008) introduced a framework where various antecedents and consequences of self-talk were established and structured (framework seen in Figure 2.2). Antecedents of self-talk involved personal factors (e.g., personality traits) and situational factors (e.g., task difficulty). Consequences of self-talk involved cognitive (e.g., concentration), motivational (e.g., confidence), behavioural (e.g., technique) and affect (e.g., anxiety) orientated mechanisms.

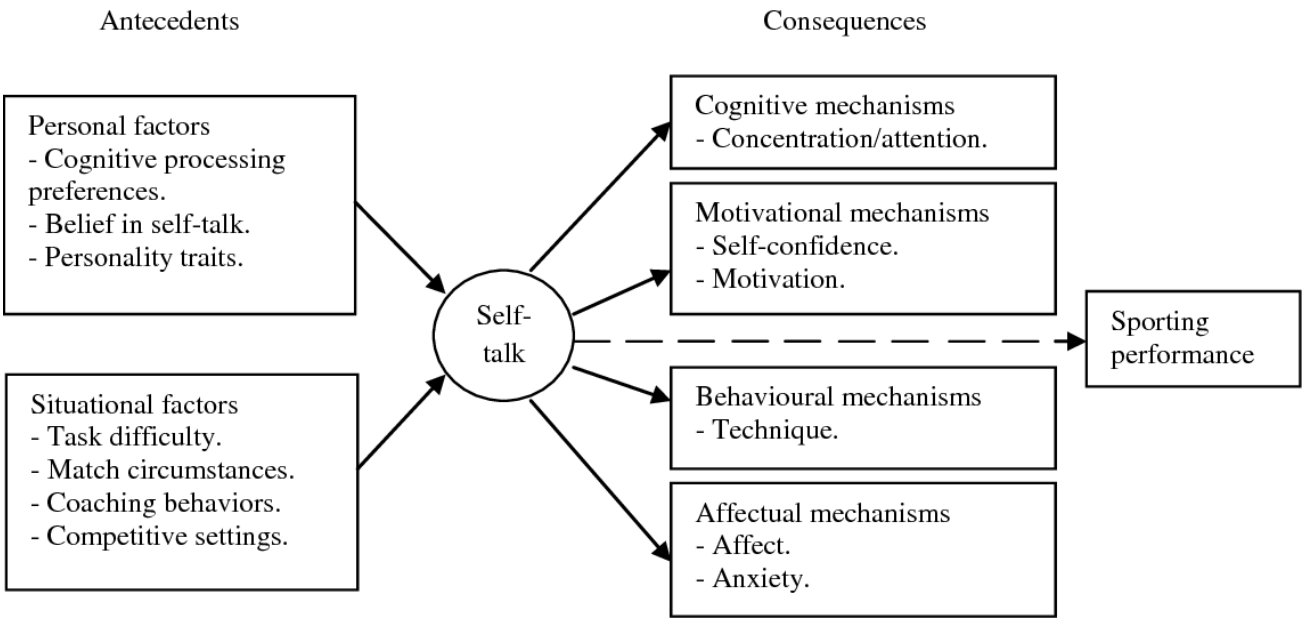


Figure 2.2*: A framework for the study and application of self-talk within sport.*

In previous self-talk research, certain cue words have been categorised based on their performance consequences and this is known as the matching hypothesis (Theodorakis et al., 2000). The matching hypothesis suggests that certain self-talk cue words are more effective for specific tasks or situations. Therefore, identifying the most effective cue words for a particular task or situation can enhance an athlete's performance (Hatzigeorgiadis et al., 2011). The matching hypothesis suggests that the content of self-talk cue words which are instructional (instructional strategic self-talk) benefits tasks which require fine motor skills (e.g., accuracy).

Also, the content of self-talk cue words which are motivational (motivational strategic self-talk) benefits tasks which require gross motor skills (e.g., power) (Galanis et al., 2016; Hatzigeorgiadis et al., 2011).

Hardy (2006) conceptualisation developed the understanding of self-talk by answering first and second-generation self-talk questions. First-generation self-talk questions are studies within the self-talk literature which attempt to answer the question of whether self-talk impacts performance. Second-generation self-talk questions are studies within the self-talk literature which attempt to answer how self-talk impacts performance (Tod et al., 2011; Hatzigeorgiadis et al., 2011). From Hardy (2006) conceptualisation of self-talk, a plethora of self-talk research has been conducted. With the new insights into the self-talk and performance relationship, new conceptualisations of self-talk were introduced to encapsulate the new research conducted from the Hardy (2006) conceptualisation of self-talk. This was conducted by Latinjak et al. (2019) and Van raalte et al. (2016).

2.2.1 Conceptualisation #1: The Entities of Self-Talk

A conceptualisation of self-talk was conducted by Latinjak et al. (2019) as it was evident that there had been many developments since the last conceptualisation of self-talk occurred (Hardy, 2006). Latinjak et al. (2019) conceptualisation identifies two distinct entities of self-talk, which are organic and strategic self-talk (examples depicted in Figure 2.3).

Organic self-talk is the self-statements the athlete generates, conveying different emotions and psychological events experienced within different performance situations. Organic self-talk can be spontaneous, meaning that it is undirected and reaction-based (Latinjak et al., 2017). For example, a football player evaluating their performance during a match could produce the following organic self-talk in reaction to the performance situation, "It is frustrating that the rain is disrupting my passes". Organic self-talk can also be goal-directed, meaning self-statements are directed towards a desired performance outcome. For example, a goalkeeper

attempting to save a penalty could produce the following organic self-talk, "watch his feet before diving" to produce the desired outcome of saving the penalty kick.

Organic spontaneous and goal-directed self-talk differ in their purposes but have similar fundamental roots as they are both generated by the athlete. This entity of self-talk draws its roots from previous research within sport and exercise psychology (Hardy, 2006) and through the dual-process theory within a general psychology context. Dual-process theory suggests that individuals process information through two systems (Kahneman, 2011). These two processes consist of an automatic (spontaneous) unconscious process and a controlled (directed) conscious process. Dual-process theory was adapted within Latinjak et al. (2019) conceptualisation of self-talk. This conceptualisation took into consideration the unique interplay between information processing systems established within dual-process theory and the self-talk which could be generated based on an athlete's sporting demands.

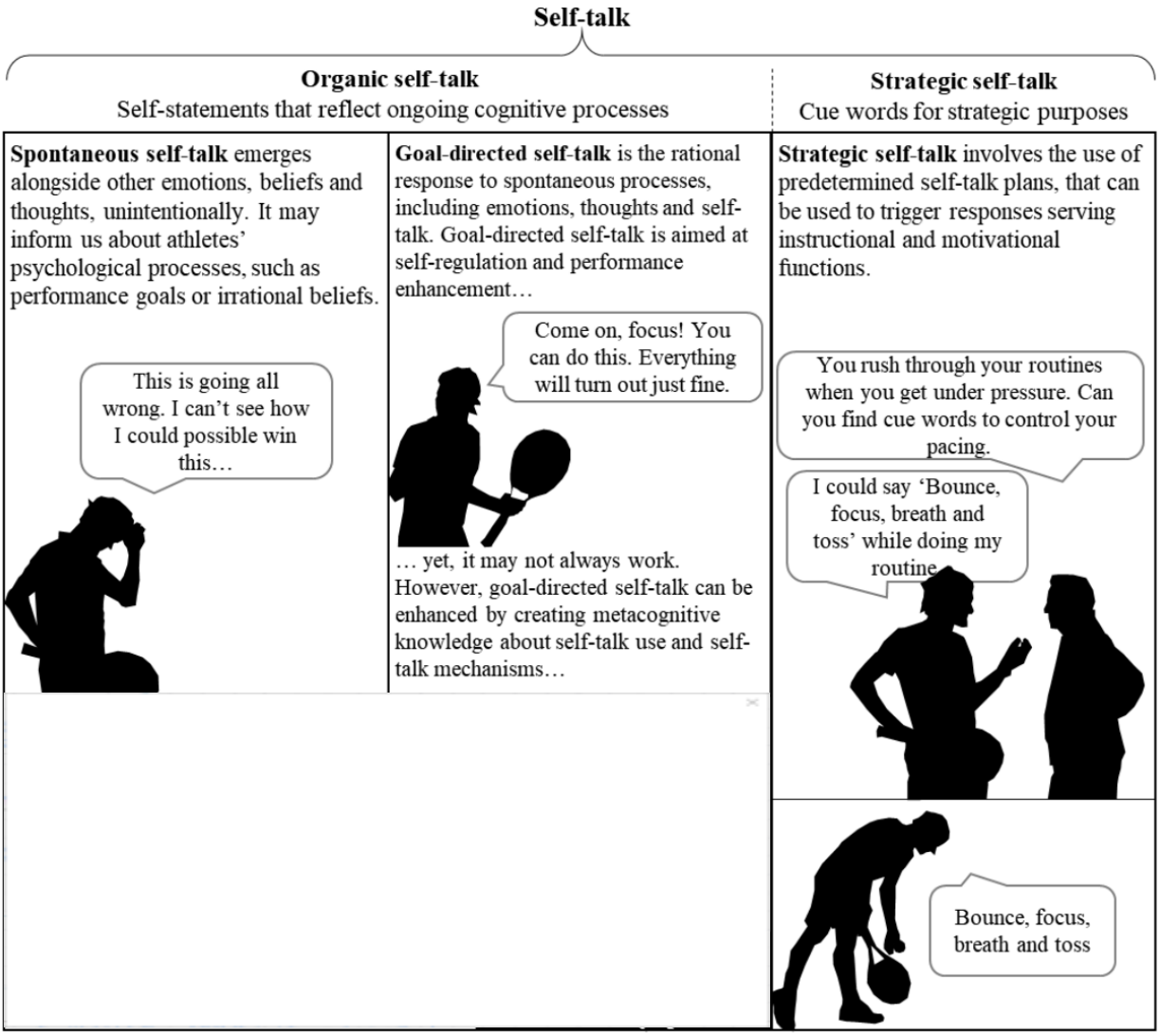


Figure 2.3: *The two entities of self-talk within Latinjak et al. (2019) conceptualisation of self-talk*

Strategic self-talk are the pre-determined self-statements, proactive and goal-directed in nature, that are created to facilitate a desired performance outcome. Strategic self-talk cue words can be generated by the individual themselves, but is typically generateds with the assistance of another individual. which are generated through the assistance of another person. For example, self-talk which is generated through the assistance of a coach, friend or sport and exercise psychology practitioner in an intervention setting (Latinjak et al., 2019). The entity of strategic self-talk draws its roots from previous research, with the viewpoint of teaching athletes psychological techniques within an intervention setting (Abraham & Michie, 2008). These psychological techniques include behaviour change techniques, altering maladaptive thought patterns and regulating emotions (Turner et al., 2020). Previous research investigating the performance effects of self-talk has heavily focused on utilising strategic self-talk cue words. Previous research includes multiple sports, such as football (Thelwell et al., 2010), endurance sports (McCormick et al., 2018) and basketball (Abdoli et al., 2018).

Both organic and strategic self-talk can benefit the athlete in many ways. Organic spontaneous self-talk can reveal the emotions the athlete is experiencing, with strategies for the desired performance outcome occurring through organic goal-directed self-talk and strategic self-talk (Latinjak et al., 2014). Both organic and strategic self-talk align with the therapy style of cognitive psychology as this enables individuals to learn how to manage their thoughts, feelings and behaviours (Turner, 2016). Previous research has shown the benefit of this action-orientated approach in multiple settings, including the enhancement of sport performance (Wood et al., 2017). Strategic and organic goal-directed self-talk also draw similarities as they both can facilitate the desired performance outcome. The similarity of both could spark confusion (Van Raalte et al., 2019), suggesting that it is important to note that the distinction between strategic and organic goal-directed self-talk is that organic goal-directed self-talk is self-generated. In contrast, strategic self-talk is generated through the assistance of another individual.

Evaluating the Latinjak et al. (2019) conceptualisation of self-talk, it is evident that this conceptualisation draws heavily from previous research and progresses from there. Progression from Hardy (2006) early conceptualisation and research on self-talk can be explained within the Latinjak et al. (2019) conceptualisation of self-talk. For instance, both instructional and motivational strategic self-talk are key functions of self-talk, which are categorised as goal-directed self-talk within Latinjak et al. (2019) conceptualisation. Although the content of the self-talk cue words differs (one more instructional and another more motivational), both possess the same purpose and that is self-talk which is goal-directed (Latinjak et al., 2020). Progression from previous research is also evident as previous research first utilised the terminology automatic self-talk to explore the inherent thoughts of athletes (Zourbanos et al., 2009). Latinjak et al. (2019) conceptualisation progresses from this terminology and automatic self-talk is now referred to as organic spontaneous self-talk. The new terminology was introduced because organic spontaneous self-talk better encompasses the biopsychological descriptors occurring within athletes and how these descriptors are revealed within self-talk generated by the athlete.

2.2.2 Conceptualisation # 2: Sport-Specific Model of Self-Talk

Other researchers also realised that there had been many developments since the last conceptualisation of self-talk and other attempts to conceptualise self-talk have occurred. Van Raalte et al. (2016) introduced the sport-specific model of self-talk, suggesting that there are two systems within the mind which are used to process information (seen in Figure 2.4). A system which is fast, intuitive, spontaneous and reactive (System 1) and a system which is slow, thoughtful and requires conscious effort to process information (System 2). The rationale of this model was formed from previous self-talk research (Hardy, 2006; Theodorakis, 2008) and the dual-process theory (Kahneman, 2003). These processing mechanisms are applied within a

sport self-talk context, with the sport-specific self-talk model theorising two distinct processing mechanisms which serve different self-talk functions.

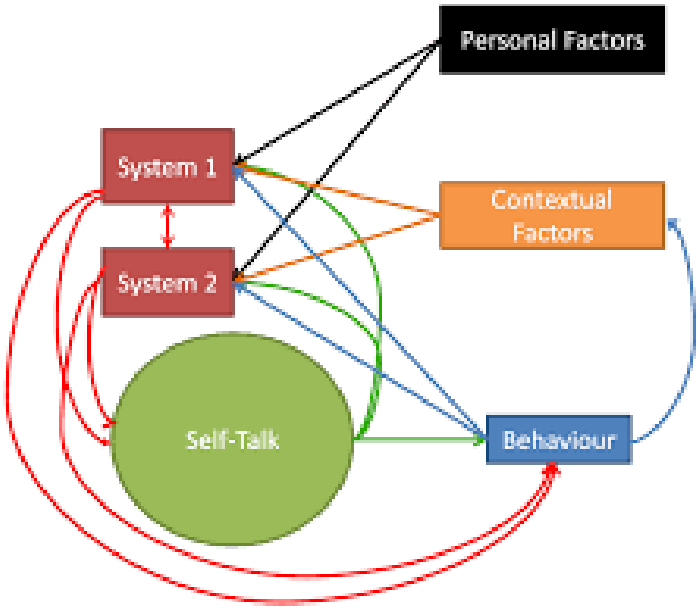


Figure 2.4: *Sport-specific model of self-talk*

System 1 self-talk represents immediate, emotionally charged reactions to a situation. For instance, while standing over a crucial putt, a golfer may generate the self-talk, "You have made this putt a thousand times. Trust your swing." System 2 self-talk on the other hand, represents the inner dialogue formed from consideration, planning and logical thinking. For example, if a golfer is strategising for a challenging hole, they might engage in more deliberate and rational self-talk: "Consider the wind direction, the slope of the green, and your recent performance on similar holes." The sport-specific self-talk model suggests that the golfer can switch between these two information processing systems, depending on the specific demands of the situation. By using the appropriate self-talk for each system, the golfer can optimise their mental approach to different aspects of their performance to consistently produce the desired response (Van Raalte et al., 2016; Van Raalte et al., 2017).

In positive effect, the sport-specific model of self-talk explains through which system information is being processed to generate self-talk cue words. In addition, the model highlights the relationship between personal, contextual (antecedents) and behavioural factors of self-talk. By doing so, the interaction between external and internal variables and their impact on the self-talk which is generated is accounted for. Furthermore, the sport-specific model of self-talk also highlights the interplay of self-talk, suggesting that there is a reciprocal relationship between self-talk and performance. This means that self-talk can impact subsequent performance and performance can impact subsequent self-talk (Van Raalte et al., 2016).

2.3 Adopting a Specific Position Within the Self-talk Literature

The sport-specific model of self-talk conducted by Van Raalte et al. (2016) and the conceptualisation of self-talk conducted by Latinjak et al. (2019) both possess similarities and differences which have aided the progression of the self-talk literature. They are both grounded within theory, which has been a recurring criticism of the self-talk literature (Hardy, 2006; Van Raalte et al., 2017). A theory driven approach is evident through the use of thought-processing theories in cognitive psychology (kahneman, 2011), neuropsychology (Christoff, 2012) and within the self-talk literature (Hardy & Oliver, 2014) to inform the creation of both model and conceptualisation of self-talk. Also, they both address second-generation self-talk questions within the self-talk literature from similar and different viewpoints. For instance, both conceptualisations highlight the importance of self-talk in relation to cognitive processes centred around learning and problem-solving (metacognitive knowledge). Both conceptualisations of self-talk emphasise the importance of the self-talk that the athlete generates. Latinjak et al. (2019) conceptualisation refers to organic self-talk (spontaneous and goal-directed), and Van Raale et al. (2016) model refers to System 1 (intuitive) and System 2 (rational) self-talk. Although the terminology used differs, both encompass the same purposes of self-talk when the athlete generates self-talk.

A concern of both conceptualisations of self-talk is that a foundational piece of both is dual-process theory. The dual-process theory is a theory which originated within a general psychology context (De Neys & Glumicic, 2008; Kahneman, 2011). An argument could be made about whether the dual-process theory is a theory that is appropriate to transfer from a general to a sport and exercise psychology context due to the uniqueness of sport and exercise psychology. For instance, how an athletes' performance is impacted by certain psychological demands and challenges can be uniquely explored within a sport and exercise psychology context. In addition, how psychological challenges are managed through developing psychological skills can be conducted in a distinct manner within a sport and exercise psychology context. For example, previous research within a sport and exercise psychology context has explored how perceived pressure impacts the technical and tactical aspects of a penalty kick shot and how a specific psychological intervention (self-conscious training) can aid in better managing pressure and performing the desired technique (Beilock & Carr, 2001; Reeves et al., 2007).

With the existence of psychological demands, challenges and application of knowledge unique to sport and exercise psychology, how applicable the dual-process theory is within a sport and exercise psychology could be called into question. Some characteristics of dual-process theory may be transferable to a sporting context (Furley et al., 2015). However, more empirical research is needed to understand better if an updated conceptualisation of self-talk rooted within dual-process theory is appropriate when exploring self-talk within a sport performance context.

Exploring the differences between both conceptualisations, Latinjak et al. (2019) conceptualisation of self-talk has started to be used within empirical research (Cooper et al., 2021; Galanis et al., 2022; Galanis et al., 2022; Hase et al., 2019: Latinjak et al., 2019; Latinjak et al., 2023). The research conducted so far has explored both the organic and strategic entities of self-talk. By doing so, the research conducted showcases the validity of Latinjak et al. (2019) conceptualisation and this research provides guidelines as to how future research could be

conducted. These guidelines include for instance, understanding how future research can be contextualised and synthesised within the wider self-talk literature (Latinjak et al., 2023), what is important to consider when researching strategic self-talk (Galanis et al., 2022; Galanis et al., 2022; Hase et al., 2019) and the duration of time needed within data collection to depict the development of participants' use of organic goal-directed self-talk (Latinjak et al., 2019).

The present thesis adopted a specific position within the self-talk literature based on exploring both conceptualisations of self-talk. The researcher believed that by taking a specific position within the self-talk literature, a clearer thesis could be produced as a specific position within the self-talk literature would result in the consistent use of terminology throughout the thesis. In addition, the three thesis studies could be conducted that serve a specific purpose in progressing the self-talk literature. Therefore, the specific position in which this thesis was located within the self-talk literature was in Latinjak et al. (2019) conceptualisation of self-talk. The conceptualisation of self-talk and the terminology of Latinjak et al. (2019) was utilised within the present thesis overall and the three thesis studies.

Latinjak et al. (2019) conceptualisation was the specific position adopted within the self-talk literature for the present thesis for three reasons. Firstly due to the intended target audience of the thesis. The present thesis was intended for researchers and applied practitioners within the field of sport and exercise psychology who are or will eventually conduct research and applied interventions that focus on self-talk. Although both conceptualisations of self-talk take into consideration how future self-talk research could occur, Latinjak et al. (2019) conceptualisation places great emphasis on applied interventions which focus on self-talk (evident within the strategic self-talk entity). Secondly due to a clear progression from previous research. Consideration was placed on questions and the issues raised within the previous conceptualisation of self-talk (Hardy, 2006), with Latinjak et al. (2019) conceptualisation of self-talk synthesising the research conducted following the previous conceptualisation of self-talk. For example, the previous conceptualisation of self-talk (Hardy, 2006) argued that there was a need for more theory-driven approaches within the self-talk literature. A theory-driven

approach to self-talk was evident within Latinjak et al. (2019) conceptualisation through introducing the two entities of self-talk. Thirdly due to research being conducted using Latinjak et al. (2019) conceptualisation. The research that has been conducted provides guidelines as to how future research could be conducted in efforts to continue to progress the self-talk literature through Latinjak et al. (2019) conceptualisation. The chosen position within the self-talk literature aided the present thesis in being produced more clearly and consistently. Although a decision was made, both conceptualisations significantly contributed to the enhancement of the self-talk literature.

2.4 Locating the Present Thesis within the Self-talk Literature

2.4.1 Study 1: Investigating the Experimental and Control Groups of Strategic Self-talk Studies

Exploring the self-talk literature through the Latinjak et al. (2019) conceptualisation of self-talk has revealed that a focus has been placed on the self-talk and performance relationship through the strategic self-talk entity of self-talk. The matching hypothesis, the antecedents and consequences of self-talk and several studies which focused on answering second-generation self-talk questions all heavily focused on developing the understanding of strategic self-talk (Hardy et al., 2008; Hatzigeorgiadis et al., 2011; Theodorakis et al., 2000; Tod et al., 2011). The exploration of strategic self-talk has proved pivotal in understanding the implications of strategic self-talk. Research findings subsequently have informed interventions which applied sport and exercise psychology practitioners have administered to athletes (Galanis et al., 2022; Hardy et al., 2018; Hatzigeorgiadis et al., 2014). The results from strategic self-talk studies which inform recommendations for athletes are generated when the performance of self-talk cue words are compared to a control group. For example, previous research explored the use of strategic self-talk cue words in a variety of situations and compared the performance to individuals within a control group, resulting in the creation of the matching hypothesis (Theodorakis et al., 2000). The matching hypothesis has subsequently informed the strategic self-talk cue words recommended to athletes and the strategic self-talk interventions used by

practitioners to help athletes facilitate the desired sporting outcome (Hatzigeorgiadis et al., 2011; Hatzigeorgiadis et al., 2014).

Evaluating the strategic self-talk studies in more detail, an aspect of these studies which warranted further exploration is the inconsistent findings evident in some strategic self-talk studies. Some studies have indicated that performance improvements are evident in the strategic self-talk group and not in the control group (Naderirad et al., 2023; Perkos et al., 2002; Zetou et al., 2012). These results suggest that the strategic self-talk used was the distinct factor that enabled performance improvements to occur. Other studies however, have indicated inconsistent findings when the experimental and control groups are compared. Some studies have revealed statistically significant results found in one performance task but not another performance task when three groups are compared amongst each other. For example, if a statistically significant result was found in a power-based performance task and not an accuracy based performance task when an instructional strategic self-talk, motivational strategic self-talk and a control group are compared amongst each other (Boroujeni & Shahbazi, 2011; Chang et al., 2014; Hase et al., 2019; Zetou et al., 2012; Zourbanos et al., 2013).

With the inconsistent findings within some previous strategic self-talk studies, further understanding why these inconsistent findings have occurred within control groups would be beneficial. One interpretation of these findings could be that the methods employed within the control groups may need further consideration, as the control groups could create an incongruence between the aims of strategic self-talk studies and what is actually being measured. Methodological issues can create inconsistent findings and negatively impact the validity of a study (Bradley, 1993). In addition, inconsistent findings could provide misleading results that practitioners could apply to strategic self-talk interventions when working with athletes.

The first study within the thesis attempted to explore what is occurring within the control groups of strategic self-talk studies. By better understanding control groups, suggestions for

improving the utilisation of control groups in future strategic self-talk studies could be provided.

2.4.2 Study 2: A Reflexive Self-talk Intervention Program

As previously mentioned, research has historically focused on strategic self-talk interventions primarily (Hatzigeorgiadis et al., 2011; Tod et al., 2011). The rationale behind the focus on strategic self-talk is understandable, as an intervention is conducted through the collaboration of two people (e.g., athlete and sport and exercise psychology practitioner). This collaboration is also an inherent characteristic of strategic self-talk (Hatzigeorgiadis et al., 2014; Latinjak et al., 2019). Strategic self-talk possesses goal-directed purposes and by better understanding how strategic self-talk can facilitate the desired outcome, applied sport and exercise psychology practitioners are put in a better position to aid athletes within interventions. However, in the same way strategic self-talk possesses goal-directed purposes, so does organic self-talk. Research therefore could explore interventions which focus on developing the organic goal-directed self-talk of athletes. Previous research has indicated that the development of organic goal-directed self-talk can occur through a reflexive self-talk intervention (Latinjak et al., 2019; Latinjak et al., 2016).

A reflexive self-talk intervention program is an intervention which is athlete-centred and aims to strengthen athletes' organic goal-directed self-talk by raising awareness of psychological challenges, improving the choice of psychological skills and thinking about the content of goal-directed self-talk. A key paper on understanding reflexive self-talk interventions was conducted by Latinjak et al. (2019). Data collection for this innovative study included an initial intake session, six - twelve intervention sessions and two post-intervention interviews. The study's results revealed that athletes' self-awareness and use of their organic goal-directed self-talk had improved. In addition, biopsychological descriptors, including emotions, motivation and confidence, both inside and outside of the athletes' sporting environment had benefited from the reflexive self-talk intervention program.

In positive effect, the key paper in understanding reflexive self-talk interventions showcases how organic goal-directed self-talk can be developed. Progression in the understanding of reflexive self-talk interventions has occurred through new intervention tools being created to enable a consistent approach when conducting intervention sessions (Latinjak et al., 2020). Although tools have been created, these have yet to be administered to athletes to confirm the tool's congruence with achieving the aims of a reflexive self-talk intervention. The suitability of intervention tools needs to be explored as it is one thing for a concept or tool to be theorised and another for it to work in practice.

Another area for further consideration within reflexive self-talk interventions is measuring the intervention program's impact. Previous research has mentioned difficulties measuring the success or failure of the intervention due to the uniqueness of each intervention session (Latinjak et al., 2019). As the athlete dictates the content of each intervention session, previous research has found it difficult to have a common outcome measure to determine the effects of the intervention (Latinjak et al., 2020). This difficulty presents challenges in research showcasing the success (or failure) of the intervention program. Difficulties are also experienced by applied sport and exercise psychology practitioners to showcase the success (or failure) of the intervention program to clients and other stakeholders.

The second study within the thesis focuses on a reflexive self-talk intervention program, exploring new intervention tools when the intervention is applied to athletes and a way to measure the impact of the intervention. By doing so, practitioners who administer a reflexive self-talk intervention would be better informed of the intricacies of a reflexive self-talk intervention program.

2.4.3 Study 3: The Mind Wandering and Performance Relationship

The first two studies of the thesis aim to understand the self-talk and performance relationship better when self-talk occurs within a sport performance context and is focused on enhancing performance. Congruence between the first two studies and the self-talk literature can be seen through the primary focus being placed on the impact of self-talk within performance tasks and interventions. However, self-talk is not a cognitive process which only occurs during performance but also occurs throughout the athlete's entire day. In addition, the thoughts and inner dialogue an athlete has with themselves is not always directed towards the performance task at hand. As the self-talk literature has indicated the performance impacts of self-talk when this occurs inside the sporting context and is goal-directed (Latinjak et al., 2019; Galanis et al., 2022), an aspect of the self-talk literature which could be considered, is how the self-talk which occurs outside of the sporting context or is not goal-directed impacts the performance of athletes.

Thoughts which are unguided by the ongoing task or situation are referred to as mind wandering (Seli et al., 2015a). Seli et al. (2016) theoretical framework explains mind wandering as a phenomenon which can occur intentionally and unintentionally. Previous research has indicated that both types of mind wandering can impact the behaviours produced in different situations positively and negatively (Carriere et al., 2013).

Mind wandering can occur in different forms. For example through imagery, which could be producing pictures in one’s mind that are unguided by the present situation. However, it is the verbal thoughts that are unguided by the present situation which is where mind wandering and self-talk link. Seli et al. (2016) theoretical framework showcases the similarities between the mind wandering literature and the self-talk literature. For instance, intentional mind wandering draws similarities to organic goal-directed self-talk due to intentional mind wandering being controlled and deliberate in nature when it occurs.

Two key papers on understanding mind wandering in a sports context were conducted by Latinjak (2018 a, b). Across the two studies, a performance task, questionnaire and semi-

structured interview were employed. The first of these two studies revealed that mind wandering does indeed occur during athletes' performance. In addition, mind wandering counteracted the goal-directed self-talk athletes generated. The second out of the two studies revealed various time points (e.g., before, during, after training/competition) and situations (e.g., boredom, fatigue, pain) when mind wandering occurred.

These studies started to paint a picture as to the mind wandering experiences of athletes and mind wandering's performance impact. The performance impact of mind wandering could present issues for athletes and applied sport and exercise psychology practitioners when conducting self-talk interventions. Issues could arise due to the time points mind wandering could occur and its effect on goal-directed self-talk. Conversely, some forms and time points of mind wandering could be beneficial, for instance attempting to mind wander when energy for cognitive activities or mental resources is low (ego depletion), therefore counteracting ego depletion. Therefore, by further understanding how mind wandering impacts performance, ways to further experience the benefits mind wandering offers and ways to mitigate mind wandering's ability to counteract goal-directed self-talk could be found. These findings could aid applied sport and exercise psychology practitioners when conducting self-talk interventions.

The third and final study within the thesis aims to explore the mind wandering experiences of athletes inside and outside a sport performance context. Further investigation is warranted, as the time points, situations and dispositional factors which are associated with mind wandering may impact performance as well as the athlete's ability to use psychological techniques (e.g. self-talk). Further exploration into the mind wandering and performance relationship would therefore benefit applied sport and exercise psychology practitioners due to a more holistic understanding of the organic self-talk which athletes produce inside and outside of the sporting context being understood.

Exploring the self-talk literature which aligns with Latinjak et al. (2019) conceptualisation of self-talk showcases that there are many aspects of self-talk which could benefit from additional

research. Exploring these unknown aspects indicates the relevance of the thesis as it aims to reveal more about the workings of self-talk inside and outside a sport performance context. The studies which were conducted in the thesis all align with the entities of self-talk evident in Latinjak et al. (2019) conceptualisation. Exploration into the control groups of strategic self-talk studies (study 1 - chapter 5) enabled a better understanding to be gained of the strategic self-talk entity. Exploration into the inner workings of a reflexive self-talk intervention (study 2 - chapter 6) enabled a better understanding to be gained of organic goal-directed self-talk. Exploration into the mind wandering and performance relationship (study 3 - chapter 7) enabled a better understanding to be gained of organic spontaneous self-talk. Further exploration as to the rationale of each of the three studies will be discussed within each study chapter. However, what has been introduced within this literature review is the aspects within the self-talk literature where additional research is warranted and how the three thesis studies align with the position the thesis has adopted within the self-talk literature.

Locating the present thesis within the self-talk literature has indicated that the three thesis studies could benefit the target audience of the thesis. Researchers would benefit from recommendations on how best to conduct strategic self-talk studies (study 1). Applied sport and exercise psychology practitioners would benefit from recommendations on how to conduct a reflexive self-talk intervention program best (study 2). Lastly, both researchers and applied sport and exercise psychology practitioners would benefit from a better understanding of how the occurrence of mind wandering inside and outside a sport performance context affects the performance of athletes (study 3).

The studies conducted within the thesis and the benefits the thesis offers to the targeted audience have now been introduced. What was established within Chapter 2 therefore, was the overarching aim of the thesis and the collection of sub-aims that were explored to achieve the overarching aim. The overarching aim and the sub-aims of the thesis are as follows:

- Overarching Aim: To explore the researched and applied nature of self-talk directed and undirected towards sport performance.

    - Sub-Aim 1: For sport and exercise psychology researchers to be better informed when making methodological decisions within strategic self-talk studies
    - Sub-Aim 2: For applied sport and exercise psychology practitioners to be better informed when creating reflexive self-talk intervention programs for athletes.
    - Sub-Aim 3: To explore the frequency, content, antecedents, and effects of self-talk that occurs inside and outside the sport context.
    - Sub-Aim 4: To build on the understanding of the entities and models established within the self-talk literature

2.5 Conclusion

Chapter 2 of the thesis has reviewed the current landscape of the self-talk literature. How self-talk fits into the wider sport and exercise psychology literature was discussed, as well as the many developments which have impacted the understanding of self-talk. New conceptualisations and terminologies which encompass the understanding of self-talk have been postulated. With the self-talk literature possessing various conceptualisations, a specific position within the self-talk literature adopted for the thesis was warranted. The position adopted was the use of Latinjak et al. (2019) conceptualisation of self-talk. From these entities of self-talk, aspects within the self-talk literature which the present thesis explored were revealed. These three studies aimed to further understand strategic, organic goal-directed and organic spontaneous self-talk.

At the end of Chapter 2, what has been introduced is how the gaps within the self-talk literature which the thesis explored could impact the target audience of the thesis. In addition, what has been introduced is how achieving the thesis' aims benefits the thesis' target audience

(a graph of Chapter 2 summary is provided in Table 2.1). As chapter two concludes, the first of the three foundational pieces of the thesis has been established: the sport self-talk literature. Chapter 3 continues the focus on introducing the foundational pieces of the thesis by next exploring the self-talk which governed the thesis. The combination of both chapters reveal the theoretical framework used for the present thesis. Establishing a theoretical framework for the thesis is important because the theoretical framework was pivotal in creating the three thesis studies. In addition, the theoretical framework was pivotal in evaluating the results of the three thesis studies.

Table 2.1

Chapter 2 Summary

Chapter	**Aims**
2	- To Provide a critical exploration into the literature which was important to the thesis. This was the first of the three important pieces which created the thesis. - To critically analyse past and present literature important to understanding self-talk within a sports context. - To introduce the aims of the thesis.
	Chapter Rationale
	- An explanation is needed to establish why conducting a thesis in this topic area is of importance. - Aspects of the self-talk literature which could be expanded on and further understood need to be highlighted, showcasing the rationale and aims of the present thesis.
	Key Research
	- Latinjak et al. (2019) conceptualisation of self-talk - Van Raalte et al. (2016) Sport specific self-talk model
	Findings
	- Latinjak et al. (2019) conceptualisation of self-talk was used within the present thesis The target audience for the thesis: - Researchers and applied practitioners within the field of sport and exercise psychology who are or will eventually conduct research and applied interventions that focus on self-talk.
	New Knowledge Gained from Chapter 2

The aims of the thesis:

- For sport and exercise psychology researchers to be able to use the information gained in research findings, when creating strategic self-talk studies
- For applied sport and exercise psychology practitioners to be able to use the information gained in research findings, when creating intervention programs for athletes.
- To explore the frequency, content, antecedents, effects of self-talk that occurs inside and outside the sport context.
- To build on the understanding of entities established within the self-talk literature

The areas within the self-talk literature that the present study investigated:

Study 1: Exploration into the control groups of strategic self-talk studies. This enables a better understanding to be gained of the strategic self-talk entity.

Study 2: Exploration into the inner workings of a reflexive self-talk intervention. This enables a better understanding to be gained of the organic goal-directed self-talk entity.

Study 3: Exploration into the mind wandering and performance relationship. This enables a better understanding to be gained of the organic spontaneous self-talk entity.

Chapter 3

Theoretical Framework

Frameworks are used in various domains of sports as it is this structure that aids in the consistent success which is achieved. A framework is used with sporting organisations to instil the desired playing style of the club is executed, regardless of the age and ability level of the athlete in the same way a framework within the field of sports performance can aid athletes' performance development and sporting success, a framework within sport and exercise psychology research can aid the achievement of research aims.

The previous chapter introduced the first of the three foundational pieces of the thesis, the self-talk literature. Exploring the self-talk literature revealed that the conceptualisation of self-talk introduced by Latinjak et al. (2019) was the position within the self-talk literature the thesis adopted. From the introduction of Latinjak et al. (2019) conceptualisation, aspects within the self-talk literature the present thesis explored were revealed, indicating the three thesis studies conducted. Strategic self-talk (study 1), reflexive self-talk interventions (study 2), and the mind wandering and performance relationship (study 3) were the three thesis studies. What was also previously revealed was that researchers and applied practitioners within the field of sport and exercise psychology who are or will eventually conduct research and applied interventions that focus on self-talk were the intended target audience of the thesis.

The previous chapter exploring the self-talk literature began to introduce the theoretical framework that was used in the present thesis through exploring Latinjak et al. (2019) conceptualisation of self-talk. Chapter three progresses from the previous chapter as a self-talk model is introduced. Therefore, the combination of chapters two and three reveal the theoretical framework that was used within the present thesis. Chapter two conceptualised self-talk, meaning that self-talk in a sport context was defined. Chapter three provides a model of self-talk, meaning the ways self-talk relates to broader concepts within the sport and exercise psychology literature are introduced. Chapter three providing an additional layer of the self-talk literature introduces further evidence of the significance of the present thesis. Also, it starts to showcase the criteria used when evaluating each thesis study's results.

Firstly, the chapter identifies why a theoretical framework was necessary for the thesis. Next, the focus shifts to identifying the criteria used in the selection process for the thesis' theoretical framework. The self-talk model used for the thesis is then introduced. Next, the congruence between each study aim and the chosen theoretical framework is discussed. The chapter concludes by discussing how new knowledge can be gained through exploring the thesis aims through the perception of a theoretical framework. By the end of the chapter, the second of the three foundational pieces of the thesis is introduced, which is the theoretical framework of the thesis.

3.1 Theory-Driven Research

A theoretical framework is a structure that provides a working model that drives the investigation and analysis of a phenomenon (Connaway & Radford, 2021). Theoretical frameworks explain how existing theories support the research being conducted, showing that the work is grounded in established ideas (Rocco & Plakhotnik, 2009). Theoretical frameworks, therefore, justify and contextualise research within the existing theories of the researched phenomenon. Therefore, introducing a theoretical framework within the present thesis is important, as this justifies and contextualises the thesis studies conducted within the existing self-talk literature. Initial attempts to justify and contextualise the three thesis studies have been conducted. Firstly by showcasing the aspects of the self-talk literature that the thesis explored further. Secondly, by showcasing the congruence between the three thesis studies and the conceptualisation of self-talk (Latinjak et al., 2019). The present chapter progresses from these initial points by contextualising how the thesis aims fit into a broader established model within the self-talk literature.

The self-talk literature was once criticised for its lack of theory-driven research (Hardy, 2006; Hardy & Oliver, 2014). The negative repercussions of a lack of theory-driven research are that it is difficult for researchers to understand, adapt or develop insights into the researched phenomenon beyond a superficial level. In addition, a lack of theory-driven research can

prevent researchers from offering strong causal explanations of the researched phenomenon (Cash, 2018; Friedman, 2003). Over the past decade, however, an improved focus on theory-driven research has occurred (Latinjak et al., 2014; Latinjak et al., 2019; Van Raalte et al., 2016). In an effort to continue this trend, the present thesis utilised a theoretical framework to provide a structure and working model that drives the investigation and analysis of self-talk.

Introducing the theoretical framework of the present thesis has already begun through introduction of the conceptualisation of self-talk (Latinjak et al., 2019). The second aspect of the theoretical framework for the present thesis was the transdisciplinary self-talk model (Latinjak et al., 2023). Theoretical frameworks and models share similarities in their ability to organise information to showcase an understanding of the researched phenomena. A difference between the two however is that a theoretical framework presents a more broader focus on attempting to explain and predict the researched phenomena (Mcleod, 2023). A model attempts to describe the processes that are occurring within the researched phenomena (Van Zyl et al., 2020). The transdisciplinary self-talk model was chosen as it fulfilled the selection criteria used for its inclusion within the theoretical framework used for the thesis.

The selection criteria used for selecting a theoretical framework were the following:

1. The theoretical framework needed to align with the thesis's position adopted within the self-talk literature.
2. The theoretical framework needed to consider the self-talk literature and the wider sport and exercise psychology literature.
3. The theoretical framework needed to account for the internal and external experiences of the athlete, which was a key component within the three thesis studies.
4. The theoretical framework needed to account for the target audience of the thesis.

The transdisciplinary self-talk model (see figure 3.1) fulfils the four-point selection criteria, and the evidence for its fulfilment is highlighted through the introduction and exploration of the model.

3.2 The Transdisciplinary Self-talk Model

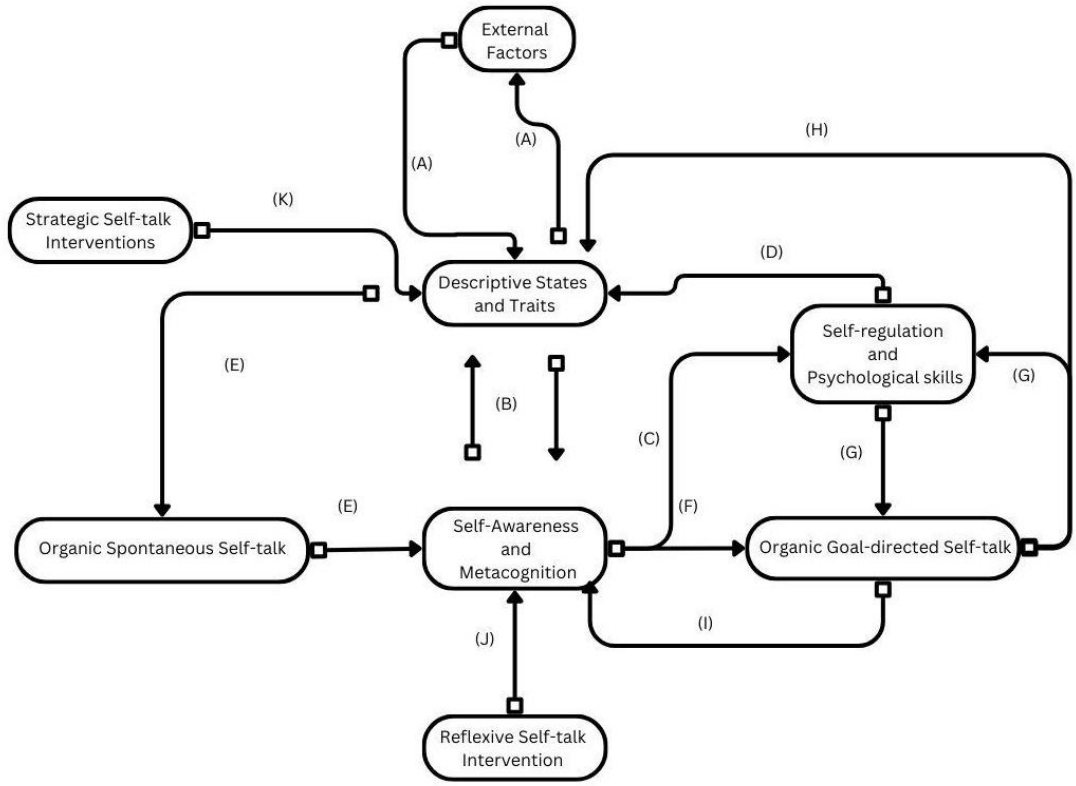


Figure 3.1. *An adapted version of the transdisciplinary self-talk model. The clusters and different pathways indicated by letters are described within the main text. The TDSM was adapted for the present thesis. The original model can be located in Latinjak et al. (2023) published paper.*

The transdisciplinary self-talk model (TDSM) synthesises the self-talk literature across multiple disciplines inside and outside of psychology (Latinjak et al., 2023). These disciplines include neuroscience, computer science, general psychology, health psychology, clinical psychology, educational psychology, development psychology and sport and exercise psychology. With the integration of these disciplines, the important internal and external factors that impact the self-talk that is generated were synthesised and structured into a working model. The TDSM describes eight core clusters that encompass a multidisciplinary approach to self-talk.

3.2.1 External Factors

External factors can broadly be defined as the observable and objective experiences of the athlete and their sporting experience (Laborde et al., 2018). External factors are an important aspect of an athlete's sporting experience, as external factors categorise aspects of the athlete's sporting experience that are objective and observable.

External factors can encompass three areas. These are the physical environment, the task characteristics and the organisational stakeholders. The physical environment includes aspects of an athlete's environment such as the weather or the crowd. Task characteristics include the demands of the sport which require the athlete to understand to be successful (e.g. pitch lines, movement techniques). Organisational stakeholders include the individuals perceived to be important to the athletes' sporting experience (e.g. parent, coach). External factors are rooted in different theories and research. For instance, the ecological dynamics theory explains task characteristics and the physical environment (Button et al., 2020; Davids et al., 2013). In addition, research that has investigated the effects of the physical environment (Sors et al., 2019) and the effects stakeholders possess on an athlete's performance (McCalla & Fitzpatrick, 2016) has informed the creation of the external factors cluster within the TDSM.

External factors are an important cluster in understanding the observable sports performance that the athlete produces. However, external factors in and of itself do not reveal the entire sporting experience of the athlete. Within the TDSM, the internal aspect of the athletes' sporting experience is also an essential cluster in understanding athletes' sporting experiences. These internal factors within the TDSM are referred to as descriptive states and traits.

3.2.2 Descriptive States and Traits

Descriptive states and traits is the cluster within the TDSM that explains the internal experiences of the individual at different time points (Latinjak et al., 2023). A descriptive state is

a temporary condition that an individual is experiencing for a relatively short period of time (Hanin, 2007). For example, a descriptive state could be an emotion that an athlete could be experiencing before their performance (e.g., excitement). On the other hand, a descriptive trait is a relatively stable condition that an individual is experiencing (Allen et al., 2013). For example, a psychological trait (e.g., extraversion) or a physical trait (e.g., height) an individual consistently showcases in various situations would be a descriptive trait. Descriptive states and traits is a cluster formed through understanding physical and psychological variables that can identify the internal sporting experiences of athletes (Gee, 2010; Latinjak et al., 2023). Descriptive states reveal how people are in various situations (e.g., emotions) and are thought to change frequently. Descriptive traits are who people typically are regardless of the situation (e.g., their personality) and are thought to be relatively stable. These states and traits can occur separately and in combination with each other.

Descriptive states and traits is an important cluster, as the cluster forms the building blocks of an athlete's sporting experience and ultimately their life. It is the combination of these processes and time points that identifies the subjective experiences of athletes. These processes happen internally within the athlete, and the external manifestation of these processes is how descriptive states, traits and external factors link. The combination of external factors and descriptive states and traits produces the behaviour and performance which is displayed (Williams et al., 2004).

Chapter two highlighted that performance can be categorised as Type 1 or Type 2 performance (for further information, see Chapter 2 sub-heading 'Exploring self-talk within sport and exercise psychology'). Often, performance is a combination of both Type 1 and Type 2 performance (Furley et al., 2015). Whether a technique or a phase of play falls within Type 1 or 2 performance depends on the athlete's perception and appraisal of the current situation. When a non-harmonious relationship between external factors and descriptive states and traits is perceived, deliberate control over these clusters can be attempted. Deliberate control is

accounted for within the TDSM and is referred to as self-regulation and psychological skills (Swann et al., 2017).

3.2.3 Self-regulation and Psychological Skills

Self-regulation and psychological skills are the intentional mental processes that control descriptive states and traits (Latinjak & Hatzigeorgiadis, 2021). Psychological skills can be triggered through the experience of an internal demand. Psychological skills can also occur through the regulation of the individual and others when there is a non-harmonious relationship between external factors and descriptive states and traits. These could be manifested through interpersonal (e.g., leadership, communication) or intrapersonal (e.g., concentration, self-motivation) skills to manage the situation experienced (Harwood et al., 2015; Kendellen & Camiré, 2019). Self-regulation and psychological skills are solution-focused in nature, with the aim to be used proactively or reactively to face challenges experienced (Calmels et al., 2003). For example, the psychological skill communication could aid in producing the teamwork necessary for sporting success (McEwan & Beauchamp, 2014). Alternatively, the psychological skill concentration could be used when performing in a pressurised situation (Vine et al., 2014).

The use of self-regulation and psychological skills can be beneficial, however they can also be a double-edged sword. As psychological skills are an intentional and effortful process, each athlete has a finite cognitive stamina at their disposal. If these cognitive resources are depleted, the athlete could succumb to a state of ego depletion, resulting in the inability to use psychological skills, negatively impacting their performance (Englert, 2017; Hagger et al., 2010; Otgaar et al., 2012).

Issues could also arise if athletes are not consistently placed in a situation to develop their psychological skills. For instance, if parents and coaches are overprotecting their athletes, the athletes may not possess or develop the skills needed to manage psychological distress while

performing (Rodis, 2013; Tamminen & Holt, 2012). In practice, an example of parents and coaches overprotecting athletes could be shielding an athlete from any adversity throughout the athlete's early career. For instance, allowing the athlete only to compete in low-pressure, friendly matches and the coach or parent always intervening to alleviate any stressful situations, such as confronting challenging opponents or dealing with the pressure of an important match (Smoll et al., 2011). Alternatively, the development of psychological skills can occur through the coach manipulating the athlete's environment (e.g. simulation training) or working with an applied sport and exercise psychology practitioner (Low et al., 2021). These situations enable the development of self-regulation and psychological skills and this development occurs through metacognition.

3.2.4 Self-awareness and Metacognition

Metacognition is the mental process of thinking about one's thoughts and the underpinning patterns of these thoughts. Metacognition in the TDSM is triggered through self-awareness. Subsequently, metacognition identifies, monitors and assesses psychological challenges (MacIntyre et al., 2014). Afterwards, a suitable coping strategy is planned to manage the psychological challenge. Coping strategies can range from various social means such as talking to a friend or coach (Sheridan et al., 2014), to physical means such as listening to music (Lima-Silva et al., 2014; Tenenbaum et al., 2004). Psychological skills fit into coping strategies when a coping strategy is selected to manage a psychological challenge through mental means (Cosma et al., 2020).

External factors, descriptive states and traits, self-regulation and psychological skills, and self-awareness and metacognition are the clusters within the TDSM that reveal the internal and external experiences of individuals. These four clusters encompass the positive and negative sporting experiences that occur within the athlete's lived reality. These four clusters align with the broader sport and exercise psychology literature, as other theoretical frameworks have included these clusters when creating a working model of the sporting experiences of athletes

(Latinjak & Hatzigeorgiadis, 2021). The TDSM, however, places emphasis on the relationship between these clusters and self-talk, as can be suggested through further exploration of the TDSM and the four self-talk clusters.

3.2.5 Strategic Self-Talk Interventions

Strategic self-talk is pre-determined and generated through the assistance of another person (e.g., a coach, friend or sport and exercise psychology practitioner). Strategic self-talk was introduced within chapter two of the thesis and the chapter explored how strategic self-talk has been researched. The TDSM however explains strategic self-talk in the form of interventions and the relationship between strategic self-talk interventions and the internal and external experiences of athletes.

The strategic self-talk intervention cluster aligns with interventions that focus on behaviour change techniques, altering maladaptive thought patterns and regulating emotions (Wood et al., 2017). Within strategic self-talk interventions, pre-determined cue words, proactive and goal-directed in nature, are created to facilitate a desired performance outcome. Strategic self-talk cue words are generated to exert mental control over descriptive states and traits, triggering the desired behaviour and performance. The TDSM depicts strategic self-talk's impact through the letters 'A' and 'K' in Figure 3.1. Previous research has showcased the positive impacts of a strategic self-talk intervention and its ability to aid gaining mental control over various descriptive states and traits within various sports. For instance, Abdoli et al. (2018) showcased the positive impact of strategic self-talk on movement coordination among basketball athletes. Galanis et al. (2022) showcased the positive impact of strategic self-talk on fatigue in basketball. Barwood et al. (2015) showcased the positive impact of strategic self-talk on stamina in cycling.

3.2.6 Organic Spontaneous Self-talk

Organic self-talk is the internal dialogue generated by the athlete which can occur spontaneously or with goal-directed purposes (Latinjak et al., 2019; Sarig et al., 2023). Chapter two of the thesis introduced organic spontaneous self-talk as an undirected and reaction-based type of organic self-talk (Latinjak et al., 2017). The TDSM also explores organic spontaneous self-talk and provides a working model to explain how organic spontaneous self-talk influences the internal variables of the athlete's sporting experience. For instance, organic spontaneous self-talk can reveal the emotions and psychological events that the athlete is experiencing. The TDSM depicts how emotions could be revealed through the letter 'E' in Figure 3.1. For example, a football player evaluating their performance during a match ("It is frustrating that the rain is disrupting my passes"). Organic spontaneous self-talk, therefore, is typically undirected and reaction-based, revealing the individual's perspective of the current experience (Latinjak et al., 2017). As organic spontaneous self-talk is often reaction-based, it can trigger self-awareness, enabling individuals to cope if the situation is perceived as a challenge. The TDSM also depicts this process through the letters' E'.

Organic spontaneous self-talk has been studied in sport and exercise psychology literature as a primary and secondary feature. For instance, the creation of measurement tools such as the automatic self-talk questionnaire for sports (Zourbanos et al., 2009) and self-talk and gestures rating scale (Van Raalte et al., 1994) placed focus on the organic spontaneous self-talk that is generated and its impact on sport performance. More often however, organic spontaneous self-talk has been explored as a secondary feature. For example, organic spontaneous self-talk has been explored through the impact descriptive states (e.g., emotions) have on performance, with the observation of these descriptive states occurring through the organic spontaneous self-talk generated (Fritsch & Jekauc, 2020). In addition, exploring organic spontaneous self-talk has occurred through its ability to create self-awareness, triggering self-regulation (Santos-Rosa et al., 2022). The TDSM suggests that once an individual is aware of the situation, what could follow is the use of organic goal-directed self-talk.

3.2.7 Organic Goal-directed Self-talk

Organic goal-directed self-talk is the self-statements directed towards a desired performance outcome. For example, a goalkeeper attempting to save a penalty ("watch his feet before diving"). Again, organic goal-directed self-talk was explored within chapter two of the thesis. The TDSM however provides a working model to explain how organic goal-directed self-talk influences the internal variables of the athlete's sporting experience. The TDSM reveals three ways that organic goal-directed self-talk can influence the athlete's sporting experience.

(1) Organic goal-directed self-talk can adjust descriptive states and traits to facilitate the desired performance outcome. For instance, when attempting to regulate appraisals, control technical execution, make strategic decisions and regulate psychophysiological arousal (Bellomo et al., 2020; Karamitrou et al., 2020). Organic goal-directed self-talk's ability to adjust descriptive states and traits is depicted in the TDSM through the letter 'H' in Figure 3.1.

(2) Organic goal-directed self-talk can also influence the sporting experience of athletes as these statements generated are deemed appropriate depending on metacognitive knowledge (e.g. knowing that something is right or wrong). Following the previous example, the organic goal-directed self-talk generated to help save a penalty is deemed appropriate, knowing that foot placement is a key deciding factor as to the direction a penalty will go (Savelsbergh et al., 2005). The TDSM depicts organic goal-directed self-talk's relationship with metacognitive knowledge through the letter 'I'.

(3) Organic goal-directed self-talk can also influence the sporting experience of athletes through its relationship with psychological skills. Continuing the previous example, the organic goal-directed self-talk generated to help save a penalty can aid performance through the internal dialogue triggering the use of the psychological skill concentration, aiding in exerting mental control over descriptive states and traits, producing the desired performance outcome (Farina & Cei, 2019). The TDSM depicts this process through the letters' G - D - A'.

Exploring organic spontaneous and organic goal-directed self-talk, similarities and differences are evident within the organic entity of self-talk. Both have similar foundational roots as the athlete generates them. Both also draw links to metacognition and self-regulation in their own unique way. Metacognition is the planning, monitoring and reviewing of one's thoughts. Self-regulation is one's awareness of their lived experiences and ability to select appropriate strategies to produce the desired behaviour and action (Zimmerman & Moylan, 2009). An aspect of self-regulation is self-awareness and the use of organic spontaneous self-talk can elevate one's level of self-awareness. Once aware, the athlete is now in a position to self-regulate and facilitate the desired sporting outcome which could be produced through the use of organic goal-directed self-talk (Jekauc et al., 2021). The TDSM depicts this process through the letter 'C'. A difference between organic spontaneous and organic goal-directed self-talk is that although they are both part of self-regulation, they are part of different aspects of the self-regulatory process.

Both organic self-talk and strategic self-talk can benefit the athlete in a multitude of ways. Organic spontaneous self-talk can reveal the emotions the athlete is experiencing, with strategies for the desired performance outcome occurring through organic goal-directed self-talk and strategic self-talk (Latinjak et al., 2014). Organic self-talk and strategic self-talk draw similarities as these concepts draw their roots within cognitive psychology interventions such as cognitive behavioural therapy, which enables individuals to learn how to manage their thoughts, feelings and behaviours (McArdle & Moore, 2012). Previous research has shown the

benefit of this action-orientated approach in enhancing sports performance (Wood et al., 2017).

3.2.8 Reflexive Self-talk Intervention

The reflexive self-talk intervention cluster within the TDSM focuses on teaching athletes the meaning of self-talk and how it relates to other components of their psychological reality. Athletes are educated on recognising dysfunctional self-talk and using organic goal-directed self-talk more efficiently (Goldberg et al., 2018; Latinjak et al., 2019). The impact of reflexive self-talk interventions therefore, is to develop athletes' self-awareness and metacognition and the TDSM depicts this process through the letter 'J' in Figure 3.1.

The uniqueness of the reflexive self-talk intervention cluster is that it provides an avenue to develop an athlete's organic self-talk. For example, through explanation, role-playing, modelling, problem-solving and scenario-based learning (Peris-Ortiz & Lindahl, 2015). Reflexive self-talk interventions can build the self-awareness and metacognition needed to interpret organic spontaneous self-talk and effectively use organic goal-directed self-talk to adjust descriptive states and traits. Building self-awareness and metacognition can subsequently improve the relationship between descriptive states, traits, and external factors (Frisch et al., 2020).

3.3 Evaluating the Transdisciplinary Self-talk Model

Evaluating the transdisciplinary self-talk model (TDSM), there are significant indications that the TDSM was helpful in governing the present thesis. The four-point selection criteria introduced earlier in the chapter helped provide a rationale for using the TDSM within the present thesis. Firstly, the chosen theoretical framework needed to align with the thesis's position within the self-talk literature. The terminology used within Latinjak et al. (2019) conceptualisation of self-

talk is the same terminology used within the TDSM, providing the rationale that the TDSM aligns with the position adopted for the thesis.

Secondly, the chosen theoretical framework needed to consider the self-talk literature and the wider sport and exercise psychology literature. The TDSM is transdisciplinary and not only considers the sport and exercise psychology literature but also goes beyond this discipline to cover multiple disciplines that have researched self-talk (Latinjak et al., 2023). Thirdly, the chosen theoretical framework needed to account for the internal and external experiences of the athlete, as this was investigated within the three thesis studies. The TDSM also synthesises external (external factors) and internal (descriptive states and traits, psychological skills, self-awareness and metacognition) experiences that align with the broader sport and exercise psychology literature (Latinjak & Hatzigeorgiadis, 2021).

Fourthly, the chosen theoretical framework needed to account for the target audience of the thesis. These were researchers and applied practitioners within the field of sport and exercise psychology who are or will eventually conduct research and applied interventions that focus on self-talk. The four clusters within the TDSM which focus on self-talk coincide with the target audience of the thesis. Researchers have explored and developed the understanding of the four TDSM clusters which focus on self-talk (Hatzigeorgiadis et al., 2014; Latinjak et al., 2017; Latinjak et al., 2019). In addition, the strategic self-talk and reflexive self-talk interventions TDSM clusters coincide with applied practitioners as these are the self-talk interventions applied practitioners conduct with athletes. Organic spontaneous and organic goal-directed self-talk coincide with researchers as both have been researched as primary and secondary features (Fritsch & Jekauc, 2020; Latinjak et al., 2014; Van Raalte et al., 1994; Zourbanos et al., 2009). The TDSM and the eight clusters which create the model provide an up-to-date account of the self-talk literature and the sporting experiences of athletes. Therefore, the suitability of utilising the TDSM within the present thesis is highlighted through these points.

The TDSM provides several benefits and satisfies the selection criteria for its use within this thesis. The TDSM provides an innovative approach to understanding self-talk, establishing itself as one of the first models that has considered and incorporated such a wide scope of disciplines that have explored self-talk. Through incorporating a wide scope of disciplines, the claims made of how self-talk influences the lived experiences of athletes are strengthened. In addition, the TDSM continues the recent trend of establishing theory-driven research within the self-talk literature. By doing so, the developed understanding of the eight clusters encompassing the TDSM aids future research by providing guidelines for conducting research. In the context of the present thesis, more clarity is gained on how the thesis added to the current level of understanding within the self-talk literature. Further exploration of how the present thesis fits into the TDSM is discussed later in the chapter.

No theoretical framework is perfect and in evaluating the TDSM, there are considerations that could be mentioned in its future use within research. The TDSM is a comprehensive model that incorporates various disciplines and clusters. Due to the TDSM's complexity, exploring specific clusters and designing studies that effectively capture the multidisciplinary nature of self-talk needs to be considered by researchers. In addition, the methodological decisions of researchers need to be considered. The integration of multiple disciplines in developing the TDSM presents an opportunity to enhance the richness of future research, though it may require thoughtful consideration to harmonise methods for a cohesive and comprehensive approach. These considerations are highlighted as the TDSM is a new model and research guided by the TDSM has yet to be conducted (to the researcher's knowledge) which has explored these considerations. However, as the TDSM provides an up-to-date synthesis of the self-talk literature, the thesis aimed to explore the abilities of the TDSM when the framework is used within self-talk research.

Further evaluating the TDSM, other theoretical frameworks were in contention for use within the thesis. A framework considered was Hardy et al. (2008) framework for the study and application of self-talk within sport. Hardy et al. (2008) theoretical framework was introduced

in chapter two of the thesis and revealed the antecedents of self-talk such as personal (personality traits) and situational (task difficulty) factors. What was also revealed was the consequences of self-talk which are cognitive (concentration), motivational (confidence), behavioural (technique) and affect (anxiety) orientated mechanisms. Although Hardy et al. (2008) framework was considered, it was believed that the TDSM is an up-to-date version of Hardy et al. (2008) theoretical framework, taking this as well as research conducted after Hardy et al. (2008) theoretical framework into consideration in the creation of the TDSM. Therefore, the TDSM was used for the thesis within the creation of the thesis studies and the evaluation of the thesis studies.

3.4 The Transdisciplinary Self-talk Model and the Present Thesis

The present thesis conducted three studies exploring three aspects of the self-talk literature. Study 1 (chapter 5) explored different control groups that might explain the inconsistent findings within some strategic self-talk studies. Study 2 (chapter 6) explored the impact of a reflexive self-talk intervention on athletes of various sports, ages and levels of playing experience. Study 3 (chapter 7) explored the relationship between mind wandering and sport performance when mind wandering occurred inside and outside a sport performance context. Chapter two of the thesis introduced the rationale behind each study and how they fit into the self-talk literature. The rationale behind each thesis study is explored further now that the theoretical framework which governed the thesis has been introduced. What is explained is where within the TDSM each thesis study is located. Also, how each study attempted to progress the knowledge within the specific self-talk cluster each study is located in is discussed.

3.4.1 Study 1: Investigating the Experimental and Control Groups of Strategic Self-talk Studies

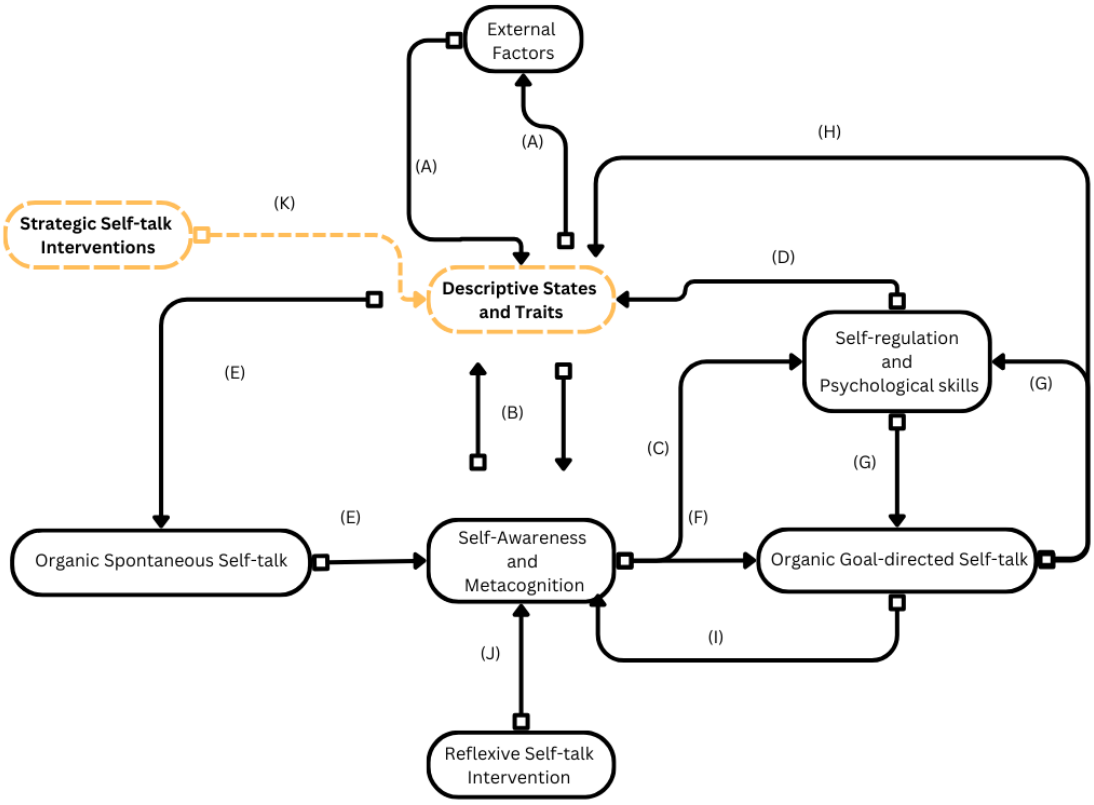


Figure 3.2: *Where Study 1 is located within the adapted TDSM (coloured in yellow)*

Exploration into the control groups of strategic self-talk studies enables further insight to be gained within the strategic self-talk cluster of the TDSM (see Figure 3.2). Further insight is gained because strategic self-talk studies inform strategic self-talk interventions (Hatzigeorgiadis et al., 2011). Methodological issues within strategic self-talk studies can provide misleading results that practitioners could apply to strategic self-talk interventions. Therefore, the relationship between strategic self-talk and performance can be better understood by developing the understanding of what is occurring within strategic self-talk studies. The results of Study 1 can aid future strategic self-talk studies and, subsequently, the strategic self-talk interventions that are created.

Further connections between Study 1 and the TDSM could be seen through the connection between strategic self-talk and descriptive states and traits (letter K). The cue words generated from a strategic self-talk intervention aim to exert mental control over descriptive states and traits. Understanding strategic self-talk interventions derives from previous research exploring how various strategic self-talk cue words impact different descriptive states and traits (Galanis et al., 2022; Hatzigeorgiadis et al., 2011). Therefore, when strategic self-talk is researched, an awareness of how pre-determined cue words impact different descriptive states and traits must be understood. Previous research that aligns with this notion includes Hardy et al. (2008) framework for the study and application of self-talk within sport and the matching hypothesis (Hatzigeorgiadis et al., 2011). Therefore, experimental and control groups can be better investigated by better understanding how pre-determined cue words impact different descriptive states and traits to gain information on the researched phenomenon. In addition, when evaluating the results of Study 1, the TDSM helped provide guidelines as to what is occurring within the control groups of the study and the clusters that are important to consider when conducting future strategic self-talk studies.

3.4.2 Study 2: A Reflexive Self-talk Intervention Program

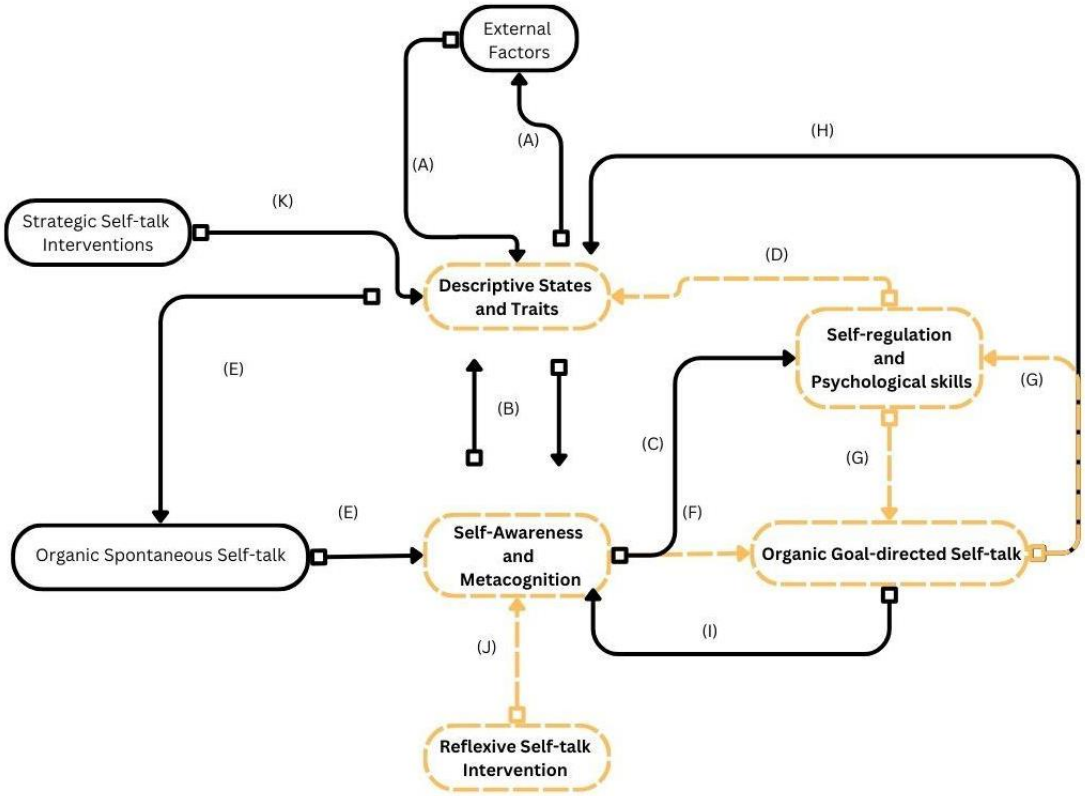


Figure 3.3: *Where Study 2 is located within the adapted TDSM (coloured in yellow)*

The cluster within the TDSM where Study 2 is located is within the reflexive self-talk interventions cluster. In a reflexive self-talk intervention, athletes are educated on recognising dysfunctional self-talk and using organic goal-directed self-talk more efficiently (Goldberg et al., 2018; Latinjak et al., 2019). A key characteristic of a reflexive self-talk intervention is the development of metacognitive knowledge. The development of metacognitive knowledge subsequently enables the athlete to use organic goal-directed self-talk better to produce specific psychological skills to manage various psychological challenges. The TDSM depicts these processes through the letters' J - F - G - D' in Figure 3.3.

Through exploring how Study 2 aligns with the TDSM, what is also highlighted is how critical self-awareness and metacognition are within reflexive self-talk interventions. Self-awareness

and metacognition are essential for self-regulation, and self-regulation is necessary for goal-directed self-talk, a key component of a reflexive self-talk intervention. Understanding the important clusters within a reflexive self-talk intervention, analysing the success or failure of a reflexive self-talk intervention and analysing the intervention's impact on the athlete's self-awareness and metacognition should therefore be measured. In addition, how the intervention impacted the athletes' use of organic goal-directed self-talk and psychological skills should also be measured, as these are the core aims of a reflexive self-talk intervention. These considerations were applied when Study 2 was conducted.

3.4.3 Study 3: The Mind Wandering and Performance Relationship

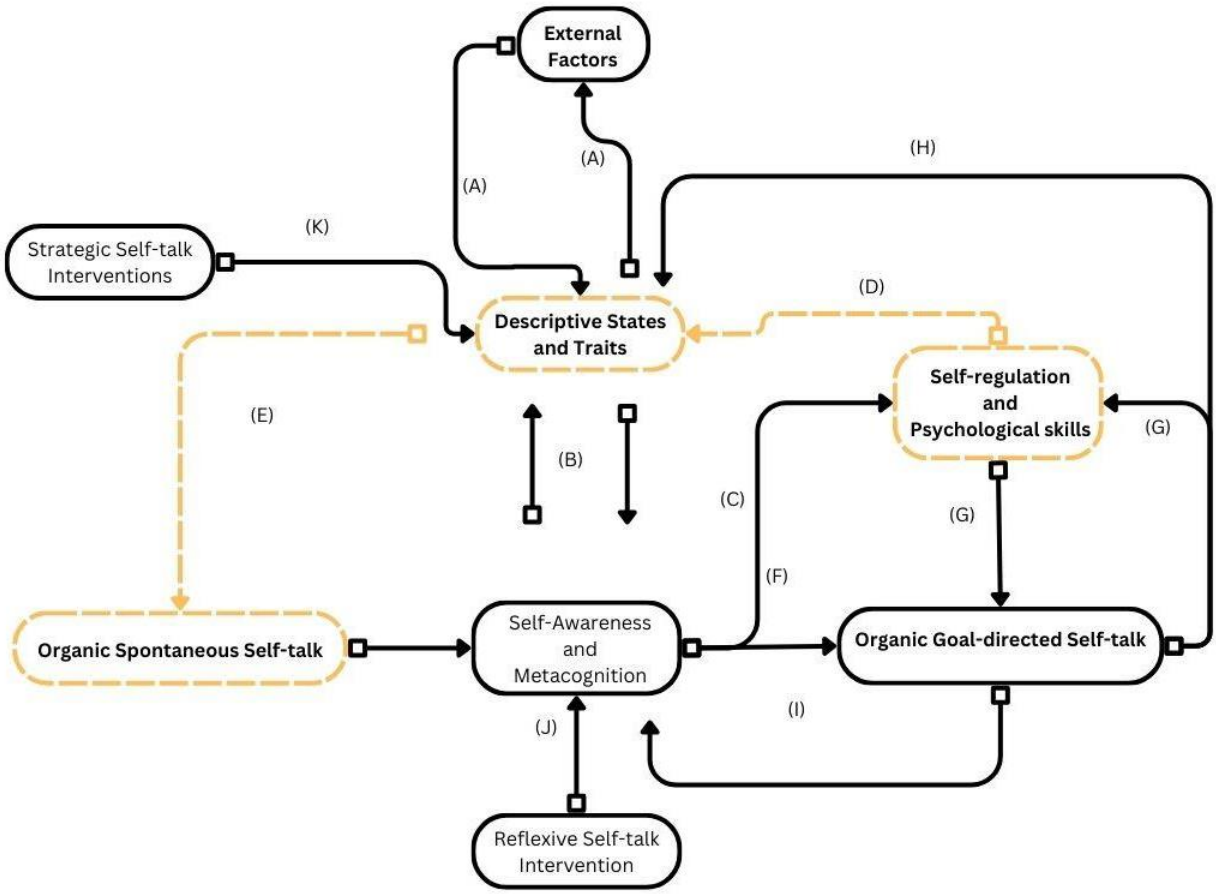


Figure 3.4: *Where Study 3 is located within the adapted TDSM (coloured in yellow)*

The mind wandering and performance relationship inside and outside a sport performance context was explored within Study 3 of the present thesis. A more holistic understanding of self-talk could be gained by better understanding the mind wandering and performance relationship. Specifically, a better understanding of the self-talk that occurs inside and outside a sport performance context and the self-talk that is not goal-directed could be gained.

Mind wandering was introduced in chapter one and was broadly defined as thoughts unguided by the present task or activity, thus unrelated to the situation (Irving, 2016; Seli et al., 2015). Mind wandering is a type of self-talk when the verbal manifestation of mind wandering occurs. Mind wandering can occur unintentionally and intentionally; therefore, mind wandering is a type of self-talk located in two clusters within the TDSM. Unintentional mind wandering is located in the organic spontaneous self-talk cluster, because both unintentional mind wandering and organic spontaneous self-talk are uncontrollable processes (Latinjak et al., 2020; Seli et al., 2015a). Intentional mind wandering is located in the self-regulation and psychological skills cluster because both are intentional mental processes (Latinjak & Hatzigeorgiadis, 2021; Seli et al., 2015a).

Exploring Study 3 through the TDSM, it can be seen that descriptive states and traits influence unintentional and intentional mind wandering (see Figure 3.4). Also, descriptive states and traits can induce unintentional mind wandering (Latinjak et al., 2018) and the TDSM depicts this process through the letter 'E'. In addition, intentional mind wandering can alter the experience of descriptive states and traits (Seli et al., 2015a), and the TDSM depicts this process through the letter 'D'. Therefore, understanding descriptive states and traits is important when exploring the mind wandering and performance relationship. Therefore, the thesis study aimed to understand further, how specific descriptive states and traits influence the relationship between mind wandering and performance.

The present thesis hypothesised that by conducting the three proposed thesis studies, further understanding of various clusters of the TDSM would be understood. In addition, exploring the three thesis studies within a theoretical framework has provided an understanding of the guidelines used when conducting the thesis studies. Further guidelines are provided in Chapter 3, as an in-depth analysis of the methodological decisions made for the thesis is introduced. By conducting three thesis studies governed by the TDSM, the coherence of the new model was put into practice. Therefore, the present chapter adds to the aims of the thesis and these are:

- Overarching Aim: To explore the researched and applied nature of self-talk directed and undirected towards sport performance.

    - Sub-Aim 1: For sport and exercise psychology researchers to be better informed when making methodological decisions within strategic self-talk studies
    - Sub-Aim 2: For applied sport and exercise psychology practitioners to be better informed when creating reflexive self-talk intervention programs for athletes.
    - Sub-Aim 3: To explore the frequency, content, antecedents, and effects of self-talk that occurs inside and outside the sport context.
    - Sub-Aim 4: To build on the understanding of the entities and models (TDSM) established within the self-talk literature

3.5 Conclusion

In conclusion, chapter three of the thesis aimed to build on the self-talk literature introduced within chapter two and further establish the rationale for the thesis. A theoretical framework was introduced and necessary, as there has been an improved focus on theory-driven research within the self-talk literature. The present thesis wanted to continue this trend. In addition, using a theoretical framework within the thesis better explains how existing theories support the research being conducted, showing that the work conducted is grounded in established ideas.

The present chapter introduced the model used in the thesis, the transdisciplinary self-talk model (Latinjak et al., 2023). A detailed explanation of the model was introduced and the rationale as to why this was included in the theoretical framework was revealed. Congruence between the three thesis studies and clusters within the TDSM was also established. Through using the TDSM, new knowledge found within the three thesis studies could be better contextualised within the self-talk literature. The present chapter was dedicated to introducing the second out of the three foundational pieces of the thesis. These foundational pieces are the parts of psychological research that were pivotal in creating the thesis. The first of these foundational pieces is the sport self-talk literature and Latinjak et al. (2019) conceptualisation of self-talk. The second foundational piece is the transdisciplinary self-talk model (Latinjak et al., 2023). A graph of Chapter 3 summary is provided in Table 3.1.

In the next chapter of the thesis, the third of the three foundational pieces of the thesis is introduced. Chapter 4 introduces the research paradigm that was utilised within the thesis. A research paradigm is the worldview of an individual. The researcher's worldview informed the decisions of how to collect, analyse and interpret the data of the three thesis studies. Introducing the research paradigm of the thesis warrants discussion as it will benefit the readers of the thesis when interpreting the knowledge gained within the thesis. The introduction of the research paradigm of the thesis concludes the three foundational pieces of the thesis, from which the three thesis studies were conducted.

Table 3.1

Chapter 3 Summary

Chapter	**Aims**
3	● Introducing the theoretical framework that was used for this thesis. This was the second of the three important pieces which created this thesis. ● This chapter was a continuation of the previous literature review chapter and aimed to add an additional layer of the self-talk literature by introducing a theoretical framework.
	Chapter Rationale
	● An Explanation is needed of how existing theories support the research that is being conducted, showing that the work conducted is grounded in established ideas ● An explanation is needed of how this thesis is contextualised within the existing theories of the researched phenomena
	Key Research
	Latinjak et al. (2023) Transdisciplinary self-talk model
	Findings
	● Latinjak et al. (2023) Transdisciplinary self-talk model was the model used for this thesis ● The transdisciplinary self-talk model showcased congruence between a model and the self-talk literature important for this thesis, combining together to form the theoretical framework of the thesis.

- The chapter showcased where each study chapter was located within the transdisciplinary self-talk model. This provided further evidence not only of the significance of this thesis but also started to showcase the criteria that will be used when evaluating the results of each thesis study.

Chapter 4

Research Paradigm

In the pursuit of knowledge and understanding, researchers employ their worldview as a guide to explore and analyse complex phenomena. The worldview of researchers serves as a lens through which researchers view their reality. Whether the world is believed to be heavily objective or subjective, socially structured, arbitrary or non-arbitrary greatly influences the pursuit of knowledge and understanding. The way researchers formulate research questions, collect and interpret data, and ultimately contribute to their respective fields' advancement is influenced by their worldview. Therefore, the researcher's worldview for the thesis is introduced within the present chapter.

The previous chapter introduced the model that aided the thesis's creation, the transdisciplinary self-talk model (Latinjak et al., 2023). A detailed explanation of the model was conducted, and the rationale for why the model was selected for the thesis was revealed. By the previous chapter showcasing the link between the sporting experience of athletes and the self-talk literature, congruence between the wider sport and exercise psychology literature and the thesis was established. In addition, the transdisciplinary self-talk model contextualised the self-talk literature and the new knowledge found through the three thesis studies. Chapter three revealed the second out of the three foundational pieces of the thesis. These foundational pieces are the parts of psychological research that were pivotal in creating the thesis. The present chapter progresses from the previous chapters by revealing the third and final foundational piece of the thesis, which is the research paradigm of the thesis. With the previous chapter showcasing the importance of athletes' internal and external sporting experiences, it is also essential to highlight the internal experiences of the researcher and how this impacted the thesis.

Chapter four aims to reveal the research paradigm of the thesis and the methodological decisions made within the thesis. Introducing the thesis' research paradigm and the why behind the methodological decisions made assists the readers when interpreting the knowledge gained within the thesis (Khaldi, 2017). Furthermore, to achieve the thesis's aims, an accurate account

of how data was collected, analysed and interpreted needed to be addressed. Doing so allowed the entire body of work within the thesis to be interpreted and synthesised.

The chapter first explores the research paradigm adopted for the thesis, encompassing ontology, epistemology, axiology, and methodology. Next, an introduction to the methodology of the thesis is provided. What follows are the methods used for data collection and data analysis for each thesis study. The chapter concludes by highlighting the features of the thesis which were consistent throughout each thesis study.

4.1 Research Paradigms

Research paradigms can be defined as the researcher's perspective of how they view, investigate and break down the real world (Patton, 1987). It is a set of basic beliefs which form the reasoning used to conduct research (Aggerholm, 2014; Lincoln & Guba, 1989; Reid, 2012). Research paradigms inform the reader what is important to the researcher and what the researcher thinks counts as knowledge. When a researcher is aware of their research paradigm, specific philosophical questions are answered to ensure there is a clear alignment with the researcher's basic beliefs and the methods employed to conduct research. Misalignment of the researcher's basic beliefs and methods used within research can cause problems for the research performed, as underdeveloped research designs and inaccurate representations of findings could occur (Ryba et al., 2022).

When attempting to understand an individual's research paradigm, four philosophical aspects need to be considered. These are ontology, epistemology, axiology and methodology (Hassmen et al., 2016). Ontology is the philosophical study of being. It refers to an individual’s view of reality and to what extent it exists and can be captured through research. Ontology is concerned with what is true or real. Epistemology is the ‘theory of knowledge’. It refers to the principles of what can be known and how you can find out about it. Epistemology explains the relationship between the individual and what is being explored. Axiology is the understanding

of the value of the research knowledge itself. Lastly, methodology is the overall theoretical rationale and principles that define how a research question and a set of methods are selected in the pursuit of knowledge. The combination of ontology, epistemology, axiology and methodology creates a research paradigm. Therefore, to fully grasp an individual's research paradigm, one must understand these four aspects of philosophy.

Research within sport and exercise psychology often explicitly references the research paradigm adopted for the study. Whether through research emphasising applied implications (Giacobbi et al., 2005) or research conducted to develop the understanding in a specific area (Byers, 2012). Clearly identifying a philosophical underpinning to research is necessary, as "any form of (research) inquiry needs to be judged using criteria consistent with its ontology, epistemology, methodology and use of methods for specific purposes" (Sparkes 2015: p. 54). Therefore, it was essential to identify a research paradigm and ensure there is congruence with its ontology, epistemology, axiology and methodology; henceforth, it was relevant to the thesis.

Highlighting the internal experiences and decision-making process of the researcher, when initially establishing the thesis, multiple research paradigms were in contention. However, it was by developing the thesis further - through exploring different areas in which self-talk studies could be created - that the congruence between the basic beliefs of the researcher and the thesis became clearer. The clarity gained led to finalising the three thesis studies. Therefore, the research conducted within the thesis has been guided by a critical realist research paradigm.

4.2 The Adopted Research Paradigm of the Thesis: Critical Realism

Critical realism explains complex pathways whereby certain behaviours lead to specific outcomes. Initiated by Roy Bhasker (1975), critical realism has a specific set of beliefs on research and the viewpoint taken to investigate and break down the real world (Patton, 1987; Lincoln & Guba, 1989). Critical realists view the world as socially structured, individually

differentiated and ever-changing (Bhaskar, 2014; Bhaskar, 2016; Wiltshire, 2018). Critical realism recognises that the world has observable events and unobservable occurrences which cause observable events. These events are suggested due to social structures and human agency.

The relationship between the social environment and the capacity for individuals to operate within a given environment is essential, as critical realism suggests that this relationship forms our perception of the world. Critical realism, therefore, recognises the agency in individuals and the agency of all stakeholders constrained to a specific environment (Ryba et al., 2022; North, 2017). Critical realism is compatible with the idea that there are different valid perspectives on reality. Therefore, critical realism suggests that there is a reality to be found within research questions, but the knowledge within this reality is subjectively and socially constructed by the individual that experiences it (Wiltshire, 2018).

The creation of the present thesis has been informed by a critical realist research paradigm. Holistically, the present thesis aimed to explore the applied and researched nature of self-talk. How the present thesis aimed to explore self-talk is through exploring the internal and external experiences of athletes, and this has been highlighted within the introduction to the theoretical framework of the thesis (Chapters 2 and 3). Critical realism places emphasis on the observable (external) and unobservable (internal) occurrences within individuals lived experiences (Bhaskar, 2014), showcasing a congruence with how the present thesis attempted to achieve the overarching aim. By doing so, a deeper understanding of self-talk could occur, progressing from previous research.

Critical realism has drawn interest in different fields of research due to its heightened focus on exploring different environments. Fields of research where a critical realist research paradigm has guided research include science, social sciences and sports (Collier, 1990). Sport-related fields with research studies guided by a critical realist research paradigm include sports management (Byers, 2013), physical education (Simmons & MacLean. 2016), sociology in sport

(Phillpots et al., 2010) and the area of focus within the thesis, sport and exercise psychology (North, 2013; Wiltshire, 2018). Previous research within sport and exercise psychology, which has been conducted through a critical realist research paradigm has investigated aspects of athletes' careers (Ronkainen et al., 2015), the perception of football coaches when using the think aloud reflective tool (Swettenham & Whitehead, 2021), the success factors of an environment created for talent development (Nikander et al., 2022) and the processes through which flow and clutch states occur (Schweickle et al., 2017). Previous research being conducted through a critical realist research paradigm provides an additional reason as to why critical realism was the adopted research paradigm of the thesis. From previous research a better understanding is important to consider when creating a study guided by a critical realist research paradigm. For instance, exploring the unobservable and observable occurrences of lived experiences are important (North, 2013; Wiltshire, 2018). In addition the perception an individual has towards their social environment is important to account for when conducting research under a critical realist research paradigm (Ronkainen et al., 2015). These considerations were incorporated into each thesis study and further information is provided when each study is discussed. In continuing the introduction of critical realism, the four aspects of a research paradigm are discussed, showcasing critical realism's ontology, epistemology, axiology and methodology and how these form critical realism's understanding of knowledge and the pursuit of knowledge (Hassmen et al., 2016).

4.2.1 Critical Realism and the Four Aspects of a Research Paradigm

Ontology. First is ontology and the knowledge that researchers gain. Critical realism possesses a stratified set of beliefs which entails three progressively deeper layers, which can be researched to gain knowledge (Fletcher, 2017; McEvoy & Richards, 2006). These are (1) the empirical, (2) the actual and (3) the real. The empirical are aspects of reality and events that can be observed and are mediated through the filter of human experience and interpretation. The actual is a deeper level of reality, which is not filtered through human experience and occurs whether they are experienced or interpreted. These events can at times be observable and

unobservable, depending on the environment of the event. The real is the deepest layer of reality and these are unobservable causal structures and mechanisms that generate an event.

The stratified ontology of critical realism can be described through the following example. Imagine a large wall in front of John, and behind the wall stands an even larger tree. From John's viewpoint, he can see the tree's branches as he looks up. These are what can be observed and are referred to within critical realism's ontology as the empirical. As John's gaze lowers, he can see the wall in front of him, but behind this wall lies the tree trunk. It is understood that there is a tree trunk due to observing the tree's branches above, but it cannot be seen currently due to the wall in front. From a different viewpoint, however, the tree trunk would be evident. Critical realism refers to this event as the actual. Lastly, as John's gaze lowers, he sees the ground he is standing on. Below the surface are the roots of the tree. They are hidden but are necessary for the tree to be positioned where it can be observed. This layer is what is known as the real. The stratified ontology of critical realism (the empirical, the actual, and the real) suggests that a phenomenon can be experienced on three layers. Critical realism therefore, has an ontology of realism (Harré, 1975).

Epistemology. Next is the epistemological belief of critical realism and the relationship between the researcher and what is being researched. Critical realism believes that knowledge is a social product produced using antecedent social products and the reflection of the individuals' experiences. Therefore, critical realism's understanding of knowledge is an epistemology of constructivism (Bogna et al., 2020; Wiltshire, 2018). For example, a volleyball player attempting to learn a serve technique undergoes training by observing the serve technique of others within the athlete's environment (e.g., teammates, coaches). Initial serve attempts are performed by the athlete, and then the success (or failure) of the attempt is reflected on. Knowledge of a successful serve is gained through technique attempts and the reflection process and this information is used in the subsequent attempt of the serve.

From a critical realist perspective, the knowledge of the world is always mediated by the discourse available to us (McEvoy & Richards, 2006). Therefore, the relationship between the researcher and what is being researched is one in which the environment of the researched phenomenon and the previous experiences of individuals being researched are vital to generating new knowledge. Continuing the previous volleyball example, if a researcher is investigating the success of a volleyball team's serves, critical realism suggests that researching serve success needs to consider how the environment (e.g., match venues, organisational stakeholders, sporting demands) and the volleyball player's perspective impact the researched phenomenon.

Axiology. Next is axiology and exploring the value of the knowledge itself. Critical realism believes that the understanding of knowledge is based on the environment and the experiences of the individual within the environment. When conducting research guided by a critical realist research paradigm, the value of knowledge enables a better understanding of the mechanisms and social structures within an environment, the events generated from these mechanisms, and the behaviours produced within these social structures.

The value of knowledge is not solely to identify generalisable laws (e.g., positivism) or to solely identify the lived experience of individuals (e.g., interpretivism); it is to develop deeper levels of understanding (McEvoy & Richards, 2006). For example, if women's participation in sports was a researched phenomenon, a critical realist approach would examine the phenomenon's visible aspects while delving into the deeper structures that influence and constrain women's involvement in the sport. The visible aspect of the researched phenomenon would be the number of women participating in sports (Pfister, 2010). Deeper structures would involve exploring the cultural norms of women's involvement in sports (Kay, 2006), the social structures which act as a barrier to women's involvement in sport (Sawrikar & Muir, 2010) or analysing how media representations reinforce or challenge existing perceptions of women's involvement in sport (Fink, 2015). By adopting a critical realist perspective, researchers can move beyond

simply describing the observable trends of a researched phenomenon to gaining insights into the complex interplay between specific factors of a researched phenomenon.

The theoretical framework used in the present thesis (specifically the TDSM) highlights the current landscape of self-talk research (Latinjak et al., 2023). In addition, the interplay between the use of the self-talk and its impact on the sporting experiences of athletes is revealed within the theoretical framework. The present thesis aims to build on previous research and develop a deeper understanding of the applied and researched nature of self-talk. This thesis aim suggests that a research paradigm that places importance on gaining insights into the complex interplay between specific factors of a researched phenomenon would be beneficial to achieve the thesis aim. Therefore, the benefits of critical realism provides additional reasoning as to why critical realism was the adopted research paradigm for the present thesis.

Methodology. Lastly is the methodology and exploring how knowledge is gained. Critical realism believes that knowledge should be gained through the use of a methodology which can gain physical, psychological and social knowledge about the researched phenomenon. Examples of methodologies include case studies, ethnography, experimental research, mixed methods research and discourse analysis (Pawson, 2006). Critical realism therefore is a research paradigm based on a pluralist methodological understanding (Wiltshire, 2018). Although it has been suggested that methodologies which utilise different methods oppose each other (Gelo et al., 2008), critical realism believes that methodological diversity does not equate to epistemological and ontological incoherence. It is suggested therefore that a higher focus within critical realism is that the selected methodology captures accurate data about different layers of social and psychological realities. The methodology within a critical realist research paradigm is one where methodologies which utilise one method or a combination of methods (e.g., mixed methods research) can be used (Ryba et al., 2022). From an understanding of methodology through a critical realist perspective, the methodological decisions for the present

thesis were made. These decisions involved selecting a methodological approach, specific methods for data collection, and specific methods for data analysis for each thesis study.

4.3 Methodology and the Present Thesis: Mixed Method Research

The methodology within the thesis took into consideration the overall aims of the thesis, the self-talk literature on which the thesis was based on (Latinjak et al., 2019), the transdisciplinary self-talk model on which the thesis was contextualised through (Latinjak et al., 2023) and a critical realist research paradigm (Bhaskar, 2014). The methodology employed for the thesis was mixed methods research.

Mixed methods research is a methodology that uses rigorous quantitative and qualitative methods to generate new insights through data integration (Ryba et al., 2022). Mixed methods research can be suitable for gaining a more comprehensive picture of a phenomenon, increasing study validity and building a stronger case for recommendations by allowing one method to enhance the other (Hassmen et al., 2016; O'Cathain et al., 2007). The term "mixed methods" may invoke different meanings (Sparkes, 2015). The present thesis takes it as an approach in which quantitative and qualitative research methods are used in a single study (Fetters & Molina-Azorin, 2017; Ryba et al., 2022). Quantitative methods typically measure values expressed as numbers, and qualitative methods typically focus on concepts expressed through an individual's opinion. Both of these research methods have historically been used separately within research. Therefore, some researchers have considered combining the two as a methodological 'minefield' (McEvoy & Richards, 2006). However, mixed methods research can successfully occur when an in-depth understanding of what this methodological approach entails is understood by the researcher.

4.3.1 Mixed Methods Research: Strengths and Weaknesses

Specific advantages to a mixed methods research approach are evident and these include triangulation, complementarity, development and initiation (Doyle et al., 2009; Moran et al., 2011; Sparkes, 2015). Triangulation is using different methods to seek confirmation of an underlying meaning (Gibson, 2016). For example, administering a quantitative method (e.g., questionnaire) and a qualitative method (e.g., interview) to investigate a phenomenon, giving the researcher a rich pool of data to analyse. Triangulation therefore, would better support the claims made by the researcher, as a rich pool of data could be used to support (or reject) the hypothesis of the researched phenomenon.

Complementarity is the clarification of findings from one method using another (Creswell et al., 2003). For example, administering a quantitative method (e.g., questionnaire) and subsequently, a qualitative method (e.g., interview) which could support (or reject) the knowledge found within the quantitative method (or vice versa). Third is development, which is using findings from one research phase to inform the development of methods for the following stage (Lonsdale et al., 2008). For example, administering a quantitative method (e.g., questionnaire) and using the results of this to inform the qualitative method (e.g., questions used in an interview).

Lastly is initiation, which is the ability to access new insights into a particular phenomenon by analysing different data sets (Marques Pereria et al., 2010). These advantages showcase how mixed methods research negates some limitations experienced through the sole use of one research approach. In addition, these examples showcase that the benefits of mixed methods research can be experienced individually and in combination within the data collection and data analysis stage of research.

Each methodology has its flaws, and employing a mixed methods research approach does present its weaknesses. Experiencing the benefits from a mixed methods research approach can only occur if specific components are understood and applied. Potential conflicts within mixed methods research can occur when researchers, knowledgeable in one form of research,

try to answer research questions with only one discipline skill set. In addition, presenting research findings in a valid and effective way can be equally challenging. Mixed methods research underpinned by conflicting research paradigms is referred to as incommensurability. Incommensurability can occur when multiple researchers collaborate on a research study and if it does occur, the understanding and interpretation of the study could be negatively impacted.

Different processes are used when conducting research utilising qualitative and quantitative methods separately. In addition, specific judgement criteria are used in the separate analysis process of quantitative research and qualitative research. A judgement criteria is used to assess the process conducted to analyse the research data (Lincoln & Guba, 1985). Challenges can occur within mixed methods research, as solely using one form of data analysis or judgement criteria on the entire data collected can be disastrous for the study. For example, using a qualitative data analysis method of a thematic analysis or a quantitative judgement criteria of objectivity, reliability, and validity within a study using mixed methods research as a methodology (Sparkes, 2015). Therefore, both quantitative and qualitative data analysis methods are suggested when analysing the research data. Furthermore, judgement criteria encompassing all aspects of mixed methods research should be employed (Sparkes, 2015). If these considerations are not made, disjointed and unfocused research could be produced.

The challenges of mixed methods research align with the suggestions from some researchers that mixing qualitative and quantitative methods is 'essentially combining oil and water' (Shank, 2006, p. 347). Nonetheless, conducting successful, data-rich mixed methods research can occur and the present thesis attempted to do so. By understanding the limitations of mixed methods research, ways to mitigate these weaknesses were attempted.

4.3.2 Mixed Methods Research Through a Critical Realist Perspective

Critical realism has a pragmatist methodological approach that best aligns data and theories with reality to derive the most plausible explanation from empirical data (Ryba et al., 2022).

Mixed methods research through a critical realist perspective can only occur if knowledge of the researched phenomenon's physical, psychological and social components can be gained. Through a critical realist approach, mixed methods research enables the production of data to be gained on different layers of social structures and mechanisms. Therefore, the three ontological layers of critical realism can be researched, utilising mixed methods research. Both quantitative and qualitative data collection methods can explore the empirical (e.g., performance statistics), the actual (e.g., questionnaire and observations) and the real (e.g., interviews). The epistemology of critical realism (constructivism) can also be explored by utilising mixed methods research through the quantitative and qualitative data collection methods previously highlighted, putting the individual in a position to share their knowledge of the researched phenomenon.

Critical realism's ontology and epistemology aligning with mixed methods research, combine well with the benefits previously mentioned of mixed methods research, as triangulation, complementarity, development, and initiation play a valuable role in the research process (Moran et al., 2011; Sparkes, 2015). Therefore, these benefits aid in the rationale behind using mixed methods research within the thesis, providing a philosophical backing to a methodological decision. In addition, previous research has been conducted, which further supported the methodological decision made for the thesis. Previous research in a sport and exercise psychology context, where a mixed methods research methodology was used through a critical realist research paradigm (Nikander et al., 2022; Eckardt et al., 2022; Ronkainen et al., 2015; Schweicklen et al., 2017; Storm et al., 2022; Swann et al., 2016). With mixed methods research being the methodology used within the present thesis, the chapter now introduces the specific data collection and data analysis methods used in each thesis study.

4.4 Data Collection and Data Analysis Methods Within The Present Thesis

Methods is a subsection within the methodology used for the thesis. The methodology is a framework for guiding how knowledge is gained within research and methods are the specific tools or activities used to collect data. The data collection and analysis methods needed to align with the methodology adopted for research. If not, disjointed research which lacks validity could be produced. Conversely, research conducted with congruence between the methodology and methods can produce a coherent piece of research that can be interpreted and applied to build on the knowledge of the researched phenomenon. The methods employed for all three thesis studies align with a mixed methods methodology as these chosen methods gained quantitative and qualitative data on the researched phenomenon.

What is revealed now is the data collection and data analysis methods used for each study. First, how the study links to critical realism is highlighted and then the methods used for data collection are introduced. Next are the methods used for data analysis and lastly the benefit that these methods possess in gaining new knowledge within each thesis study is provided.

4.4.1 Study 1: Investigating the Experimental and Control Groups of Strategic Self-talk Studies

Study 1 explored whether the conditions placed on strategic self-talk study groups and control groups impacted their ability to self-regulate and successfully perform the desired technique. Aspects of critical realism appeared within Study 1 as an observable event and an unobservable occurrence influencing an observable event were explored. An observable event within the study was the performance tasks. An unobservable occurrence within the study was strategic self-talk's influence on descriptive states and traits. Strategic self-talk's influence on the subsequent performance produced was an observable event that was influenced by an unobservable occurrence. Aspects of critical realism also appeared within Study 1 through the data collection methods used.

Data Collection. The data collection methods used in Study 1 were two performance tasks and a semi-structured interview. A performance task involves participants executing

specific techniques (Hepler & Chase, 2008). Performance tasks differ depending on the aims of a study. For Study 1, athletes who compete in badminton were the targeted participants. The performance tasks for the study therefore, replicated performance situations typically experienced in badminton matches. By employing performance tasks similar to the performance situations experienced within the sport, a more accurate and applicable exploration into the self-regulatory effects of strategic self-talk could occur (Kross et al., 2014; Latinjak et al., 2019).

Two performance tasks were completed within the study and the selection of both performance tasks were informed by a critical realist research paradigm. The selection process of the two performance tasks involved watching matches and training sessions of badminton athletes, discussions with badminton coaches and athletes, and attending badminton training sessions. This process enabled the researcher to gain an in-depth understanding of participants' social environment and the capacity for individuals to operate within a given environment. Critical realism recognises the agency of individuals and the agency of stakeholders constrained to a specific environment informs individuals perception of the world (Ryba et al., 2022; North, 2017). Therefore by incorporating the targeted audience of the study (badminton athletes) and stakeholders within their environment (coaches) in the creation of the study, the selected performance tasks are better positioned to enable the self-regulatory effects of strategic self-talk to be explored.

A semi-structured interview was another method used within Study 1 and this is a method that enables pre-determined questions to be asked and allows space for unplanned questions to be asked (Kallio et al., 2016). A semi-structured interview allows a consistent amount of information to be gained across each interview and allows each athlete's unique experiences to be accounted for. The creation of the semi-structured interview was tailor-made for the study and the creation was informed by the study's aims, previous research (Latinjak et al., 2019; Miles & Neil, 2013), discussions with the researcher's PhD supervisors and the researchers professional judgement. The semi-structured interview enabled participants to explore their

perception of the performance tasks and investigate the differences in perception in the experimental and control groups.

The use of a semi-structured interview was informed by a critical realist research paradigm. Critical realism is compatible with the idea that there are different valid perspectives on reality. Therefore, critical realism suggests that there is a reality to be found within research questions, but the knowledge within this reality is subjectively and socially constructed by the individual that experiences it (Wiltshire, 2018). The use of a semi-structured interview enables Study 1 to account for the different perspectives individuals had of the self-regulatory effects of strategic self-talk with the two performance tasks.

Data Analysis. Two data analysis methods were planned for Study 1, a multivariate analysis of variance (MANOVA) and a content analysis. The MANOVA was selected to analyse the study's quantitative data (performance task). A MANOVA is able to analyse, simultaneously, the badminton performance tasks and the strategic self-talk cue words used by participants (Weinfurt, 2000). A content analysis was used to analyse the study's qualitative data (semi-structured interview). A content analysis is a qualitative research method that aims to produce an understanding of the meaning of the content of the data set (Vears & Gillam, 2022). The content analysis identified the occurrence of specific words, phrases and themes within the analysed text (Hambrick et al., 2010; Harwood & Garry, 2003). From these themes, the participant's perception of the performance tasks and the strategies participants used to self-regulate when executing the performance tasks were identified.

Using a performance task, a semi-structured interview for data collection, a MANOVA, and a content analysis for data analysis showcases the mixed methods research methodology within the study. The benefit of utilising these data collection and data analysis methods was that a holistic account of participants' experiences in both the experimental and control groups could be gained. The performance task puts participants in a position where they are required to use

self-regulatory strategies to execute the performance task successfully. Self-regulatory strategies could include for instance, strategic self-talk (Galanis et al., 2022), deep breathing (Pelka et al., 2017) or imagery (Simonsmeier & Buecker, 2017). The semi-structured interview occurs immediately after the completion of the performance task. The semi-structured interview explored the self-regulatory strategies used by all participants. The combination of methods therefore achieves the first thesis aim: for sport and exercise psychology researchers to be better informed when making methodological decisions within strategic self-talk studies. Further information on the performance tasks used and the questions asked within the semi-structured interview is mentioned in the method section of the study chapter. Introducing the methods for Study 1 in the present chapter highlights the benefits of both data collection and data analysis methods and the criteria used for selecting and creating the methods used for the study.

4.4.2 Study 2: *A Reflexive Self-talk Intervention Program*

Study 2 explored the effects of a reflexive self-talk intervention program and how a reflexive self-talk intervention tool could aid athletes in better using organic goal-directed self-talk to manage psychological challenges. Aspects of critical realism appear within Study 2 as an observable event and an unobservable occurrence influencing an observable event were explored. An observable event within the study was the intervention sessions conducted with the researcher and the participant and the completion of the intervention session tool. An unobservable occurrence within the study was the development of metacognitive knowledge, which was the aim of a reflexive self-talk intervention program. The development of metacognitive knowledge subsequently influenced an observable event, which was the performance produced now that strategies to better manage challenging performance situations have occurred within the intervention sessions.

Data Collection. Study 2 utilised a variety of methods to achieve the study's aims. The data collection methods used for the study were a semi-structured interview, questionnaires, a reflexive self-talk intervention session tool and a reflective journal.

Participants underwent semi-structured interviews at four-time points. These were pre, mid, post and follow-up intervention. The questions within the semi-structured interview were guided by the interview framework of #SportPsychMapping (Latinjak et al., 2021). #SportPsychMapping was a consistent interview structure that enabled the athlete's psychological reality and sporting experiences to be identified. Conducting an interview at four time points enabled an understanding of the athlete's sporting experiences and how the reflexive self-talk intervention impacted aspects the athlete perceived as essential to their performance at specific time points.

A questionnaire was also used for data collection within Study 2. A Questionnaire is a specific list of questions used to gather data about the individual's experiences, opinions and behaviours (McLeod, 2018). A questionnaire was administered at four time points within the study, similar to a semi-structured interview. Using a questionnaire enabled the athlete's progression to be tracked as the reflexive self-talk intervention progressed.

The study used an intervention tool, a 25-step interactive board game (Latinjak et al., 2020). An intervention tool is an activity, worksheet or guide used within intervention sessions to develop techniques (e.g., self-talk cue words) or skills (e.g., self-regulation). Within the context of the reflexive self-talk intervention program, the intervention tool put participants in a position to better manage perceived challenges which were experienced through exploring the challenge and potential solutions in more detail, therefore developing the athlete's self-regulatory abilities.

Lastly, the researcher produced a journal during the entire data collection period. The journal provided information on the workings of the intervention tool from the researcher's

perspective (Anderson et al., 2004). The journal detailed the athlete's ability to use the intervention tool, the impact the reflexive self-talk intervention had on the participants' sporting experiences and the researcher's experience of administering the reflexive self-talk intervention program.

The benefit of utilising a semi-structured interview, a questionnaire and an intervention tool is that the combination of these tools mirrors applied sport and exercise psychology interventions (Mack et al., 2014; Watson et al., 2022). These tools are used to educate the athlete, practise the use of psychological techniques and track their progression to achieve the aims of the intervention.

The methods used for Study 2 were informed by a critical realist research paradigm. For instance, within the intervention tool used, participants better managing psychological challenges involved exploring the social environment and the capacity for individuals to operate within this environment when experiencing the discussed psychological challenge. In addition, the construction of the intervention tool aligns with the belief that knowledge is a social product produced using antecedent social products and the reflection of the individuals' experiences, aligning with critical realism's epistemology of constructivism (Bogna et al., 2020; Wiltshire, 2018). Furthermore, the combination of interviews and a researcher journal enabled a holistic exploration of the environment from which the reflexive self-talk intervention program was administered to be accounted for. The use of these methods aligns with critical realisms heightened importance of accounting for the human agency of individuals and stakeholders of the constrained environment within the researched phenomenon (Ryba et al., 2022).

Data Analysis. The methods for data analysis used within Study 2 were descriptive statistics and an interpretive phenomenological analysis (IPA).

The data generated from a questionnaire was analysed by producing descriptive statistics on statistical packages for social sciences (SPSS). Descriptive statistics provides a statistical summary of the data gained in a study. The four different time points when the questionnaire was administered can be accounted for by producing descriptive statistics of the data set. Accounting for the four time points revealed the impact the reflexive self-talk intervention program had on the participants at various stages of the intervention program.

The data generated from the semi-structured interviews and the reflective journal were analysed through an interpretive phenomenological analysis (IPA). An IPA is a qualitative analysis method that places meaning as a central focus, aiming to understand the data set's content and complexity (Smith & Osborn, 2007). An IPA relies on the researcher engaging in an interpretative relationship with the data set to understand the participant's lived experiences. Furthermore, an IPA allows for a deep understanding of participants' experiences to be analysed (Pringle et al., 2011), aligning with the aim of Study 2 in the investigation of the researcher and participants experiences within the reflexive self-talk intervention program. In addition, previous research utilising similar data collection methods have analysed their data through the use of an IPA, which revealed insights into participants lived experiences (Pridgeon & Grogan, 2012; Nicholls et al., 2005). The semi-structured interview conducted using #SportPsychMapping and the reflective journal produced by the researcher was analysed through an IPA, as the context, personal meanings and changes in participants' and the researcher’s lived experiences could be highlighted.

The selection of descriptive statistics and an IPA provided a holistic approach to analysing the study data, as data from both the researcher's and the participant's perspective could be analysed. Having multiple perspectives within the data analysis aligns with the study's research paradigm of critical realism. Critical realism is compatible with the idea that there are different valid perspectives on reality and knowledge within this reality is subjectively constructed by the individual that experiences it (Wiltshire, 2018). These perspectives are accounted for to provide a deeper understanding of the researched phenomenon. Having multiple perspectives within

the data analysis also aligns specifically with the methodological approach of mixed methods research. In addition, applied sport and exercise psychology practitioners can benefit from the study's methodological approach, as helpful information in the future use of a reflexive self-talk intervention program can be extracted from the study. The combination of methods therefore achieves the second thesis aim: for applied sport and exercise psychology practitioners to be better informed when creating reflexive self-talk intervention programs for athletes. Further information on the methods used for data collection and data analysis for the study is provided in the study chapter's method section. Introducing the methods for Study 2 in the present chapter highlights the benefits of both data collection and data analysis methods and the criteria used for selecting and creating the methods used for the study.

4.4.3 Study 3: *The Mind Wandering and Performance Relationship*

Study 3 explored the mind wandering and performance relationship by investigating how mind wandering impacts subsequent performance and how various dispositional factors mediate the mind wandering and performance relationship. Study 3 was created through a critical realist research paradigm. Aspects of critical realism within Study 3 include exploring an observable event and an unobservable occurrence that influences an observable event. An observable event was sport performance, an unobservable occurrence was mind wandering and the subsequent performance produced after a mind wandering experience was an observable event influenced by an unobservable occurrence.

Data Collection. Two methods were used in the data collection of Study 3 and these were questionnaires and a semi-structured interview.

Questionnaires were utilised within Study 3 to explore whether certain dispositional factors mediated the mind wandering and performance relationship. Dispositional factors are an individual's personal characteristics that may affect how they behave (Pineda-Espejel et al.,

2017). Therefore, questionnaires would better reveal which personal characteristics impact the mind wandering and performance relationship most. The benefit of using questionnaires was that a consistent tool could be used to explore a variety of dispositional factors across all participants. In addition, previous research has indicated that a questionnaire can be used as an instrument to assess and reveal the affects of dispositional factors (Sheard et al., 2009).

A semi-structured interview was tailor-made for the study. By tailor-making a semi-structured interview, participants were able to discuss their mind-wandering experiences which they experienced inside and outside a sporting context. The benefits of a semi-structured interview were that two-way communication between the researcher and the participant could occur (Galletta, 2013). A semi-structured interview (as previously mentioned) aligns with the critical realist research paradigm adopted for the present thesis. The method enabled participants to discuss their perception of reality in regards to mind wandering experiences and provide the context within participants' lived experiences (Latinjak et al., 2018b). Semi-structured interviews also allow space for participants to give examples, elaborate and make connections with other aspects of their lived experiences.

Data Analysis. Two methods were used for data analysis within Study 3 and these were ranking analysis and content analysis.

The data generated from the questionnaires was analysed by conducting a ranking analysis on SPSS. Ranking analysis involves producing descriptive statistics of the data set and then ranking participants' scores amongst the data set. By conducting a ranking analysis, the questionnaire scores of each participant could more clearly be brought to life, indicating whether their mind wandering experiences were (or were not) congruent with other participants with similar questionnaire scores. In addition, ranking analysis has previously been used within sport and exercise psychology research, aiding in generating new insights into the researched phenomenon (Lubker et al., 2012; Szabo, 2014).

A content analysis was used to analyse the semi-structured interviews within the study. The content analysis identified the occurrence of specific words, phrases and themes within the analysed text (Hambrick et al., 2010; Harwood & Garry, 2003). As Study 3 was exploratory in nature, having an analysis method that identifies themes aligns with the data collection method of semi-structured interviews. With the identification of common themes, what could be better understood were the performance consequences of mind wandering when certain dispositional factors were accounted for. Participants were put in a position where they could explain their experiences of mind wandering in great detail due to semi-structured interviews (Rumbol et al., 2018). The in-depth discussion could subsequently be analysed (due to a content analysis) to see whether these experiences were shared amongst others, developing the understanding of the researched phenomenon. The combination of methods therefore achieves the third thesis aim: To explore the frequency, content, antecedents, and effects of self-talk that occurs inside and outside the sport context.

The section provided introduces the data collection and analysis methods used in Study 3 and highlights their benefits, justifying their selection for the study. The study chapter further explored the selection of each questionnaire, the questions within the semi-structured interview, how both methods interrelate, and how they both serve the broader purpose of the study's aims.

4.5 Consistent Features of the Thesis

The methods used for data collection and data analysis took into consideration the phenomenon being researched, the research paradigm of the thesis, previous research, discussions with the researcher's PhD supervisors and the researcher's professional judgement. Therefore, the method section for each study has various unique components. A benefit to the diversity of methods used is that this indicates an in-depth understanding of the researched phenomena and the methods which could best explore the researched phenomena in the

context of the thesis aims. However, there are also similar aspects of each study which are apparent within the thesis, and these also contributed to the creation of the thesis.

4.5.1 Ethics

Ethical approval for each study within the thesis was conducted and approved by the University of Suffolk Research Committee. Ethical approval was a rigorous process in which each study's rationale, methods, procedure, sampling strategy and time horizon were scrutinised before the committee approved them. Additional ethical considerations were made as within the write-up of all studies, the confidentiality of participants of each study was upheld to keep participants anonymous.

4.5.2 Access

The access gained to work with athletes involved using multiple physical and online resources. Firstly, multiple discussions with coaches (either face-to-face or online) were conducted. Following the approval from the coach, what followed was having discussions with athletes and teams (either face-to-face or online) detailing the thesis studies. Afterwards, time was given for athletes to read the study's information sheet and ask any questions about participating in the study.

4.5.3 Setting and Participants

Once the information sheet had been read and the athlete agreed to participate by signing the informed consent form, the athlete became a study participant. Athletes participated in the studies, knowing they could withdraw from the study at any time. Data collection occurred in many physical locations in the UK and internationally through utilising online resources.

Participants in the thesis studies ranged in ages between 18 - 69 years old, sports including badminton, football, athletics, basketball, golf, tennis, table tennis, squash, gymnastics, triathletes, and experience from local, university, academy, commonwealth and professional levels within their sport.

4.5.4 Judgement Criteria

An area consistent within the data analysis conducted throughout the thesis was the judgement criteria used within research. A judgement criteria is a set of points used to evaluate the procedure conducted within a study (Sparkes, 1998). For example, evaluating the creation or selection of a specific questionnaire. Judgement criteria could also evaluate how dependable the process was conducted to collect and analyse the research data.

Within mixed methods research, different judgement criteria have been used. Some studies have used specific quantitative and qualitative judgement criteria separately, some studies have attempted to combine them, some studies have utilised previous research recommendations, and some studies have created novel judgement criteria for their study (Bryman et al., 2008; Readdy et al., 2014). These options are believed to be beneficial for mixed methods research, compared to the option of solely using the judgement criteria for qualitative or quantitative research for the entire data set (Sparks, 2015). A decision was made for the judgement criteria for the thesis. Nonetheless, previous research has highlighted that "future work is needed to develop and agree on core quality criteria for integrating qualitative and quantitative designs as well as for judging mixed method research rigour" (Ryba et al., 2022, p. 17).

The judgement criteria for the thesis were conducted separately. A specific judgement criteria for the quantitative component of research data and a specific criteria for the qualitative component of research data were employed. The judgement criteria used for the quantitative

component of research data aimed to highlight the validity and reliability of each method used. The judgement criteria included:

- (1) internal consistency, which is measuring how well a tool delivers reliable scores
- (2) test-retest reliability, which is the consistency of results when the test is repeated.

The judgement criteria for the quantitative component of each thesis study aligned with Poczwardowski et al. (2014) guidelines for the quantitative research data.

The judgement criteria for the qualitative data aimed to highlight the trustworthiness of the qualitative methods used for each study. The judgement criteria included:

- (1) training in conducting semi-structured interviews
- (2) the use of a pilot study
- (3) triangulation of data collection and analysis
- (4) undergoing the process of member checking.

The judgement criteria followed the guidelines of trustworthiness described by Patton (2002), Poczwardowski et al. (2014) and Sparkes (1998) for the qualitative research data.

Deciding to judge the research data separately and use two judgement criteria enables a consistent and valid approach to be conducted to evaluate each thesis study's procedures. By doing so, an enhanced level of congruence could be showcased between the aims of each thesis study and the methods used to explore the researched phenomenon. In addition, the argument of each study providing accurate research findings could be strengthened by using two judgement criteria. Lastly, as a secondary benefit, the use of two judgement criteria aligns with previous research which has used a mixed methods research methodology (Sparkes, 2015). Despite attempts to create a specific judgement criteria for a mixed methods research methodology (Bryman, 2007; Bryman et al., 2008; Heyvaert et al., 2013), a unified and widely accepted mixed methods judgement criteria has yet to be created. Therefore, using two judgement criteria was deemed the most appropriate approach for the present thesis (Sparkes, 2015).

The consistent areas present within the thesis align with the thesis' viewpoint of having a consistent foundation. From a consistent foundation, the findings from each study were better supported because a rigorous process of critical thinking, discussions with supervisors, reading of previous research and gaining ethical approval had been conducted for each study. A consistent foundation within the thesis helped develop a robust method approved by multiple individuals and experts to conduct each study. Undergoing this process for each study's methods helped gain more confidence in the procedure of each study and the results found within each study.

4.6 Conclusion

Philosophy in sport is an area which draws importance to all athletes, as these basic beliefs impact the day-to-day performance, year-to-year improvements and careers of athletes. Coach Phil Jackson was the example presented in the chapter, however, the careers of all athletes and coaches can be explored through the philosophical assumptions they hold. Philosophy is also important within the world of sport and exercise psychology research, especially within the present thesis. The chapter introduced critical realism as the research paradigm which guided the thesis. In addition, mixed methods research was introduced as the methodology for the thesis (Chapter 4 summary provided in Table 4.1).

With the conclusion of Chapter 4, the three foundational pieces of the thesis have now been introduced. Critical realism, the transdisciplinary self-talk model (TDSM) and the self-talk literature are the three foundational pieces of the thesis, and the combination of these foundational pieces created the thesis. Critical realism was the researcher's worldview when exploring the self-talk literature, the TDSM and creating three studies that explored three aspects of the self-talk literature (see Figure 4.1).

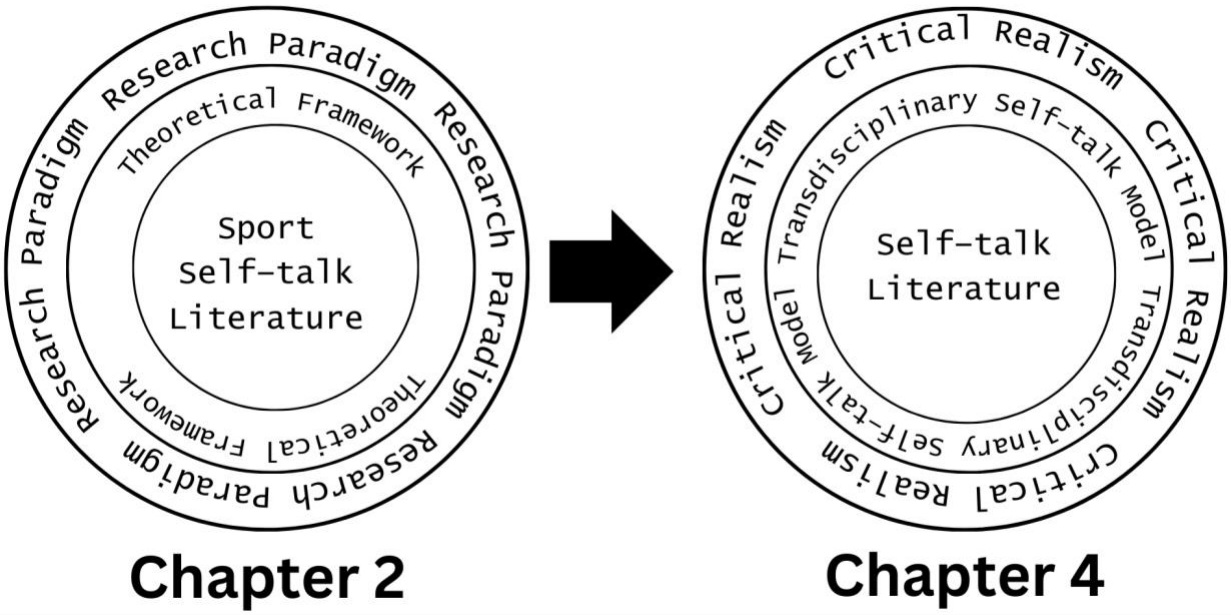


Figure 4.1: *Foundational pieces that were pivotal in the creation of the thesis and the progression of understanding from Chapter 2 to Chapter 4.*

With the understanding of the foundational pieces of the thesis, the focus now turns to the first study of the thesis. The first study of the thesis aimed to explore whether the conditions placed on strategic self-talk study groups and control groups impact their ability to self-regulate and successfully perform the desired technique. Exploring the experimental groups and control groups within a strategic self-talk study was necessary, as the control group allows researchers to minimise multiple factors except the conditions to which the experimental group were exposed to. Therefore, more valid measures could be utilised in future strategic self-talk studies by better understanding what was occurring within control groups.

Table 4.1

Chapter 4 Summary

Chapter	**Aims**
4	● To introduce this thesis' research paradigm, encompassing ontology, epistemology, methodology and axiology. This is the third and final important piece which created this thesis. ● To reveal the methodological decisions made for data collection and analysis
Chapter Rationale	
● By understanding the thesis' research paradigm and the why behind the methodological decisions made, the reader can better understand how the data within the three studies were interpreted. ● An accurate account of how data was collected, analysed and interpreted needs to be addressed to achieve this thesis's aims	
Key Research	
Bhasker (1975)	
Findings	
● Critical realism was the research paradigm which was used for the thesis ● Mixed methods research was the methodology used for the thesis	
New Knowledge Gained from Chapter 4	
● The interpretation of the self-talk literature through a critical realist research paradigm	

Chapter 5

Investigating the Self-regulatory Attempts within a Strategic Self-talk Study

5.1. Introduction

The present study aimed to investigate the self-regulatory strategies which may be employed when athletes attempt to execute the desired performance outcome. Previous research has revealed performance improvements through strategic self-talk (Galanis et al., 2022; Galanis et al., 2018; Hardy et al., 2018; Zourbanos et al., 2013a). However, inconsistencies have been evident within the control groups of strategic self-talk studies, and these inconsistencies involve different control groups being used and a statistically significant difference not consistently found when the experimental and control groups are compared (Boroujeni & Shahbazi, 2011; Chang et al., 2014; Galanis et al., 2023). Exploring the control groups within strategic self-talk studies would be important, as the control group allows researchers to minimise multiple factors except for the experimental group's conditions (Boot et al., 2013; Bobrownicki et al., 2022). Therefore, more accurate procedures can be utilised in future strategic self-talk studies by better understanding what is occurring within control groups.

The previous chapter revealed that critical realism is the thesis's research paradigm, and mixed methods research is the methodology of the thesis. The present study aimed to explore whether the conditions placed on strategic self-talk study groups and control groups impact their ability to self-regulate and successfully perform the desired technique. Exploring the underlying use of self-regulation within a strategic self-talk study aligns with one of the aims of the thesis:

- For sport and exercise psychology researchers to be better informed when making methodological decisions within strategic self-talk studies.

The present study chapter first explores the literature on strategic self-talk and its link with self-regulation, highlighting the opportunity to progress the self-talk literature through strategic self-talk. The methods and results section follows, detailing what actions were taken within the study and the results which were found. A discussion section is conducted next, where previous

research and the present study are synthesised, showcasing how the study adds to the knowledge of the researched area. The chapter concludes with recommendations for researchers undergoing strategic self-talk studies in the future.

5.2 Strategic Self-talk

Strategic self-talk is the use of pre-determined self-talk cue words that aim to trigger a specific response (Latinjak et al., 2019). The uniqueness of strategic self-talk lies within it being pre-determined. Also, strategic self-talk follows specific rules, suggesting that different cue words trigger specific performance responses. Hardy et al. (2008) conceptual framework highlighted these antecedents and consequences of self-talk, as cognitive, motivational, affective and behavioural mechanisms are triggered depending on the vocalised cue word. These four mechanisms can all impact performance in different ways. The transdisciplinary self-talk model has also depicted the uniqueness of self-talk and how pre-determined cue words influence descriptive states and traits, subsequently influencing the behaviour and performance which is produced (Latinjak et al., 2023; further information on the fundamentals of strategic self-talk can be found in Chapter 3).

5.2.1 Strategic Self-Talk Studies

Self-talk cue words have typically been categorised into instructional and motivational strategic self-talk (Abdoli et al., 2018; Boroujeni & Shahbazi, 2011; Galanis et al., 2022; Perkos et al., 2002). Instructional strategic self-talk is a statement focused on the technical aspect of task execution (e.g., "twist hip"). Motivational strategic self-talk is a statement focused on effort levels (e.g., "relax"). A study that showcases how these cue words have been explored can be seen by Boroujeni and Shahbazi (2011). Participants were divided into an instructional strategic self-talk group, a motivational strategic self-talk group and a control group, as the impact of different cue words on a basketball chest pass and jump shot were investigated. The results

revealed that the instructional strategic self-talk group had better accuracy in passing and shooting than the motivational strategic self-talk group and the control group. The results also revealed that the motivational strategic self-talk group had better passing speed than the control group.

Boroujeni and Shahbazi (2011) study is one of many which have followed a common blueprint within strategic self-talk studies. Performance tasks (e.g., basketball chest pass and jump shot) are used to investigate the performance impacts when specific self-talk cue words are used (e.g., instructional strategic self-talk, motivational strategic self-talk) and when self-talk cue words are not used (e.g., control group). Previous research has explored the strategic self-talk and performance relationship within various sports and performance tasks. These sports include cross-country running (Weinberg et al., 2012), football penalty kick (Stamou et al., 2007), basketball free throw (Galanis et al., 2022), tennis forehand shot (Hatzigeorgiadis et al., 2009), rugby union vertical jump (Edwards et al., 2008), volleyball serve (Zetou et al., 2012), softball throw (Chang et al., 2014) and badminton lob shot (Hidayat et al., 2014). Previous research has typically explored instructional and motivational strategic self-talk. In addition, previous research has also explored performance tasks which require fine motor skills (e.g., accuracy-based tasks) and gross motor skills (e.g., power-based tasks).

In positive effect, strategic self-talk studies have progressed the understanding of the capabilities of strategic self-talk. Information on which cue words typically work best for fine motor skills (instructional strategic self-talk) and gross motor skills (motivational strategic self-talk) has been revealed (Theodorakis, 2000). In addition, previous research has also showcased how instructional and motivational strategic self-talk influences the production of the desired outcome under various conditions, for example, in pressurised situations or when under physical exertion (Hase et al., 2019). The findings from strategic self-talk studies have aided in creating various frameworks and working models that have explained the relationship between self-talk and performance. For instance, second-generation self-talk questions that focus on better understanding the moderators and mediators of self-talk (Tod et al., 2011), the matching

hypothesis (Theodorakis, 2000), a meta-analysis of self-talk (Hatzigeorgiadis et al., 2011) and a cluster within the transdisciplinary self-talk model (Latinjak et al., 2023). These showcase how the strategic self-talk and performance relationship has been researched, how knowledge gained within research has been applied to athletes and what needs to be considered when conducting future strategic self-talk research (further information of these frameworks can be found in Chapter 2 and Chapter 3 of the thesis).

The findings from strategic self-talk studies have also better informed the interventions conducted by applied sport and exercise psychology practitioners. For instance, a tool which applied practitioners utilise within strategic self-talk intervention sessions is the IMPACT guidelines (Hatzigeorgiadis et al., 2014). The IMPACT guidelines is an acronym encompassing six steps for the applied practitioner and the athlete to work together to create pre-determined cue words and a plan as to when these will be used. This acronym stands for (I) identify what you want to achieve, (M) match the self-talk to needs, (P) practise the different cues consistently, (A) ascertain which cues work best for you, (C) create specific self-talk plans, (T) train self-talk plans to perfection.

5.2.2 Exploring the Research Design of Strategic Self-talk Studies

There are aspects of strategic self-talk research that further exploration could occur, specifically within the research design of strategic self-talk studies. A typical research design within strategic self-talk studies investigates the impact strategic self-talk has on a performance task, and this procedure has typically been conducted in one of two ways. Either through comparing participants' performance scores before using strategic self-talk and afterwards (e.g., pre-post scores) (Hatzigeorgiadis et al., 2014). Another way is by comparing the performance task scores of the experimental group (e.g., participants who used strategic self-talk) with a control group (e.g., participants who did not use strategic self-talk) (Hase et al., 2019). The present study explored the latter way in which the impact of strategic self-talk is measured.

Previous research using the research design comparing experimental and control groups have yielded some inconsistent findings. Some studies have indicated performance improvements in the experimental group and not in the control group, suggesting that the strategic self-talk used (experimental group) was the distinct factor which enabled performance improvements to occur (Naderirad et al., 2023; Perkos et al., 2002; Zetou et al., 2012). Other studies, however, have indicated inconsistent findings when comparing the experimental and control groups (Boroujeni & Shahbazi, 2011; Chang et al., 2014; Hase et al., 2019). Some studies have showcased performance improvements within both experimental and control groups. Furthermore, some studies have revealed statistically significant results found in one performance task but not another performance task when three groups are compared amongst each other. For example, if a statistically significant result was found in a power-based performance task and not an accuracy-based performance task when an instructional strategic self-talk, motivational strategic self-talk and a control group are compared amongst each other (Zetou et al., 2012; Zourbanos et al., 2013b). With research findings varying in their results, exploring why these results have occurred is warranted.

A control group aims to minimise multiple factors except for the independent variable (Bobrownicki et al., 2022). Investigating control groups is crucial because it is these groups that the experimental groups are compared to, indicating the performance impacts of strategic self-talk. Understanding what occurs within control groups makes it easier to confidently determine which changes or outcomes are due to the experimental condition instead of another variable. Also, if changes are evident in both the experimental and control groups, the likelihood that the changes were solely due to the experimental group conditions decreases. Exploration into the varying research findings has yet to occur. Further exploration would benefit the accuracy of strategic self-talk studies and the subsequent implications of strategic self-talk interventions.

Further exploring control groups, strategic self-talk studies typically employ either a no self-talk control group or an unrelated (or neutral) self-talk control group. These are placed into the

same category of a control group but possess different qualities. The no self-talk control group is a group which does not receive the experimental condition (strategic self-talk), and participants are left to their own devices in the execution of the performance task (Hatzigeorgiadis et al., 2009). The unrelated self-talk control group is a group which receives a negative intervention in addition to not receiving the experimental condition. An example of unrelated self-talk would be for participants to vocalise a random number during the execution of the performance task (Hase et al., 2019). The present study hypothesised that participants in the no self-talk group and unrelated self-talk group utilise self-regulatory strategies, suggesting a reason why performance improvements have occurred within previous research.

5.3 Strategic Self-talk and Self-Regulation

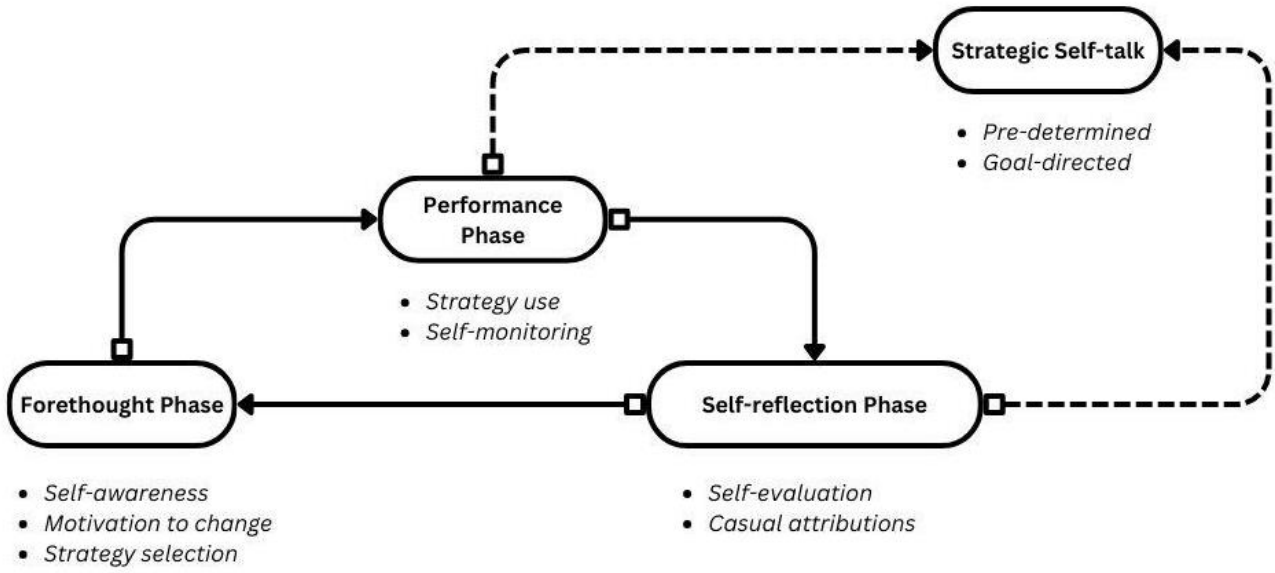


Figure 5.1. *An adapted version of the cyclical phases and subprocesses of self-regulation. The three phases of self-regulation includes the forethought, performance and self-reflection phase. The model was adapted for the present thesis and the link between the self-regulation process and strategic self-talk has been showcased. The link can be seen through the arrows from both the performance phase and self-reflection phase leading to strategic self-talk. The original model can be located in Clearly and Zimmerman (2001) published paper.*

Self-regulation is the ability to manage thoughts, emotions and behaviour in line with the demands of the situation (McCormick et al., 2019). Self-regulation occurs through three phases: forethought, performance and self-reflection (Zimmerman, 2000). The forethought phase encompasses the athlete being self-aware of a performance challenge and being motivated to change the performance challenge positively (Kuhl, 2000). If both needs are met, a strategy is selected to manage the performance challenge. Examples of strategies include state-oriented (e.g., changing emotions), perception-orientated (e.g., changing interpretation of situations), acceptance-orientated (e.g., embracing the current situation), avoidance-oriented (e.g., staying away from the situation) and victim-blaming strategies (Elferink-Gemser & Hettinga, 2017; Forman & Butryn, 2015; McCormick et al., 2019). The performance phase encompasses the use of the selected strategy. Self-regulatory strategies can be executed through various means (Zimmerman, 2000). Examples of means to execute these strategies include behavioural (e.g., going for a walk), social (e.g., coach-athlete meeting), use of objects (e.g., listening to music), consumption of substances (e.g., energy drink) and mental means (Hatzigeorgiadis & Galanis, 2017; Sniehotta, 2009). If the execution of the selected strategy occurs through mental means then psychological techniques (e.g., self-talk) are used to execute the selected strategy (see Figure 5.1). Last is the self-reflection phase, which includes comparing self-observed performances against a standard (e.g., another person's performance) and evaluating the level of satisfaction one has with the strategies employed. The self-regulation process is cyclical in nature, as the self-reflection which has occurred informs the subsequent use of self-regulation (Zimmerman, 2000).

An example of the three phases of self-regulation in practice would be if an athlete is aware of their pre-match anxiety and attempts to manage it through changing descriptive states (feelings of worry). This selected state-oriented strategy could be executed through mental means. Specifically, the technique of deep breathing could be conducted to exert mental control over descriptive states and manage the experienced pre-match anxiety (Kudlackova et al., 2013). Another technique which could be used to exert mental control over descriptive states is self-talk (Hatzigeorgiadis et al., 2009). Reflecting on how the selected technique impacted pre-match anxiety would impact the likelihood of the strategy being repeated in the future.

Self-regulation and strategic self-talk have a bi-directional relationship. Self-regulation can help an athlete use strategic self-talk effectively, and strategic self-talk can help an athlete self-regulate (Kolovelonis et al., 2012; Latinjak et al., 2019). Furthermore, strategic self-talk cue words enable athletes to self-regulate proactively or reactively. Proactively, self-talk can be used to prevent the experience of an emotion or control its expected intensity. Reactively, strategic self-talk can be used to cope with an experienced emotion (Gregersen et al., 2017; Hatzigeorgiadis & Galanis, 2017; Latinjak et al., 2019).

The experimental groups and control groups in strategic self-talk studies both have the capabilities to self-regulate. The experimental groups are already performing a self-regulatory strategy in the form of strategic self-talk. For example, utilising instructional strategic self-talk cue words in the regulation of focus (Hatzigeorgiadis, 2006) or motivational strategic self-talk in the regulation of arousal levels to achieve the desired performance outcome (Hatzigeorgiadis et al., 2009). The present study argues that participants in the experimental groups can also undergo the self-regulation process despite having a cue word to vocalise. Self-regulation is a process where all that is required for its initiation is for the athlete to be aware of a psychological challenge and be motivated to manage the challenge (Zimmerman, 2000). Therefore, despite using strategic self-talk, there are still opportunities to use other self-regulation strategies and execute these through various means. For example, deep breathing or changing one's tennis racket in between performance tasks attempts. Although procedures are

used to ensure participants within the experimental group are using self-talk (manipulation check), procedures also need to check for any additional self-regulatory strategies that may have been used during a performance task. Therefore, the present study suggests that self-regulation is a process which needs close attention within the research design of strategic self-talk studies.

An argument could be suggested that the unrelated self-talk control group places the participant at more of a disadvantage compared to the no self-talk control group. The difficulty of the unrelated self-talk control group is that the potential use of self-regulation could be impeded due to the negative intervention of unrelated self-talk. What can also be argued is that the unrelated self-talk control group more accurately aligns with what a control group should do. A control group aims to minimise multiple factors except for the independent variable (Bobrownicki et al., 2022). However, to the researcher's knowledge, both control groups have yet to be utilised and analysed within the same study.

5.4. The Present Study

The present study attempted to explore on a self-regulatory level what is occurring within strategic self-talk studies. Experimental and control groups were explored to see whether participants attempted to self-regulate when they underwent performance tasks and if so, what self-regulatory strategies were used. Badminton was the sport where two performance tasks were used in the present study. Badminton is a sport which possesses the repeated use of fine and gross motor skills, the use of self-regulation to aid badminton performance and strategic self-talk to enhance performance (Hidayat et al., 2014; Hidayat et al., 2023).

The present study aimed to explore two control groups to investigate their differences and investigate whether one is more accurate in achieving the aims of a control group than the other. By examining the research design of a strategic self-talk study, suggestions for improving

the utilisation of experimental and control groups in future studies can be provided. The research questions (RQs) for the study chapter are as follows:

1. What are the performance outcome differences in two performance tasks completed by participants in four self-talk groups?
2. What self-regulatory strategies are used by participants in the four self-talk groups when attempting to produce the desired performance outcome?
3. Do the self-regulatory strategies used by participants differ due to the experimental or control group? If yes, how?

5.5 Method

5.5.1 Participants

Voluntary response sampling was the sampling strategy used to recruit participants. Voluntary response sampling is the collection of samples from participants voluntarily chosen to participate in the study (Murairwa, 2015). In addition, convenience sampling, a non-probability sampling method that focuses on collecting samples from individuals located around a convenient location, was utilised (Etikan et al., 2016). Participants were eligible for the study depending on meeting a specific sampling criteria. Sampling criteria for participation in the study were that participants had to be (1) aged 18 and above and (2) regularly training and competing in badminton.

Power analysis (G*Power 3.1.9.2) was used to calculate the number of participants required to achieve a minimum power of .80. The effect size of a power analysis was estimated considering (a) the effect size identified in previous research where a performance task was performed by participants who were divided into instructional and motivational strategic self-talk groups and a control group (Galanis et al., 2022; Gregersen et al., 2017). The effect size in the study conducted by Gregersen et al. (2017) was 0.39, considered medium using Cohen's (1988)

criteria. The analysis showed that a minimum of 10 participants per group was required for the present study, 40 participants in total.

The minimum total of participants was not achieved. During the time allocated to data collection, a considerable number of restrictions were placed on using sports halls and badminton facilities within the United Kingdom due to the COVID-19 pandemic. These restrictions greatly impacted the resources available to conduct the data collection portion of the study. With the minimum total of participants not being achieved, it was decided that the quantitative analysis in the form of a MANOVA was not performed (information of a MANOVA can be found in Chapter 4). The decision to complete the study was made despite the minimum total of participants not being achieved, as the number of participants within the study was an acceptable amount for the qualitative component of the study.

The participants in the present study were 20 Amateur badminton athletes (17 Males, 3 Females). Participants ages ranged between 19 - 62 years (M = 28.50, SD = 9.57). All participants of the present study competed in amateur badminton leagues within the United Kingdom. Their badminton experiences during the time point of data collection involved training 1 - 3 times a week, competing in an amateur league match (singles and/or doubles) once a week and competing in an amateur league tournament (singles and/or doubles) approximately every 2 months.

5.5.2 Self-talk Groups

Four self-talk groups were utilised within the present study. These were instructional strategic self-talk, motivational strategic self-talk, unrelated self-talk and no self-talk. Instructional strategic self-talk were cue words that focused on the technical aspect of task execution (e.g., twist hip). Motivational strategic self-talk were cue words that focused on effort levels (e.g., relax). Unrelated self-talk were statements which had no relation to the present task (e.g., purple). The cue words used within each self-talk group were generated based on the

researchers understanding of each self-talk group, discussions with badminton coaches and players on self-talk applicable to the sport and previous research (Hidayat et al., 2014; Hidayat et al., 2023).

5.5.3 Badminton Performance Tasks

Two performance tasks were used for the present study, and these tasks replicated the performance situations typically experienced in badminton matches. It was believed that by employing performance tasks similar to the performance situations experienced within the sport, a more accurate and applicable exploration into the self-regulatory functions within strategic self-talk studies could occur (Kross et al., 2014; Latinjak et al., 2019). The selection process of the two performance tasks and the amount of attempts for both tasks involved watching matches and training sessions of badminton athletes, discussions with badminton coaches and athletes, discussions with the researcher's PhD supervisors, attending badminton training sessions, previous research utilising badminton players (Ahmad & Abdullah, 2014; Hidayat & Budiman, 2014) and previous research utilising strategic self-talk and a performance task Kolovelonis et al., 2011). These various sources of information enabled two badminton tasks to be incorporated into the present study and to confirm the number of attempts for both performance tasks. The agreed attempt amount was 2 sets of 12. The first set was a practice and the second set was the performance set used for data analysis. Utilising a variety of sources to inform the performance task used for the present study drew congruence between what the study desired to be investigated and what was actually investigated. These tasks were an accuracy-based badminton task (see Figure 5.2) and a power-based badminton task (see Figure 5.3).

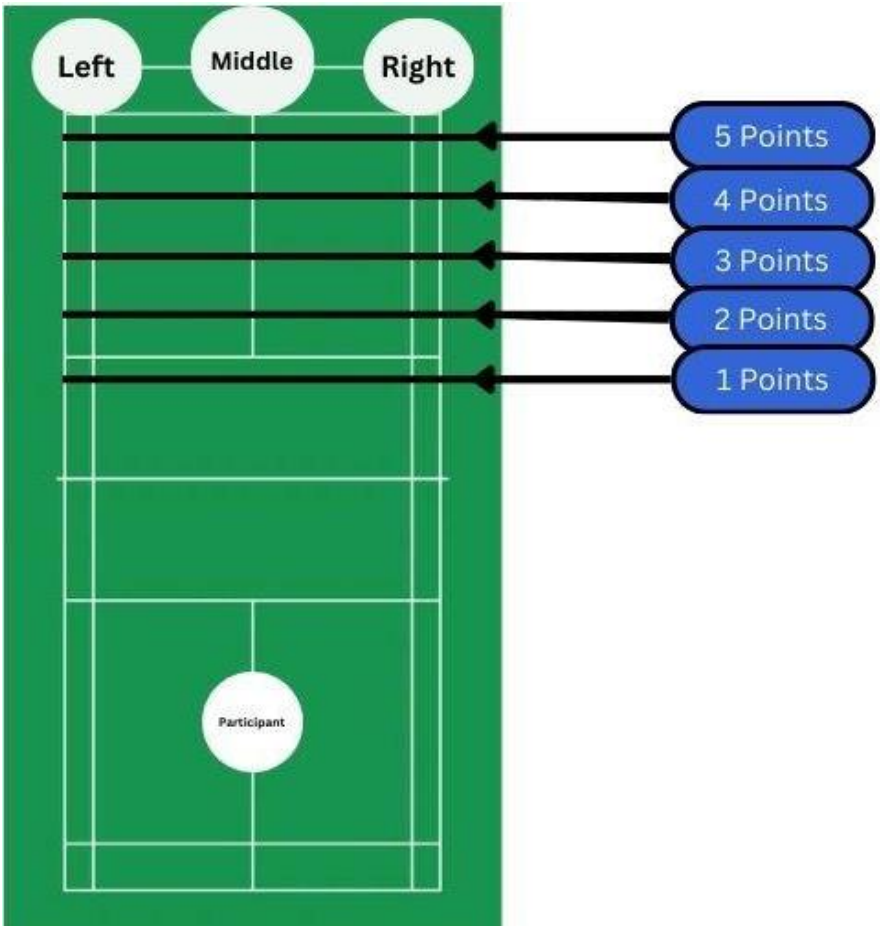


Figure 5.2 Accuracy task

Accuracy Task. One badminton performance task performed in the present study was accuracy based (fine motor skills task). Participants stood in the middle of the centre line. Three cones were located on the back line of the opposite side of the court from where the participant was standing. One cone was located along the left of the back line, one cone was located on the centre of the back line, and one cone was located on the right of the back line. A direction (either left, middle or right) was given to the participant by the researcher. Once the participant heard the direction, they vocalised their strategic self-talk cue word (depending on their allocated group) and then performed their choice of a backhand or smash (forehand) shot with the intention of getting the shuttle as close to the instructed cone as possible. A point system was created to measure the accuracy of participants:

- 5 points if the shuttle falls between the intended target and 50cm
- 4 points if the shuttle falls between the intended target and 100cm
- 3 points if the shuttle falls between the intended target and 150cm
- 2 points if the shuttle falls between the intended target and 200cm
- 1 point if the shuttle falls over the net

The direction participants were instructed occurred in random order and this order differed for each participant. The task ended when the participant had completed their 12 attempts.

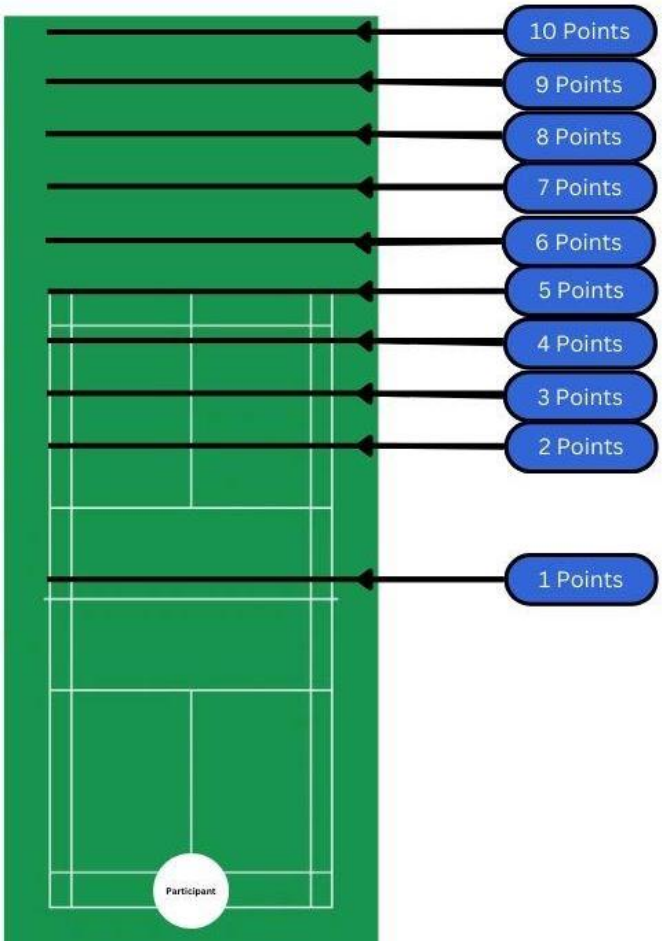


Figure 5.3: Power task

Power Task. The other badminton task performed in the study was power based (gross motor skills task). Participants stood in the centre of the back line. Participants vocalised their strategic self-talk cue words (depending on their allocated group) and then performed a smash (forehand) shot, attempting to hit the shuttle as hard and as far as they could. Smash is a power shot performed in badminton (and volleyball), justifying its use in the power-based badminton task (Ricardo, 2023). It was believed that the further in the distance the shuttle travelled, the greater the level of power the individual possessed (Chang et al., 2014). The task ended when the participant had completed their 12 attempts. A point system was created to measure the distance (therefore power) of participants:

- 10 points if the shuttle falls between past the back line and 250cm
- 9 points if the shuttle falls between past the back line and 200cm
- 8 points if the shuttle falls between past the back line and 150cm
- 7 points if the shuttle falls between past the back line and 100cm
- 6 points if the shuttle falls between past the back line and 50cm
- 5 points if the shuttle falls between the back line and 50cm
- 4 points if the shuttle falls between the back line and 100cm
- 3 points if the shuttle falls between the back line and 150cm
- 2 points if the shuttle falls between the back line and 200cm
- 1 point if the shuttle falls over the net

5.5.4 Strategic Self-talk Manipulation

A procedure was integrated into the present study to uphold the study's integrity and ensure the independent variable (strategic self-talk group) was accurately manipulated. Participants who selected a strategic self-talk cue word (those within the instructional, motivational and unrelated self-talk groups) were instructed to vocalise their cue word aloud during each shot

attempt. The researcher had to hear this vocalisation, and the cue word had to be vocalised before each shot attempt was performed.

5.5.5 Semi-Structured Interview

The creation of the semi-structured interview was tailor-made for the study and was informed by previous research within the self-talk (Latinjak et al., 2020; Latinjak et al., 2019) and self-regulation (Jordalen et al., 2020) literature, and discussions with the researcher's PhD supervisors. The benefits of a semi-structured interview were that a two-way communication between the researcher and the participant could occur (Galletta, 2013). Therefore, information can be gained about the participants' experiences within the performance tasks and how self-regulation may have impacted participants' performance.

The interview script for the study included a list of questions and issues pertaining to the participants' thoughts and emotions about the present and future performance tasks. An example of a question focusing on the self-regulatory processes of the participant in the present was, "How do you think the self-talk cue word impacted your performance?". An example of a question focusing on the self-regulatory processes of the participant in the future was, "If you could do the task all over again, what would you do to perform better in both tasks?". Similar and different questions were used between the strategic self-talk groups (instructional and motivational strategic self-talk) and the control groups (unrelated and no self-talk). It was believed that as different self-regulatory processes may be used between these groups, questions exploring these differences were necessary. An example of a question within the control groups interview script which was not asked to the strategic self-talk groups was, "What did you do to try and forget negative thoughts and feelings experienced during both tasks?" (interview scripts can be found in Appendix 1).

5.5.6 Procedure

Ethical approval for the present study was gained through the University of Suffolk Research Committee (RETH20/012). Potential participants were informed about the present study if they met the sampling criteria. Once they had read, signed and returned the informed consent form, data collection began.

First, participants were randomly placed into one of the four self-talk groups: instructional, motivational, unrelated or the no self-talk group. If the participant was placed into the instructional, motivational or unrelated self-talk group, they were provided with a definition of that self-talk group. They were then given several examples of cue words within their allocated group and they were given the choice to select the cue word they would repeat in the badminton performance tasks. This step was skipped if a participant was placed into the no self-talk group. All participants were unaware whether they were in the experimental or control group. All participants were also not informed of the performance effects of certain cue words (e.g., instructional strategic self-talk benefitting accuracy-based tasks).

Next, the participants performed the badminton performance tasks. They first performed a practice round of both tasks, enabling them to gain familiarity with the tasks and the self-talk cue word they had to repeat during each shot attempt. Afterwards, the participant was given time to ask any questions. Questions typically centred around the procedure, such as, "Can I select two cue words?" (no) or about court placement, such as, "Do my feet have to stay in the designated spot?" (yes). Once all questions had been answered, the participant performed both tasks, and these were the scores recorded for data collection. The order in which both tasks were completed was alternated. Half the participants performed the accuracy task, then the power task, and half the participants performed the power task and then the accuracy task. Once both tasks had been performed, the semi-structured interview was conducted. Semi-structured interviews lasted for approximately 24 - 30 minutes. Once the semi-structured

interview had been completed, data collection concluded. A study protocol can be found in Appendix 1, where a detailed structure of the data collection process is provided.

5.5.7 Data Analysis

Performance Task. The quantitative data collected (performance task) was supposed to be analysed using a MANOVA in SPSS. However, due to a minimum number of participants not being achieved, a MANOVA was not performed. Instead, descriptive statistics of each self-talk group's performance task score are provided only to showcase an overview of the data that was collected.

Semi-structured Interview. The qualitative data collected (semi-structured interview) was analysed using a content analysis (Vears & Gillam, 2022). A content analysis was conducted by identifying the occurrence of specific words, phrases and themes within the analysed text (Hambrick et al., 2010; Harwood & Garry, 2003). A hybrid content analysis was conducted using a deductive and inductive approach. Content categories and sub-categories were generated deductively, as the self-talk groups participants were assigned to, the two performance tasks conducted and the aim of the present study to better understand the self-regulatory strategies attempted by participants informed these categories. The codes generated in each sub-category were generated inductively, as these codes were generated through participants' responses to the semi-structured interview questions.

A hybrid content analysis was the qualitative method chosen for the study, as the study was exploratory in nature. Having an analysis method that places the data set at the forefront enables the research phenomenon's uniqueness to be accurately represented. Participants were put in a position where they could explain their experiences of both performance tasks in great detail through semi-structured interviews (Rumbold et al., 2018). Semi-structured interviews were analysed to see whether these experiences were shared amongst other participants within the same self-talk group. Therefore, a level of consistency could be achieved

across the qualitative data using a deductive approach to create the content categories and sub-categories. In addition, the uniqueness of each content category could also be evident through an inductive approach to creating the codes for each sub-category.

Conducting a hybrid content analysis first involved generating codes through multiple read-throughs of the interview transcripts. Next, the first round of coding occurred by organising the data into the content categories. Next, the second round of coding occurred, which involved taking a closer look at the text within each of the content categories which had been coded. In practice, a closer look at the text entailed analysing each chunk of text coded within each content category and labelling the text with a code that describes what was being said. This round of coding not only enables the participants' experiences to be more clearly seen but also enables codes to be categorised into sub-categories.

Next, further refinement of the codes occurred. Specific codes within sub-categories may be similar to one another. Careful consideration of whether to collapse two codes into one within a sub-category was considered. It may be apparent that the codes labelled may be too broad and further specification of these codes was conducted in this event. Lastly, an interpretation of the hybrid content analysis is provided within the results section of the present study (Vears & Gillam, 2022).

Judgement Criteria. A specific judgement criteria for the research data was employed separately for the study. Justification and the rationale behind the decision was discussed in Chapter 4. The judgement criteria used for the quantitative component of data collection aimed to highlight the reliability and validity of the performance tasks used. In addition to the selection process of the two performance tasks previously stated, a pilot study was conducted. Both performance tasks were performed by badminton athletes, with the researcher and a badminton coach present. The tasks' suitability to investigate accuracy and power were evaluated by badminton athletes, coaches and the researcher and were deemed appropriate.

The pilot study kept the study procedure the same but confirmed the appropriateness of the two performance tasks. The judgement criteria for the quantitative data analysis component was not utilised due to a MANOVA not being performed.

The judgement criteria for the qualitative component of data collection and data analysis followed the guidelines of trustworthiness described by Patton (2002), Poczwardowski et al. (2014) and Sparkes (1998). For data collection, the researcher underwent training in conducting semi-structured interviews, and the process of member checking occurred at the end of each interview. Member checking involved a summary of the semi-structured interview being produced and the participant having the opportunity to confirm or deny that the semi-structured interview accurately revealed their experiences within the performance tasks. If they disagreed with the accuracy of the summary, participants then had the opportunity to discuss further and clarify any points made within the semi-structured interview. What was involved in this further discussion is going through the questions the participant wished to clarify their points. Once complete, the summary of the semi-structured interview was provided and the participant again had the opportunity to confirm or deny that the semi-structured interview accurately revealed their experiences within the performance tasks. Lastly, complementarity was conducted for data analysis as the categories generated in the hybrid content analysis were audited by the researcher, with rival explanations explored before confirming the results found.

5.6 Results

5.6.1 Badminton Performance Task

Table 5.1 showcases the mean and standard deviation performance scores of the four self-talk groups. The motivational strategic self-talk group scored the highest within the accuracy task and the no self-talk group scored the highest within the power task. It is also evident that the unrelated self-talk group scored the lowest in both the accuracy and power task. These

descriptive statistics provide an indication as to the various performance effects of participants in different self-talk groups.

Table 5.1

Group	Mean (SD)
Instructional Self-Talk (N=7)	Accuracy: 4.80 (2.58) Power: 5.40 (2.88)
Motivational Self-Talk (N=5)	Accuracy: 5.00 (1.91) Power: 4.00 (1.82)
Unrelated Self-Talk (N=4)	Accuracy: 3.50 (1.73) Power: 3.50 (2.38)
No Self-Talk (N=4)	Accuracy: 4.00 (2.16) Power: 5.75 (1.70)

Note: *Mean and standard deviation performance scores of the four self-talk groups*

5.6.2 Content Analysis

A hybrid (both inductive and deductive) content analysis was performed on the raw data which was generated from the qualitative interview transcripts. Four content categories were deductively categorised as these were based on the aims and design of the study. These were (1) instructional strategic self-talk, (2) motivational strategic self-talk, (3) unrelated self-talk and (4) no self-talk. Three sub-categories within each content category were deductively categorised. These three sub-categories were based on the aims of the study and the topics of

discussion within the semi-structured interview. By utilising these sub-categories participants' experiences in both tasks and the self-regulatory strategies attempted could be revealed. These were (1) power task effects, (2) accuracy task effects and (3) future performance adjustments. Lastly, the codes within each sub-category were generated inductively and totalled 101 codes altogether. Figures 5.4 - 5.7 illustrate the content categories, sub-categories, codes and an example of a quote within each code generated, with a number beside each code indicating the frequency in which each code was generated.

5.6.3 Instructional Strategic Self-Talk Group

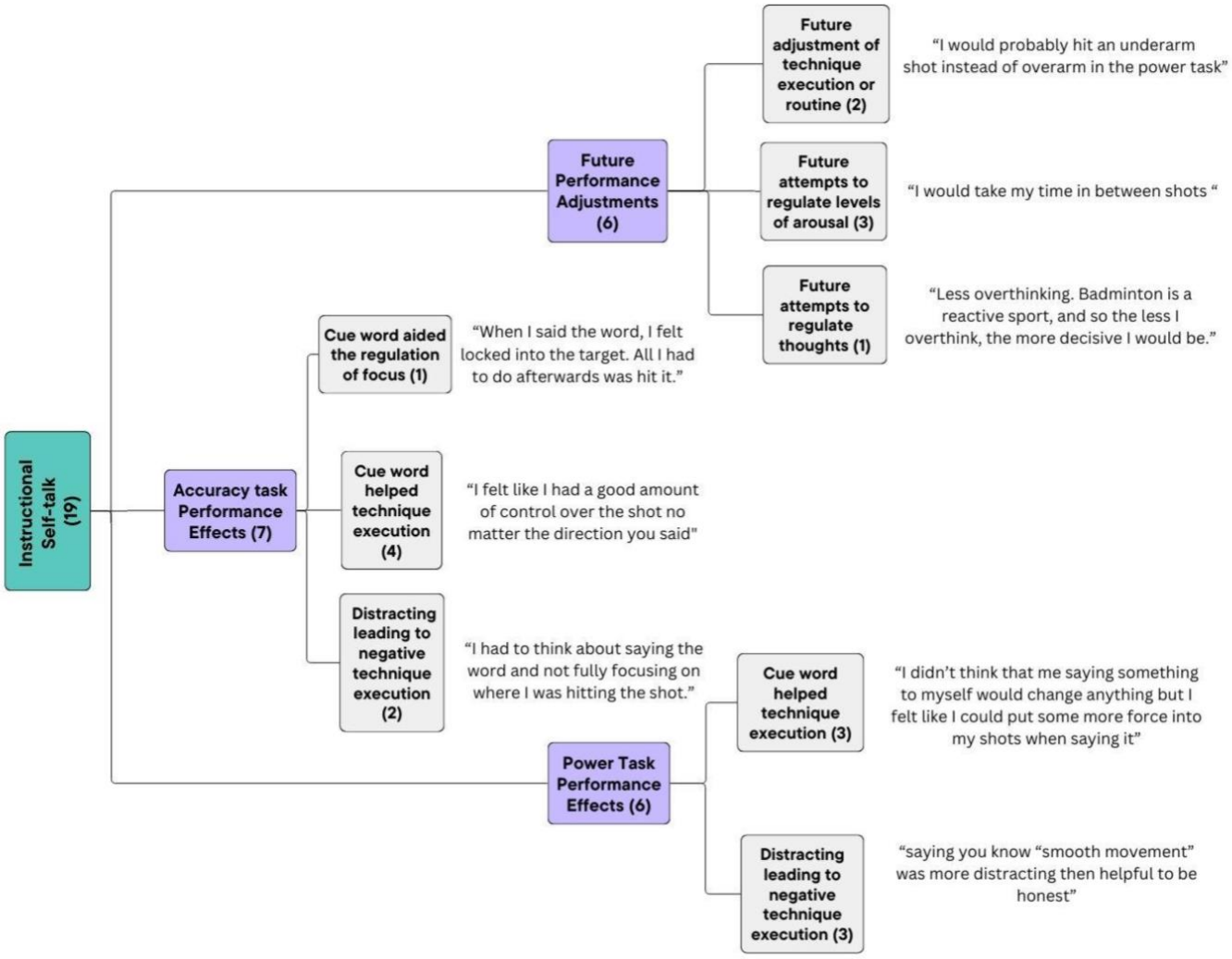


Figure 5.4. Instructional strategic self-talk. What is displayed is the content category (in green), the sub-categories (in purple), the codes (in grey) and an example of the generated code (in quotation marks).

Instructional strategic self-talk was the content category which encompassed the codes which were generated from participants who were instructed to use instructional strategic self-talk within the performance tasks (seen in Figure 5.4). The codes generated from participants' interview transcripts were grouped into one of three sub-categories. The power task performance effects and the accuracy task performance effects sub-categories were two sub-categories which encompassed participants' reflections on the completed performance tasks.

The future performance adjustments sub-category encompassed participants' reflections as to what they would do differently, if they repeated the performance tasks in the future.

Codes generated within the power task performance effects sub-category focused on how the use of instructional strategic self-talk at times helped technique execution and was distracting leading to negative technique execution. Codes generated within the sub-category showcase positive and negative performance situations experienced by participants. For instance, when discussing how the instructional strategic self-talk cue word impacted power task performance, in positive effect, participants stated how the cue word aided technique executions:

> *"I didn't think that me saying something to myself would change anything but I felt like I could put some more force into my shots when saying it"*

Conversely, when discussing how the instructional strategic self-talk cue word impacted power task performance, participants stated (in addition to the quote provided in figure 5.4) how the cue word distracted them, thus negatively impacting their performance:

> *"It (saying the cue word) was really distracting. There were times when I made a good connection with the shuttle and it went far but when I would repeat the phrase (flick wrist) and I wasn't able to replicate the technique"*

Codes generated within the accuracy task performance effects sub-category focused on how the use of instructional strategic self-talk at times aided the regulation of focus, helped with technique execution and was distracting leading to negative technique execution. Codes generated within the sub-category showcase positive and negative performance situations experienced by participants. For instance, when discussing how the instructional strategic self-talk cue word impacted accuracy task performance, participants stated (in addition to the quote provided in figure 5.4) how the cue word helped with performing technique execution:

> *"Saying the word was weird at first but once I got used to it it helped a bit... Yes it definitely did because having to focus on your instruction (direction) was difficult but once I said the word I knew what I needed to do"*

Conversely, when discussing how the instructional strategic self-talk cue word impacted power task performance, participants stated how the cue word distracted them, thus negatively impacting their performance:

> *"I had to think about saying the word and not fully focusing on where I was hitting the shot."*

Lastly, within the future performance adjustments, participants revealed what they would do in future to try and perform better in the two performance tasks. Answers centred around future adjustment of technique execution or routine, future attempts to regulate levels of arousal and future attempts to regulate thoughts. For instance, participants believed that if they better managed their levels of arousal, they would be able to perform better in both tasks in the future (in addition to the quote provided in figure 5.5):

> *"I think the only thing I would do differently is just try and calm down. Whenever I messed up I got annoyed at myself and that didn't help. So I would say something or do something to try and calm down before each attempt"*

5.6.4 Motivational Strategic Self-Talk Group

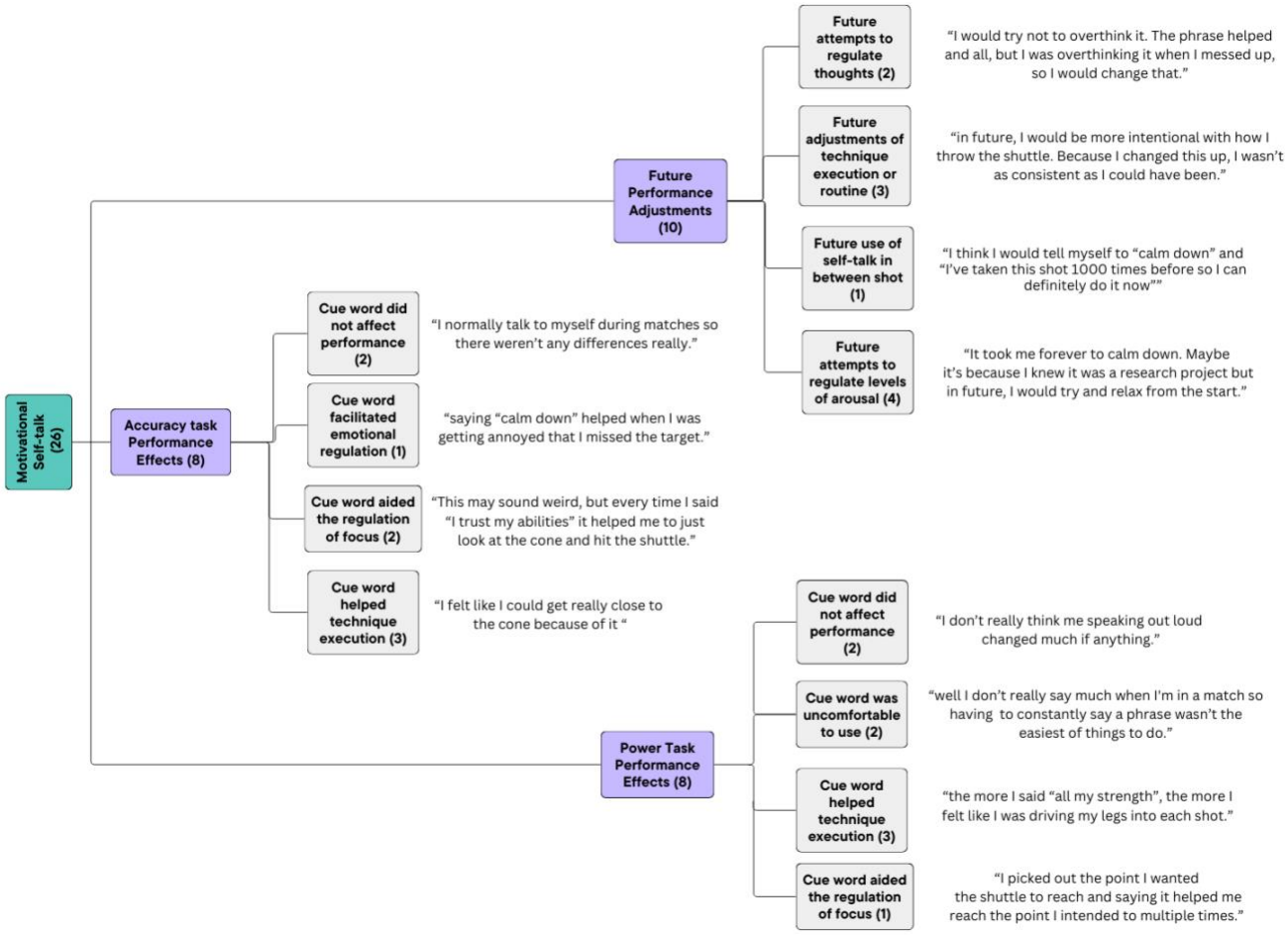


Figure 5.5. Motivational strategic self-talk. strategic self-talk. What is displayed is the content category (in green), the sub-categories (in purple), the codes (in grey) and an example of the generated code (in quotation marks).

Motivational strategic self-talk was the content category which encompassed the codes which were generated from participants who were instructed to use motivational strategic self-talk within the performance tasks (seen in Figure 5.5). Codes generated within the power task performance effects sub-category focused on how the use of motivational strategic self-talk at times did not affect performance, was uncomfortable to use, helped with technique execution and aided the regulation of focus. Codes generated within the sub-category showcase positive and negative performance situations experienced by participants. For instance, when discussing

how the use of a motivational strategic self-talk cue word impacted power task performance, in positive effect, a participant stated how the cue word aided the regulation of focus:

> *"I picked out the point I wanted the shuttle to reach and saying it helped me reach the point I intended to multiple times."*

Conversely, when discussing how the use of a motivational strategic self-talk cue word impacted power task performance, participants negatively stated (in addition to the quote provided in figure 5.5) how the cue word was uncomfortable to use:

> *"Saying the words to be honest (I can do it) felt quite weird, quite uncomfortable. I think it's because even though I was saying it I didn't really believe it. So it was confusing repeatedly saying something I'm not feeling"*

Codes generated within the accuracy task performance effects sub-category focused on how the use of motivational strategic self-talk at times did not affect performance, facilitated emotional regulation, aided the regulation of focus, and helped with technique execution. For instance, when discussing how the use of a motivational strategic self-talk cue word impacted accuracy task performance, participants stated how the cue word positively impacted their ability to regulate focus and concentrate on specific performance cues:

> *"This may sound weird but every time I said "I trust my abilities" it helped me to just look at the cone and hit the shuttle"*

In addition to the regulation of focus, participants also stated that the use of the self-talk cue word positively impacted their ability to regulate levels of arousal:

> *"saying "calm down" helped when I was getting annoyed that I missed the target."*

Lastly, codes generated within the future performance adjustments sub-category centred around participants believing that future attempts to regulate thoughts, future adjustments of technique execution or routine, future use of self-talk in between shot attempts and future attempts to regulate levels of arousal would positively impact performance if both tasks were performed in future. For instance, a participant stated that the additional use of self-talk would aid their performance on both tasks:

> *"I think I would tell myself to "calm down" and "I've taken this shot 1000 times before so I can definitely do it now". I think if I said this in-between shots or after every bad shot I probably would have done a lot better"*

In addition, attempts to regulate levels of arousal were also perceived by participants as a strategy that would aid future performance:

> *"It took me forever to calm down. Maybe it's because I knew it was a research project but in future, I would try and relax from the start."*

5.6.5 *Unrelated Self-Talk Group*

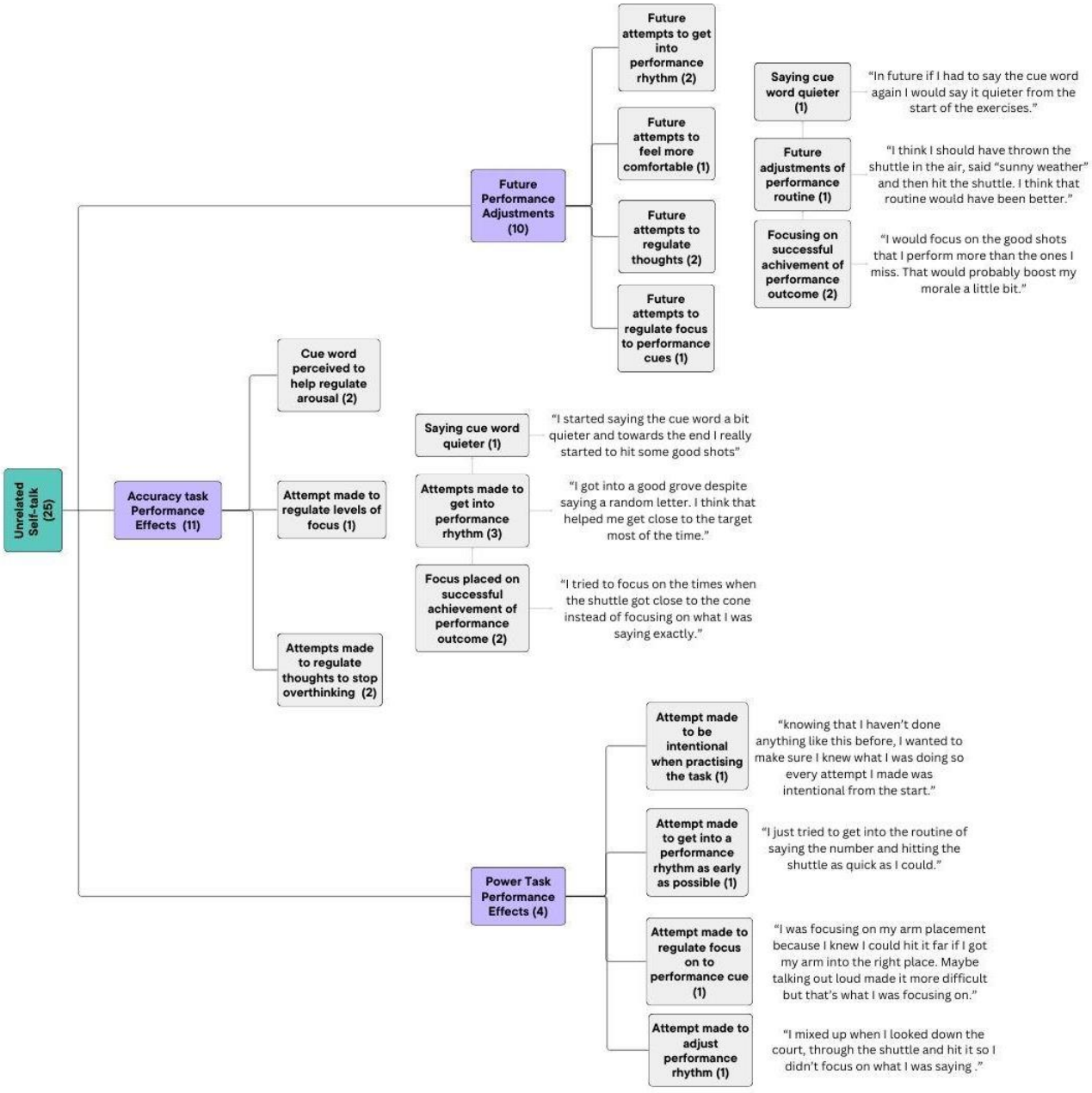


Figure 5.6. Unrelated Self-talk. strategic self-talk. What is displayed is the content category (in green), the sub-categories (in purple), the codes (in grey) and an example of the generated code (in quotation marks).

Unrelated self-talk was the content category which encompassed the codes which were generated from participants who were instructed to use self-talk which was unrelated to the performance tasks (seen in Figure 5.6). Codes generated within the power task performance effects sub-category, focused on how the use of unrelated self-talk triggered attempts made on being intentional when practising the task, attempts made to get into a performance rhythm as early as possible, attempts made to regulate focus on to performance cues and attempts made to adjust performance rhythm. For instance, when discussing what the participant did to try and promote more positive thoughts and feelings being experienced during both tasks, a participant said that they attempted to get into a performance rhythm as early as possible:

> *"The task was really easy, what was not easy is you know saying the number (unrelated self-talk) and doing the task. So I just tried to get into the routine of saying the number and hitting the shuttle as quick as I could"*

In addition, when the desired performance outcome was not executed, a participant stated that they attempted to adjust their performance routine to try and forget the negative thoughts and feelings experienced during the power task:

> *"I mixed up when I looked down the court, threw the shuttle and hit it so I didn't focus on what I was saying."*

Codes generated within the accuracy task performance effects sub-category focused on how the use of unrelated self-talk at times was perceived to help regulate arousal, triggered the attempt made to regulate levels of focus, triggered the attempts made to regulate thoughts to stop overthinking, triggered saying the cue word quieter, triggered the attempts made to get into a performance rhythm and triggered the focus placed on successful achievement of the performance outcome. For instance, when discussing what was attempted to try and promote the experience of more positive thoughts and feelings during the accuracy task, participants

stated (in addition to the quote provided in figure 5.6) that they attempted to focus on the successful achievement of a performance outcome:

> *"I tried to feel happy when I hit the cone instead of feeling bad when I missed. So I don't know if you saw but I sometimes threw a little fist pump when I got close to the cone"*

In addition, when discussing what was attempted to try and forget negative thoughts and feelings experienced during the accuracy task, a participant stated that they attempted to vocalise the cue word quieter:

> *"I don't know whether this helped or not but at the start when I was messing up, for the next couple shots I started saying the cue word a bit quieter and towards the end I really started to hit some good shots."*

Lastly, codes generated within the future performance adjustments sub-category centred around participants believing that the use of future attempts to get into a performance rhythm, future attempts to feel more comfortable, future attempts to regulate thoughts, future attempts to regulate focus to performance cues, saying the cue word quieter, future adjustments of performance routine, focusing on successful achievement of the performance outcome would aid future execution of the performance tasks. For instance, when discussing what could be done if a future attempt of the performance tasks was conducted, a participant stated that they would adjust their routine:

> *"I think I should have thrown the shuttle in the air, said "sunny weather" and then hit the shuttle. I think that routine would have been better."*

In addition, when discussing what could be done if a future attempt of the performance tasks was conducted, a participant stated that they would try and regulate their thoughts to avoid the cue word becoming a distraction:

> *"Yeah the more I said it (Q) the more distracting it became so in future I would try to avoid that... I don't know maybe through focusing on the shuttle or something"*

5.6.6 No Self-Talk Group

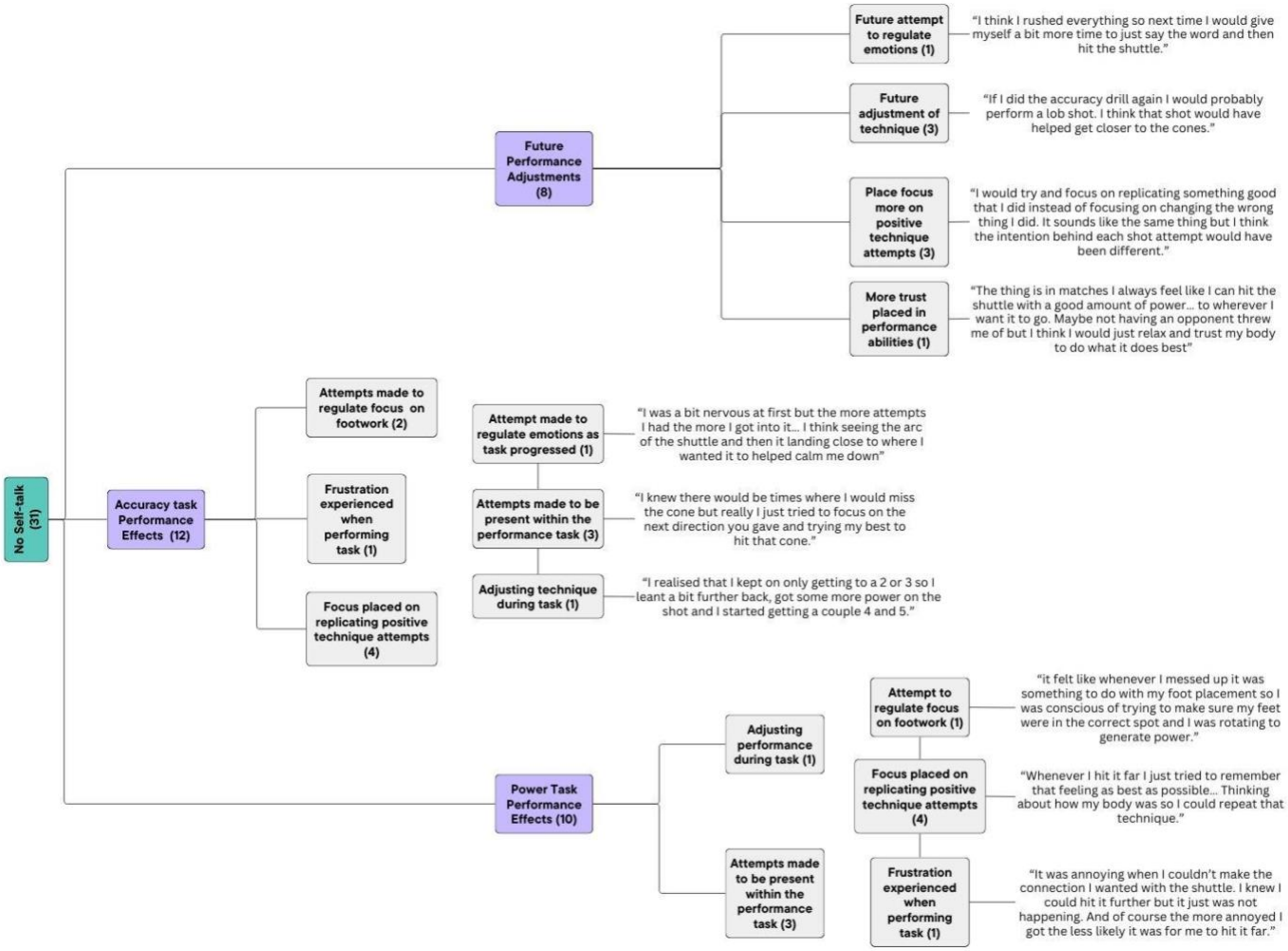


Figure 5.7. No self-talk. What is displayed is the content category (in green), the sub-categories (in purple), the codes (in grey) and an example of the generated code (in quotation marks).

No self-talk was the content category which encompassed the codes which were generated from participants who were not given options for self-talk cue words to use and completed the performance tasks (seen in Figure 5.7). The codes generated from participants' interview transcripts were grouped into one of three sub-categories. Codes generated within the power task performance effects sub-category focused on how no self-talk triggered the adjustment of performance during the task, attempts made to be present within the performance task,

attempt made to regulate focus on footwork, focus placed on replicating positive technique attempts and frustration experienced when performing the task. Codes generated within the sub-category showcase positive and negative performance situations experienced by participants. For instance, when discussing what was attempted to try and promote more positive thoughts and feelings experienced during both tasks, participants attempted to replicate positive technique execution:

> *"Whenever I hit it far I just tried to remember that feeling as best as possible… Thinking about how my body was so I could repeat that technique."*

Conversely, when discussing the thoughts and feelings which were experienced during the power task, a participant stated that they experienced frustration:

> *"It was annoying when I couldn't make the connection I wanted with the shuttle. I knew I could hit it further but it just was not happening. And of course the more annoyed I got the less likely it was for me to hit it far"*

Codes generated within the accuracy task performance effects sub-category focused on how no self-talk triggered attempts to regulate focus on footwork, frustration experienced when performing the task, focus placed on replicating positive technique attempts, attempt made to regulate emotions as task progressed, attempts made to be present within the performance task and adjusting the technique during the task. Again, codes generated within the sub-category showcase positive and negative performance situations experienced by participants. For instance, when discussing what was attempted to try and forget negative thoughts and feelings experienced during the accuracy task, participants stated that they attempted to remain focused on the present task at hand:

> *"I knew there would be times where I would miss the cone but really I just tried to focus on the next direction you gave and trying my best to hit that cone"*

Conversely, when discussing the thoughts and feelings which were experienced during the accuracy task, a participant described a negative emotion experienced and the attempts made to manage this emotion:

> *"I was a bit nervous at first but the more attempts I had the more I got into it… I think seeing the arc of the shuttle and then it landing close to where I wanted it to helped calm me down"*

Lastly, codes generated within the future performance adjustments sub-category centred around participants believing that by making future attempts to regulate emotions, future adjustments of technique, placing focus more on positive technique attempts and more trust placed in performance abilities would facilitate an improved performance in future. For instance, when discussing what could be done if a future attempt of the performance tasks was conducted, participants stated (in addition to the quote provided in figure 5.7) that they would adjust their technique, specifically within the accuracy task:

> *"I would definitely loosen my grip, especially for the cone drill (accuracy task)... I probably would have felt more comfortable and got more shuttles closer to the cones"*

In addition, a participant stated that they would put more trust in their abilities if attempting both tasks in the future:

> *"The thing is in matches I always feel like I can hit the shuttle with a good amount of power… to wherever I want it to go. Maybe not having an opponent threw me of but I think I would just relax and trust my body to do what it does best"*

5.7 Discussion

The present study aimed to explore the experimental and control groups of a strategic self-talk study, investigating the self-regulatory strategies which may be employed when athletes attempt to execute the desired performance outcome. Previous strategic self-talk studies showcased an opportunity to explore why inconsistent findings have occurred when experimental and control groups are compared to one another.

The present study mirrored the methods employed by previous research (Change et al., 2014; Hase et al., 2019; Hidayat et al., 2014; Zetou et al., 2012). Performance tasks were completed by participants who were randomly placed into an experimental (instructional or motivational strategic self-talk) or a control group (unrelated or no self-talk). The present study differs from previous research in two ways. Firstly, two control groups were administered within the present study. Secondly, a mixed methods research approach was used for data collection. New knowledge was gained as to the potential reasons inconsistent findings have occurred within strategic self-talk studies and how self-regulation was attempted by participants when completing the performance tasks were revealed.

5.7.1 Self-Regulation and Self-Talk Groups

The present study revealed that participants attempted to self-regulate in all four self-talk groups. Previous research has alluded to the possible use of self-regulation in strategic self-talk studies (Hase et al., 2019). The present study progresses from previous research as additional information on the self-regulatory strategies used within a strategic self-talk study has been revealed.

When exploring the results of the present study with previous research on self-regulation, it is suggested that participants went through the three phases of self-regulation (Clearly &

Zimmerman, 2001). Firstly, the codes generated indicate that participants were aware of psychological challenges and were motivated to change the performance situation. Examples of psychological challenges include the experience of frustration when the desired performance outcome was not achieved or the vocalisation of self-talk being a distraction for some participants. With the experience of psychological challenges, different participants selected multiple self-regulatory strategies to manage these challenges. For example, the regulation of focus was attempted by participants in order to aid the concentration placed on performance cues and subsequently the performance which was produced (Hatzigeorgiadis & Galanis, 2017). Secondly, the selected strategy was performed primarily through behavioural and mental means. An example of a behavioural mean within the data set was the use of celebrating when the desired performance outcome was achieved. Examples of mental means within the data set include using self-talk and looking and listening solely to the present experience (being present). Lastly, self-reflection occurred through the self-evaluation participants made after each performance task attempt. The researcher became aware of these reflections through the semi-structured interview.

Similarities between codes generated were evident amongst the experimental and control groups. These codes revealed similar ways in which self-regulation was attempted when completing the performance tasks. For example, the regulation of focus, thoughts and arousal were codes often generated within experimental and control groups. The codes generated also revealed participants' self-awareness and self-reflection abilities, as self-regulation strategies which could be used in a future attempt of the performance tasks were stated. Therefore, the bi-directional relationship between strategic self-talk and self-regulation was evident in the present study, a notion shared by previous research (Gregersen et al., 2017; Hatzigeorgiadis & Galanis, 2017; Latinjak et al., 2019).

With the present study shedding light on the use of self-regulation in experimental and control groups, a reason why inconsistent findings have occurred in some strategic self-talk studies are suggested. Suppose participants in each self-talk group self-regulate (facilitated through

strategic self-talk or other techniques). In that case, additional aspects of strategic self-talk studies need to be considered. By accounting for the self-regulatory strategies attempted by participants, the results that strategic self-talk studies generate would be more accurately understood. Further analysis of the self-talk groups provides details of how the use of self-regulation in the present study aligns with previous research. Subsequently, the recommendations provided within the present study to researchers when conducting future strategic self-talk research, derive from the further analysis of each self-talk group.

5.7.2 Instructional Strategic Self-Talk

Instructional strategic self-talk are statements focused on the technical aspect of task execution (Galanis et al., 2022; Perkos et al., 2002). The mean scores in both the accuracy and power tasks for the instructional strategic self-talk group were not the highest compared to the other self-talk groups. Previous research suggests that instructional strategic self-talk is beneficial for tasks that require fine motor skills (Hatzigeorgiadis et al., 2017; Tod et al., 2011). Applying previous research, it would be suggested that statistically significant results within the accuracy-based task would be evident if the quantitative analysis occurred (an explanation for why quantitative analysis did not occur is provided in the methods section). However, qualitative analysis of the data set did occur, and the codes generated within the group provided information about what was occurring among participants who used instructional strategic self-talk.

Frequently generated codes within the instructional strategic self-talk group were that the cue words aided in regulating focus and technique execution in both tasks. These codes are supported by previous research indicating the performance benefits of instructional strategic self-talk (Hardy et al., 2008; Perkos et al., 2002; Zetou et al., 2012). In addition, codes generated within the power task indicated that instructional strategic self-talk also aided in executing the technique. Previous research often suggests that motivational strategic self-talk benefits tasks

that require gross motor skills (power-based tasks) (Hatzigeorgiadis et al., 2011). Participants understood that although power-based tasks primarily focused on power output, technical elements were still necessary for participants to effectively transfer power within the kinetic chain when striking the shuttle with power. Possessing technical elements in a power-based task could be seen as a negative, as previous research has opted to use power-based tasks that do not possess technical elements (Theodorakis et al., 2000). However, the present study opted to use a power-based task that possessed some technical elements, as all power-based tasks in sport performance require some degree of technical ability. Also, by employing performance tasks similar to the performance situations experienced within the sport, a more accurate and applicable exploration into the self-regulatory functions within strategic self-talk studies could occur. Lastly, previous research has employed power-based performance tasks that require technical elements (Galanis et al., 2023; Hatzigeorgiadis et al., 2004).

Instructional strategic self-talk has been shown in previous research to aid technique execution by regulating attentional focus shifting one's attention to an external focus (Hardy et al., 2008; Hatzigeorgiadis & Galanis, 2017). Regulating attentional focus may have aided participants in the performance tasks. However, a MANOVA was not performed to determine whether a statistically significant difference was evident in the performance task scores of the present study. Nonetheless, the codes generated within this group provide qualitative data congruent with previous research. The results indicate that on a self-regulatory level, the methods employed within an instructional strategic self-talk group are congruent with how instructional strategic self-talk should impact performance. That is, instructional strategic self-talk can influence performance by regulating attentional focus.

5.7.3 Motivational Strategic Self-talk

Motivational strategic self-talk are statements focused on effort levels (Galanis et al., 2022; Perkos et al., 2002). The mean scores in the accuracy-based task revealed that the group performed the best compared to the other self-talk groups. Previous research suggests that

motivational strategic self-talk is beneficial for tasks which require gross motor skills (Hatzigeorgiadis et al., 2011). Applying previous research, it would be suggested that statistically significant results within the power-based task would be evident if the quantitative analysis occurred. However, qualitative analysis of the data set did occur, and the codes generated within the group provided information about what was occurring among participants who used motivational strategic self-talk.

The motivational strategic self-talk group revealed codes centred around self-regulation, which were unique to the group. These included using strategic self-talk to regulate emotions in the accuracy task, the regulation of thoughts and the use of self-talk in between shot attempts to regulate emotions if participants completed the performance tasks in future. Previous research has indicated that strategic self-talk can aid in the regulation of emotions. Emotion regulation can occur through exerting mental control over subjective experiences (e.g., calming down), physiological processes (e.g., breathing slowly) or observable behaviour (e.g., standing straight) (Fritsch et al., 2022; Fritsch et al., 2022; Latinjak & Hatzigeorgiadis, 2020). In addition, previous research has also showcased the performance benefits of motivational strategic self-talk due to its impact on affective processes (emotions) (Cheng & Hardy et al., 2016; Hardy et al., 2008; Fritsch et al., 2022).

The congruence between previous research and the codes generated within the motivational strategic self-talk group indicates that on a self-regulatory level, the methods employed within a motivational strategic self-talk group are congruent with how motivational strategic self-talk should impact performance. Motivational strategic self-talk should influence performance by regulating emotions (Fritsch et al., 2022). Regulating emotions may have aided participants with the performance tasks. Caution however is warranted within this interpretation of the findings. Although the interpretation of findings is supported by previous research, the code which this interpretation derives from was only generated once within the sub-categories which focused on participants reflecting on their performance within the two tasks.

5.7.4 Common Themes Amongst the Experimental Groups

Exploring the codes in both the instructional and motivational strategic self-talk groups reveals similar self-regulatory strategies were attempted within the performance tasks. The regulation of thoughts, focus, emotions and arousal levels were self-regulatory strategies performed by participants in the experimental groups. These self-regulatory strategies allude to participants' use of self-regulation to enable strategic self-talk to work better when executing the performance tasks. For instance, deep breathing to regulate emotions followed by vocalising the strategic self-talk cue word. The combined use of these strategies formed the self-regulation process that could enhance performance execution (Orbach & Blumenstein, 2022).

The results from the present study suggest that participants within the experimental self-talk groups are using self-regulatory strategies in addition to the use of strategic self-talk. These self-regulatory strategies have been shown to aid performance (Brick et al., 2016; Hatzigeorgiadis et al., 2017). Therefore, self-regulation is an additional aspect that strategic self-talk studies need to consider. Without accounting for self-regulation, what could be argued is that strategic self-talk studies would actually investigate the use of strategic self-talk, in combination with other unknown self-regulation strategies and techniques when executing a performance task. More consideration therefore may need to be placed on evaluating the adherence of the methods employed for the study, ensuring these are being followed by participants. Evaluating the adherence to the study protocol is referred to as the manipulation check. Further exploration of a suitable manipulation check is suggested within the researcher recommendation segment of the discussion section.

Codes generated by participants in both experimental groups centred around strategic self-talk being uncomfortable and distracting. These codes were generated despite participants being able to choose from various cue words within their group. Previous research has indicated that participants selecting a self-talk cue word is better than assigning participants a cue word (Hatzigeorgiadis et al., 2011). These generated codes suggest that self-talk cue words can be

negatively perceived if participants have not familiarised themselves with their selected cue word.

5.7.5 Unrelated Self-talk

Unrelated self-talk consisted of statements that had no relation to the present task. The mean scores in both the accuracy and power tasks for the unrelated self-talk groups were the lowest compared to the other self-talk groups. Previous research has typically used unrelated self-talk as a control group to compare against the experimental group (Hase et al., 2019). Therefore, little information is known about the self-regulatory strategies used by participants when executing performance tasks. The codes generated within the group provide information about what was occurring among participants who used unrelated self-talk.

The use of self-regulation within the unrelated self-talk group focused on managing the negative intervention of vocalising unrelated self-talk. A unique code within the unrelated self-talk group was the attempt to regulate thoughts to reduce overthinking. The regulation of thoughts alludes to organic self-talk, which encompasses the thoughts the athlete generates that can convey their sporting experience and be directed towards the desired performance outcome (Latinjak et al., 2019). The benefits of organic self-talk draw similarities to strategic self-talk, as these can both be goal-directed in nature and can both be used as the mental means when performing a self-regulatory strategy, facilitating the desired performance outcome (further information of organic self-talk can be found in Chapter 3).

Attempting to exert mental control over the negative intervention of vocalising unrelated self-talk was also conducted by attempts to regulate attentional focus, thoughts and placing focus on the achievement of the performance outcome. The regulation of attentional focus was a code evident in the experimental groups. The unrelated self-talk control group differs from the experimental groups, as the regulation of attentional focus was also conducted in order to

focus on the achievement of the performance outcome. Focusing on achieving the performance outcome aimed to change the participant's perception and increase the likelihood of a successful performance outcome being replicated. The performance benefits of regulating attentional focus have previously been mentioned, and these apply to the current self-regulation attempts within the unrelated self-talk group (Brick et al., 2016; Hatzigeorgiadis et al., 2017).

Although these attempts to exert mental control were mentioned, participants' scores within both tasks were the lowest compared to the other self-talk groups. One interpretation of these findings is that although self-regulation was attempted, self-regulation may not have been achieved due to the repetitiveness of the negative intervention of unrelated self-talk. An argument could be made that unrelated self-talk is a valuable control condition, as this condition minimises the performance benefits of self-regulation being experienced.

5.7.6 No Self-talk

No self-talk was the group where participants completed both performance tasks without the requirement of vocalising self-talk. The mean scores in the power task for the no self-talk group were the highest compared to the other self-talk groups. Previous research has typically used no self-talk as a control group to compare against the experimental group (Hatzigeorgiadis et al., 2009; Theodorakis et al., 2001). Little information however is known about the self-regulatory abilities of participants in the group when executing the performance tasks. However, the codes generated within the group provide information about what was occurring among participants who did not use self-talk.

An attempt to self-regulate, unique to the no self-talk group, was the attempt to focus on the present. Focusing on the present aims for athletes to accept their current thoughts and feelings and embrace their current situation (Bernier et al., 2009). Previous research indicates that

focusing on the present can induce relaxation and reduce anxiety levels, positively aiding performance (Bernier et al., 2009; Hut et al., 2023). The regulation of emotions as the accuracy task progressed was also a code generated within the group. Emotion regulation has previously been mentioned within the motivational self-talk group, as well as the various benefits that result from emotion regulation (Fritsch et al., 2022; Fritsch et al., 2022).

Codes generated within the no self-talk group that centred around self-regulation were the regulation of emotions as the task progressed, the regulation of focus on the present, focus placed on performance cues (footwork) and replicating a positive performance outcome. The regulation of focus and attempts to focus on achieving a positive performance outcome were codes also generated within the unrelated self-talk control group, suggesting that there are similar attempts to self-regulate conducted between both control groups.

The codes generated within the no self-talk group reveal that there were self-regulatory attempts that were similar to other self-talk groups and also self-regulatory attempts that were unique to the no self-talk group. With the mean scores revealing that the no self-talk group performed the best in the power task, an argument could be made that the self-regulation strategies used within the no self-talk group helped participants within the power performance task. What could be suggested from these results is that a no self-talk control group may not be an accurate control group condition, as participants' attempts to self-regulate may impact task performance scores. However, the reasoning behind why a control group is being used may make utilising a no self-talk group appropriate for the strategic self-talk study. Further explanation is provided in the researcher recommendations segment of the discussion section.

The quantitative and qualitative data analysis for the four self-talk groups reveals that two of the three research questions have been answered. Research Question 2 (what self-regulatory strategies are used by participants in the four self-talk groups when attempting to produce the desired performance outcome?) and Research Question 3 (do the self-regulatory strategies used by participants differ due to the experimental or control group a participant is placed in? If

yes, how?) have been answered. What was not answered was Research Question 1 (what are the performance outcome differences in two performance tasks completed by participants in four self-talk groups) due to the quantitative statistical analysis not being conducted (an explanation of why can be found in the method section). By investigating the researched phenomenon, a possible reason as to why inconsistent findings have occurred within some strategic self-talk studies has been provided. Furthermore, what is also clear are the potential pitfalls that future strategic self-talk studies could fall into if the results from the present study are not considered. Recommendations are provided for researchers who would like to conduct strategic self-talk studies in the future based on the analysis of each self-talk group.

5.7.8 Researcher Recommendations

The recommendations offered to researchers are suggested due to the results of the present study and previous research. Three recommendations are provided: (1) to consider when to use an unrelated self-talk control group or a no self-talk control group, (2) to consider the manipulation check used for a strategic self-talk study and (3) to consider the expectations for both experimental and control groups.

Strategic Self-talk Control Groups. The results of the present study indicate that participants in both the unrelated self-talk and no self-talk control group attempted to self-regulate. Now that the self-regulatory strategies attempted by participants in the control groups are better understood, recommendations for when each control group could be used can be suggested. It is suggested that if a study wanted to investigate the use of strategic self-talk against a negative intervention, then the use of an unrelated self-talk control group would be ideal for the study. This study would investigate whether a strategy seen as facilitating the desired performance (strategic self-talk) differs from a strategy seen as debilitating the desired performance. The recommendation for the unrelated self-talk control group is provided based on the results of the present study, in addition to previous research indicating that the use of

unrelated self-talk can act as a negative intervention, impeding the use of self-regulation strategies enhancing performance (Chang et al., 2014; Hase et al., 2019).

If a study wanted to investigate how effective strategic self-talk is in facilitating the desired performance, then the use of a no self-talk control group would be ideal for the study. The no self-talk control group is recommended because the control group allows participants to use their typical self-regulation strategies. What would be investigated would be whether the desired performance outcome is more likely to be achieved through strategic self-talk or participants utilising their typical self-regulation strategies. In order to accurately investigate the self-regulatory strategies within the control group, a specific manipulation check may be necessary, leading to the next recommendation.

Manipulation Check. Another recommendation is to consider the manipulation check used in a strategic self-talk study. A manipulation check is an evaluation tool to confirm that the study methods are followed by participants (Hauser et al., 2018). A manipulation check can inform the researcher that the assigned strategic self-talk cue words are being used by participants. A form of a manipulation check was conducted within the present study, as participants were instructed to vocalise their self-talk cue word loud enough for the researcher to hear. The benefit of this manipulation check is that it ensures that the self-talk cue word is consistently being used throughout both performance tasks. Previous strategic self-talk studies have showcased other manipulation checks which can be used. For example, asking participants, "have you used the self-talk from the self-talk sheet during the performance task?" (Chang et al., 2014), "did you say anything to yourself during your sit-up session?" (Hardy et al., 2005) and "how often did you repeat your self-talk statement?" (Hase et al., 2019). Manipulation checks within strategic self-talk studies have mainly focused on whether strategic self-talk is used. With the present study showcasing that various self-regulation strategies are used within self-talk groups, it is recommended that a manipulation check be employed which also helps researchers account for participants' attempts to self-regulate.

A manipulation check used by Kolovelonis et al. (2011) asked participants if they said anything to themselves during the performance task and, if yes what they said to themselves. These answers were coded into four categories: no, assigned cue word, general self-talk and others. The information gained resulted in additional analysis on participants who reported using general or other self-talk to see whether the information gained within the manipulation check impacted the study results. Kolovelonis et al. (2011) provides a blueprint for a manipulation check which could be used to assess whether the strategic self-talk cue word is used and if the regulation of thoughts is attempted. Further progression however is needed as questions also need to assess whether other attempts to self-regulate (emotion regulation, regulation of focus) are attempted.

Study Expectations. Lastly, another recommendation is to consider the expectations of both the experimental and control groups. Participants can sometimes become aware of whether they are within the experimental or control group. If participants become aware of their group, their expectations would be different. Participants within the experimental group may expect the strategic self-talk used to aid performance. Participants within an unrelated self-talk control group may expect the cue word not to aid performance. Participants within a no self-talk control group may have different expectations as they would not have been assigned a cue word. These different expectations may impact motivation to complete the performance tasks to the best of the participant's ability. Therefore, it is suggested that expectations for the experimental and control groups should be the same. Otherwise, the mechanisms that cause a difference in performance (strategic self-talk or other self-regulatory strategies) would be difficult to know (Boot et al., 2013).

Expectations could be equal in both experimental and control groups through a neutral expectancy design. For example, half of each group (experimental and control groups) are informed that the cue word they receive will improve their outcome, whereas the other half are led to have neutral expectations. Another possible way is to provide a large positive or negative incentive for performance. For example, in the context of the present study,

participants could have been told that performance in both tasks would impact the selection process for the next badminton tournament. Alternatively, a table of each participant's performance scores could be made available for the club to see. These examples would decrease the likelihood of participants' expectations of their assigned group influencing their performance.

5.7.9 Limitations

The present study has provided new knowledge within studies focusing on strategic self-talk. Nonetheless, limitations are evident within the present study which should be considered when interpreting the results of the present study.

Firstly, it is evident that there was a lack of participants who took part in the present study. The a priori power analysis revealed that a minimum of 40 participants (10 participants per group) was the minimum requirement for the present study. The minimum requirement however was not met. It was previously mentioned that if participants in each self-talk group are self-regulating, statistically significant differences may not occur. Although self-regulation could be one interpretation of the lack of statistically significant results in the present study, another interpretation is due to the minimum requirement of participants not being met within the present study.

Another limitation evident was the lack of a baseline measure for both performance tasks. Conducting a baseline measure may not have impacted the achievement of the aims of the present study. Participants would still have been put in a situation where they were undergoing a performance task and then immediately reflecting on this performance task, therefore revealing the potential self-regulatory strategies being attempted. However, conducting a baseline measure would have added to the reliability of the performance scores (had the minimum requirement of participants been met) and is a measure that has been used in previous research (Galanis et al., 2018; Galanis et al., 2023).

Another limitation was the power based performance task used in the present study and the way in which this was measured. The selection of the power based task was informed through attending badminton training sessions, discussions with badminton coaches and players and previous research in badminton (Hidayat & Budiman, 2014) and similar performance tasks (Chang et al., 2014). Although the power output of the individual impacts the distance the shuttle will travel, the angle of the shot would also impact the distance the shuttle will travel. Therefore, the angle of the power shot performed may have impacted the results in the power based task.

An additional limitation evident was the manipulation of self-talk used for the study. Participants vocalising their cue word out loud is a manipulation check that confirms the consistent use of the cue word by the researcher. Drawbacks to this manipulation check are evident. Responses from participants in previous research have stated that the overt vocalisation of self-talk can be distracting to use due to self-talk not typically being conducted overtly during performance (Masciana et al., 2001). In addition, the overt vocalisation of self-talk perceived as distracting and uncomfortable were codes generated within the present study. Therefore, the necessity to vocalise self-talk could have impacted the participant's ability within both performance tasks.

Furthermore, a limitation evident was lack of information gained as to the previous experiences of participants. Although the performance experiences of individuals were somewhat accounted for (amateur level athletes) more information could have been gained as to the success athletes have had and the number of years they have participated in their sport. Information on the playing experience of athletes could have been gained using the *Elite/Amateur Playing Experience* model (Swann et al., 2015).

5.5 Conclusion

Strategic self-talk is an entity within self-talk that has greatly influenced our understanding of the relationship between self-talk and performance. The understanding of strategic self-talk originated within the results of strategic self-talk studies, leading to a more informed strategic self-talk intervention applied to athletes. When exploring previous research on strategic self-talk, there was a plethora of research investigating the impact various strategic self-talk cue words have on performance tasks. However, an opportunity for further investigation was revealed as more information behind the experimental and control groups of strategic self-talk studies could be gained. The importance behind investigating the research design of strategic self-talk is that the control group is typically compared to the experimental group to indicate the success of the strategic self-talk study. The present study aimed to explore in more detail why inconsistent findings may have occurred within previous research.

It was revealed that participants within the experimental (instructional and motivation strategic self-talk) and control groups (unrelated and no self-talk) attempted to self-regulate when executing the performance tasks. Attempts to self-regulate are not inherently negative. However, strategic self-talk studies do need to consider the self-regulatory strategies participants attempt. If not, the validity and reliability of study results could be negatively impacted, especially if the attempts to self-regulate by the groups are impacting performance task scores. Therefore, the results of the present study have added to the knowledge of strategic self-talk studies. This new knowledge was packaged together as recommendations for future strategic self-talk research to consider. The aim of the study was not to criticise previous research but to better inform future research through achieving the present study's aims (chapter summary provided in Table 5.2).

A typical aim within self-talk studies is to gain new knowledge within the researched area, which can better inform self-talk interventions. Although that was not the focus of the present study, the next chapter of the thesis does focus on a self-talk intervention. As seen within the present study, self-regulation is an important concept within the self-talk and performance relationship. Self-regulation has been of focus with various self-talk interventions, one of which

will be explored within the next chapter. In the next chapter, a self-talk intervention will be researched to better inform applied sport and exercise psychology practitioners in its future use. The intervention is a reflexive self-talk intervention.

Table 5.2

Chapter 5 Summary

Chapter	**Research Questions**
5	1. What are the performance outcome differences in two performance tasks completed by participants in four self-talk groups? 2. What self-regulatory strategies are used by participants in the four self-talk groups when attempting to produce the desired performance outcome? 3. Do the self-regulatory strategies used by participants differ due to the experimental or control group a participant is placed in? If yes, how?
Chapter Rationale	
Inconsistencies have been evident within the control groups of strategic self-talk studies. Exploring the control groups within strategic self-talk studies is important, as the control group allows researchers to minimise multiple factors except the conditions to which the experimental group were exposed to. More valid measures can be utilised in future strategic self-talk studies by better understanding what is occurring within control groups.	
Key Research	
● Strategic self-talk Research (Boroujeni & Shahbazi, 2011; Chang et al., 2014; Galanis et al., 2023; Zourbanos et al., 2013b) ● Self-Regulation (Kuhl, 2000; Zimmerman, 2000)	
Findings	
● Research questions 2 and 3 were achieved ● Each experimental and control group generated similar and unique codes within the information gained from the semi-structured interviews	

New Knowledge Gained from Chapter 5

- Participants within the experimental and control groups attempted to self-regulate thoughts, emotions, focus and arousal levels when executing performance tasks
- Participants within the experimental and control groups utilised behavioural and mental means to perform the selected self-regulatory strategy
- Recommendations provided for future strategic self-talk research to consider:
    - Consider when to use of an unrelated self-talk and a no self-talk control group
    - Consider the manipulation check used for the study
    - Consider the expectations for both experimental and control groups.

Chapter 6

Exploring the Application of a Reflexive Self-talk Intervention

6.1 Introduction

A reflexive self-talk intervention is a viable intervention program that can help athletes develop their metacognitive knowledge, self-awareness and use of self-talk. Previous research suggests that the benefits that can be experienced from a reflexive self-talk intervention are emotional, motivational, performance-related and life outside of the athletes' sporting experience (Latinjak et al., 2019). However, further insight is needed so applied sport and exercise psychology practitioners can be better equipped to administer the intervention. The present study builds on the current understanding of reflexive self-talk interventions, as a deeper understanding of using a reflexive self-talk intervention, using a new intervention tool and its impact on athletes' metacognition is explored. Exploring the metacognitive development experienced from a reflexive self-talk intervention aligns with one of the aims of the thesis:

- For applied sport and exercise psychology practitioners to be better informed when creating reflexive self-talk intervention programs for athletes.

The chapter first explores the literature on applied sport and exercise psychology interventions and then narrows its focus to reflexive self-talk interventions. Previous research exploring reflexive self-talk interventions is then evaluated, highlighting the strengths and opportunities to progress the understanding of reflexive self-talk interventions. The chapter then provides a methods and results section, detailing what actions were taken within the study and the results found. A discussion section then follows where previous research and the present study results are synthesised, showcasing how the study adds to the knowledge of the researched area. Lastly, recommendations are offered that applied sport and exercise psychology practitioners could use when conducting a reflexive self-talk intervention.

6.1.1 Applied Sport and Exercise Psychology Interventions

Interventions within the field of sport and exercise psychology are how knowledge gained within research is typically transformed into content that an athlete can apply to their

performance. Intervention programs are created by the athlete and the applied sport and exercise psychology (SEP) practitioner. Intervention programs last for several intervention sessions where an athlete attempts to learn psychological techniques (e.g., goal-setting), which helps the athlete produce a psychological skill (e.g., concentration), subsequently enhancing performance or well-being (Henriksen et al., 2014; Ong & Chua, 2021). For example, when Anthony Joshua fought Andy Ruiz Jr in a world heavyweight boxing match, Anthony Joshua hired an applied SEP practitioner (Davies, 2019; Simpson, 2019). The applied SEP practitioner worked with Anthony Joshua to help develop pressure management, a psychological skill which looked to have helped him win the rematch.

When creating and implementing an intervention program, various factors must be considered and the processes which are used are dependent on the approach of the practitioner (Keegan, 2016; Latinjak & Hatzigeorgiadis, 2020). If a cognitive behavioural approach is being utilised, then First an initial intake session is conducted where the practitioner becomes aware of the athletes' sporting experience. An initial intake session tool could be used to gain information about the athlete's sporting experiences, for example, the Performance Interview Guide (Aoyagi et al., 2017), the Sport-Clinical Intake Protocol (Taylor & Schneider, 1992) or #SportPsychMapping (Latinjak et al., 2021). The practitioner is then informed of the aspects of the athlete's sport that the athlete perceives as important. Also, areas in which the intervention program could focus on are revealed. Additional information may be needed, such as the performance impacts of the areas that are the main focus of the intervention or another individual’s perspective on the areas that are the main focus of the intervention. Therefore, a performance observation, completing a questionnaire or completing an interview with the athlete’s coach could be administered. Additional information can reveal more certainty of the areas the athlete wishes to enhance.

What follows the initial intake session is intervention planning, where information gained from the initial intake session, previous research and the practitioner's professional judgement is formulated into an intervention program. Afterwards, the intervention is implemented, and

intervention sessions are conducted. Intervention sessions for example, could include discussions and tasks centred around changing maladaptive descriptive states, creating strategic self-talk cue words or being taught thought-stopping techniques (Keegan, 2016; Latinjak & Hatzigeorgiadis, 2020). Once the intervention is complete, an evaluation of the intervention is conducted. Intervention evaluation explores whether the goals of the intervention were achieved, whether any changes in performance were evident or whether questionnaire scores differed from pre-post intervention.

The guidelines for creating, implementing and evaluating an intervention have helped several practitioners when working with athletes (Keegan, 2016; Henriksen, 2015; Latinjak & Hatzigeorgiadis, 2020). In addition to intervention guidelines, applied SEP practitioners also need to possess counselling techniques, as these techniques enable a smooth transition between intervention sessions and can increase the likelihood of achieving the intervention goal (Mack et al., 2019). Counselling techniques can include open-ended questions, affirming, reflecting, and summarising the comments made by the athlete, as well as active listening skills (Mack et al., 2017). The combination of intervention guidelines and counselling techniques enables an intervention program to be created, where a clear intervention goal is identified, and both the athlete and the practitioner work together to accomplish the goal.

Understanding the relationship between intervention guidelines and counselling skills is important in the present study. An understanding of the relationship is needed because the methods employed for the present study mirrored the intervention programs which occur in applied SEP practice (de Cruz & Smith, 2022; Keegan, 2016). In addition, the present study also mirrored the process of a self-talk intervention program, which was stated when exploring the transdisciplinary self-talk model in Chapter 3 (Latinjak et al., 2023). Mirroring the procedures of applied practice heightens how applicable recommendations from study results can be, thus achieving the thesis aim centred around applied SEP practitioners.

Issues can arise when aspects of the intervention guidelines or counselling techniques are not implemented. For example, issues can arise if the practitioner does not actively listen to the athlete, if previous research is not taken into consideration in creating the intervention program, or if there is no established intervention goal. Therefore, when interventions are conducted in an applied context and when being researched, considerations of these processes are necessary (Latinjak et al., 2020). Applying these considerations to the present study, actively listening to the athlete was a counselling technique used during the intervention sessions, and previous research investigating reflexive self-talk interventions was used in the creation of the present study. Lastly, a reflexive self-talk intervention program was deemed successful by the researcher if the intervention goal was achieved and the athlete could use the developed psychological techniques or skills without the practitioner's assistance. The criteria for a successful intervention program was established as this aligns with the intervention approach of developing athlete metacognitive knowledge and showcasing this gained knowledge within their performance (Latinjak et al., 2019)

Further exploring the applied SEP literature, previous research has focused mainly on intervention guidelines, specifically attempting to answer whether the intervention program works. By doing so, applied SEP practitioners can gain confidence in administering certain intervention programs themselves. However, the repercussions of only reporting the success of the intervention is that it alienates neophyte practitioners, as those early in their applied career require more information than just the success or failure of the intervention (Quartiroli et al., 2023). What is also required is information about the intricacies of the intervention program, the counselling techniques which were used, the setting up of intervention sessions, the challenges within the intervention which had to be overcome, the transference of ownership over the intervention program from the practitioner to the athlete, and the reflections of the intervention from the practitioner's perspective. These answer whether the intervention did (or did not) work. These aspects also need to be highlighted within research to help the development of neophyte practitioners better and more accurately reflect the actual doing of applied SEP (Martindale & Collins, 2013; Owton et al., 2014; Tod et al., 2017). These

considerations were adopted within the present study chapter and its exploration into a reflexive self-talk intervention program.

6.1.2 Reflexive Self-talk Intervention

A Reflexive self-talk intervention program aims for the athlete to develop their organic goal-directed self-talk by discussing the content of their goal-directed self-talk, improving their choice of psychological skills and raising their levels of self-awareness of psychological challenges experienced during performance (Latinjak et al., 2020). The reflexive self-talk intervention aims to regulate athletes' organic goal-directed self-talk by preventing unwanted self-talk and developing organic goal-directed self-talk (Latinjak et al., 2019).

The thought process behind the intervention is that by frequently reflecting on various psychological challenges experienced during performance, an athlete's ability to use organic goal-directed self-talk in selecting appropriate psychological skills will be enhanced, subsequently improving performance. The thought process behind a reflexive self-talk intervention differs from interventions which are not reflexive in nature, for example a strategic self-talk intervention. A strategic self-talk intervention focuses on working with the athlete to develop pre-determined cue words to trigger specific performance related responses (Latinjak et al., 2023: Hatzigeorgiadis et al., 2014). A reflexive self-talk intervention however, differs from a strategic self-talk intervention's approach as the entity of self-talk which is of focus differs. A reflexive self-talk intervention focuses on developing an athlete's understanding of their organic self-talk and use of organic goal-directed self-talk. Previous research indicates that interventions could be implemented at three levels to change an athlete's organic self-talk. Changes in organic self-talk can occur by attempting to change personal factors, regulating the athletes' perception and changing the environment in which the sport occurs (Latinjak et al., 2020). These are inherent within reflexive self-talk interventions, as they often start practitioner-led and end athlete-led as the athlete has developed levels of self-awareness. The

applied SEP practitioner utilises a socratic questioning approach, which is useful for promoting the development of metacognitive knowledge (McArdle & Moore, 2012).

Reflexive self-talk interventions are rooted within foundational psychological interventions. These are cognitive behavioural approaches such as cognitive behavioural therapy and rational emotive behaviour therapy (Beck, 1993; Ellis, 1957). Both cognitive behavioural approaches and reflexive self-talk interventions focus on raising the individual's awareness of their inner dialogue, and when the inner dialogue is dysfunctional, replacing it to align with the desired outcome. Cognitive behavioural approaches therefore indicate that an important characteristic of a reflexive self-talk intervention is the self-regulation strategies (psychological skills) required to manage psychological challenges by controlling psychological states and traits (Latinjak et al., 2020). Also, it is the development of metacognitive knowledge about the athlete's organic goal-directed self-talk content.

6.2.3 Metacognition

Metacognition is one's ability to monitor, control and evaluate the effectiveness of their thought process (Brick et al., 2020; MacIntyre et al., 2014). Two processes encompass metacognition: metacognitive knowledge and the regulation of cognition. Metacognitive knowledge includes declarative knowledge (e.g., knowing one tends to lose focus during training), procedural knowledge of how specific cognitive strategies may be used (e.g., goal-directed self-talk to enhance performance) and conditional knowledge of when and why to use them (e.g., task demands) (Schraw & Moshman, 1995; Tomporowski et al., 2015). Secondly, self-regulation accompanies metacognitive knowledge in that the declarative, procedural and conditional knowledge gained is used to select a strategy to manage the experienced psychological challenge. Metacognitive knowledge and self-regulation work in partnership with one another, and it is the reflexive self-talk intervention that attempts to develop both these cognitive processes (Brick et al., 2016; Latinjak et al., 2016).

Measuring the development of metacognitive knowledge can be challenging, however previous research has showcased a way (Goudas et al., 2017), which is through mental toughness. Mental toughness measures an individual's resilience and confidence (Clough et al., 2002; Nicholls et al., 2009). Previous research suggests that one's level of belief in one's ability (confidence), ability to control emotions (resilience), and ability to do both with some level of consistency indicates that an individual is mentally tough (Spada et al., 2008). Links between mental toughness and metacognition are evident, as one's confidence derives from declarative, procedural and conditional metacognitive knowledge. In addition, controlling one's emotions is conducted through self-regulation. Therefore, if an athlete can showcase improved confidence and emotional control, levels of metacognitive knowledge can be suggested to have improved.

Exploring how metacognition can be measured is important for the study, as previous research has highlighted the difficulty of measuring the impact of reflexive self-talk interventions (Latinjak et al., 2020). The difficulty in measuring the impact of reflexive self-talk interventions is due to the content of each intervention session being dictated by the athlete's psychological challenge. Therefore, it is difficult for previous research to have a common outcome measure to determine the intervention effects (Latinjak et al., 2020). The consequence of not having a common outcome measure is that the intervention's success (or failure) is challenging to showcase to athletes and other stakeholders. It is believed that the impact of an intervention needs to be measured by concepts that align with the intervention's fundamental aims. As a fundamental aim of a reflexive self-talk intervention is the development of metacognitive knowledge, mental toughness was deemed a viable option to measure the impact of a reflexive self-talk intervention within the present study. The present study attempts to expand the knowledge of a reflexive self-talk intervention by utilising a mixed methods methodology to measure the impact of performance and the mechanisms by which the reflexive self-talk intervention can improve performance, metacognition and self-regulation.

6.2.4 Reflexive Self-talk Intervention Studies

With the current landscape of reflexive self-talk intervention studies, there are opportunities to explore aspects of the intervention and progress the understanding of its application. At the point of writing the study, to the best of the researcher's knowledge, three research papers and one book chapter have been published.

Latinjak et al. (2016) and Latinjak et al. (2018) explored reflexive self-talk interventions, one as a case study and the other within an experimental design. Results from both studies developed the understanding of administering reflexive self-talk interventions, as situations in which the intervention was beneficial (e.g., situations requiring self-regulation) and not beneficial (e.g., small number of intervention sessions) were showcased.

Further exploring previous research, a key paper in the creation of the present study was conducted by Latinjak et al. (2019). The innovative study administered a reflexive self-talk intervention through online resources. Four athletes participated in the study, where an initial intake session, six to twelve intervention sessions, and two post-intervention interviews were conducted. The study's results revealed that athletes' self-awareness of the self-talk they used was raised and refined. In addition, descriptive states and traits, including emotions, motivation and confidence, both inside and outside of the athletes' sporting life, were found to improve due to the intervention.

Previous research included a book chapter detailing an intervention tool and a recommended procedure for its use (Latinjak et al., 2020). The intervention tool is a 25-step board game format which achieves the aims of the reflexive self-talk intervention program through participants identifying a psychological challenge, discussing the situational and contextual factors surrounding the challenge, selecting a psychological skill to affect the challenge positively and discuss potential organic goal-directed self-talk cue words and phrases which could aid in performing the psychological skill. This previous research has informed the creation

of the present study, as it has revealed the different procedures which could be conducted when researching reflexive self-talk interventions. Introducing a reflexive self-talk intervention tool enables a consistent approach to be conducted within intervention sessions, aiding the achievement of the aims of the intervention. Metacognitive knowledge could be developed through repeated use of the intervention tool (Latinjak et al., 2020).

Within the key paper in the creation of the present study (Latinjak et al., 2019), the innovative use of incorporating online resources aligns with the current technology usage of the present day and age. There are 5.18 billion internet users worldwide (Petrosyan, 2023), suggesting that online resources could make the intervention more accessible to a broader audience. In addition, the Latinjak et al. (2019) study was conducted using a longitudinal study format where data collection for a study occurs over a prolonged period. A longitudinal study format mirrors what typically occurs within applied SEP practice, as intervention sessions typically last over a prolonged period. By using this study format, more applicable recommendations can be made for applied SEP practitioners.

Latinjak et al. (2019) study also provides clear and useful information for applied SEP practitioners, enabling the use of a reflexive self-talk intervention program and the intricacies of its implementation to be more accessible to practitioners. In-depth information about an intervention program has not always been showcased, and providing information about an intervention, benefits neophyte practitioners (Martindale & Collins, 2013; Owton et al., 2014). The intricacies of the intervention program were revealed through the practitioners keeping a journal diary, enabling an understanding of the proceedings of the intervention from the practitioners' perspectives to be provided. Lastly, Latinjak et al. (2019) study incorporated a third party to reflect on the intervention's impact on the athlete's performance. As a post-intervention analysis, an individual within the athletes' sporting environment provided details about any meaningful changes they had seen in the athlete. The study by Latinjak et al. (2019) showcases that a journal diary and data collection from multiple sources are useful when evaluating reflexive self-talk interventions, so these were incorporated into the present study.

Opportunities to build on previous research exploring reflexive self-talk interventions presented themselves. One area for progression has been mentioned in attempting to measure the impact of a reflexive self-talk intervention. Another area is utilising a mixed methods research methodology. This methodology has yet to be utilised when investigating reflexive self-talk interventions; however, it is a mixed methods approach that is a typical approach within applied interventions. A mixture of methods are typically used within the initial intake session and the creation and evaluation of the intervention program (Keegan, 2016). For example through the use of observations, questionnaires, interviews and discussions with other stakeholders. By utilising a methodology congruent with applied SEP practice, more applicable recommendations could be provided to applied SEP practitioners from the results of the present study. In addition, a mixed methods approach would strengthen the results found in the effects of the reflexive self-talk intervention program due to complementarity.

Exploring the methods used within previous research reveals that the method of an interview for data collection has typically been utilised (Latinjak et al., 2016). What has yet to be used is a questionnaire. Questionnaire data presents a unique insight into athletes' experiences, especially when multiple athletes are taking part in a study and when the questionnaire is completed at several time points of the intervention program. In addition, a questionnaire is a method that is typically used in combination with other methods within applied SEP practice for the creation and evaluation of an intervention program (Goisbault et al., 2022). A questionnaire could be a method that assesses the impact of the intervention throughout the program.

In addition, previous research has not clearly defined the playing experiences of participants. It may be the case that reflexive self-talk interventions impact athletes differently, depending on whether they are elite or amateur. Exploring the playing experience of participants is warranted, as previous research has highlighted that elite athletes possess more metacognitive knowledge (a key characteristic of the intervention) than amateur athletes (Scharfen et al.,

2019). With these differences evident, it may well be the case that the athletes with more amateur playing experiences may experience more benefit from a reflexive self-talk intervention program in comparison to athletes with more elite playing experiences (Ong & Chua, 2021). A potential reason may be due to amateur athletes potentially experiencing more psychological challenges which the intervention program could aid in their development of metacognitive knowledge and the management of these challenges. Lastly, the 25-step board game (Latinjak et al., 2020) has yet to be utilised within an intervention study, suggesting that the tool's validity and reliability needs to be explored across various athletes of different sports.

6.2.5 The Present Study

The present study explored the effects of a reflexive self-talk intervention program. A longitudinal study format was used for the present study to mirror interventions administered within applied SEP practice. Previous research investigating applied SEP interventions and the need to include the intricacies of the intervention proceedings were considered in the present study. Previous research investigating and administering reflexive self-talk interventions has showcased opportunities for progression which the present study attempted to explore. These were the difficulty in measuring the impact of reflexive self-talk interventions, the lack of mixed methods research conducted when investigating reflexive self-talk interventions, the lack of clarity in defining the elite/amateur playing experiences of participants and the introduction of a reflexive self-talk intervention tool which has yet to be utilised within the delivery of an intervention; suggesting the tool's validity in achieving the aims of the intervention program should be assessed. Exploring these opportunities for further progression answers both the questions of whether the reflexive self-talk intervention works and how did (or did not) the intervention work. The present study adds to the current understanding of the researched topic by building on previous reflexive self-talk intervention studies.

Study aims:

- To investigate the ability of a reflexive self-talk intervention to develop metacognitive knowledge
- To investigate the application of the reflexive self-talk intervention tool in achieving the intervention aims
- To provide a detailed account of the reflexive self-talk intervention program from the participant's and researchers perspective.

6.2 Method

6.2.1 Participants

Participants were recruited through the sampling strategy of non-probability sampling and voluntary response sampling similar to the sampling criteria in Study 1 (Etikan et al., 2016; Murairwa, 2015). Depending on meeting specific sampling criteria, participants were eligible for the study. Sampling criteria for participation in the study was that participants had to (1) be aged 18 and above, (2) be regularly training and competing in a sport setting.

The participants in the present study were eight athletes (7 Males, 1 Female). Participants ages ranged between 18 - 62 years old (M = 43.25, SD = 15.80). Athletes from a range of different sports within the United Kingdom took part in the study. These sports included Football (N = 1), Triathlon (N = 5), Badminton (N = 1) and Table Tennis (N = 1).

6.2.2 Materials

The present study adopted a mixed methods approach (Moran et al., 2011; Sparkes, 2015) to gain a more comprehensive picture of the effects of a reflexive self-talk intervention (RSTI) through triangulation (using multiple methods to seek confirmation), complementarity (clarification of findings), and initiation (deeper insights through multiple methods of data analysis). Both quantitative and qualitative data collection methods were used in the present

study. The materials included questionnaires, a semi-structured interview (#SportPsychMapping), a reflexive self-talk intervention tool, and a researcher's journal diary.

6.2.3 Questionnaires

A questionnaire was used to gain the quantitative data for the present study. The questionnaires selected for the study were selected based on understanding the study's aims, previous research (Latinjak et al., 2019; Sheard, 2009), discussions with PhD supervisors, the researcher's professional judgement and understanding how questionnaires are utilised within applied SEP practice, aligning with the applied nature of the present study. The questionnaires were used to gain information on participants' playing experiences. In addition, questionnaires were used to gain information on levels of mental toughness throughout the entire intervention program.

The value of Cronbach Alpha scores was used to measure internal consistency for the mental toughness questionnaire used. Internal consistency is the extent to which all the items in a test measure the same concept or construct. There are different reports on the acceptable values of alpha, however scores closer to 0.95 indicate high internal consistency (Tavakol & Dennick, 2011).

Elite/Amateur Playing Experience. A 5-item model was used to classify all participant's playing experiences for the present study (Swann et al., 2015). The model had a 4-point Likert scale (1 = semi-elite sporting experiences to 4 = world-class elite sporting experiences) and five questions. These five questions were (A) athlete's highest standard of performance, (B) success at the athlete's highest level, (C) experience at the athlete's highest level, (D) competitiveness of sport in athlete's country and (E) global competitiveness of sport. High scores represented more elite athlete playing experiences, and lower scores represented more amateur athlete

playing experiences. Participants playing experiences were classified utilising the following equation:

Eliteness/expertise of athletic sample = [(A+B+C/2) /3] X [(D+E) /2]
Classification: 1 - 4 = Semi elite; 4 - 8 = Competitive elite; 8 - 12 = Successful elite; 12 - 16 = World class elite

Semi-elite represented athletes training and competing regularly at a level below the top standard within their sport (local/regional level). Competitive elite represented athletes who regularly competed at the top standard nationally within their sport but had infrequent success at that level. Successful elite represented athletes who regularly competed at the top standard within their sport and succeeded at that level. World class elite represented athletes with sustained success at the highest level of their sport, with repeated wins over a prolonged period within world sporting events (e.g., Olympics) (Swann et al., 2015). The questionnaire can be found in Appendix 7.

Mental Toughness. The sport mental toughness questionnaire (SMTQ) is a 14-item questionnaire to explore athletes' mental toughness levels (Sheard et al., 2009). Participants responded to items on a four-point Likert scale ranging from 1 (not at all true) to 4 (very true). The 14 items explore confidence, constancy and control, which combine to reveal the athlete's mental toughness levels. Confidence is an athlete's belief in their abilities to produce the desired outcome. Constancy reflects determination, responsibility and a consistent attitude. Lastly, control reflects the participant's perception that they can bring about the desired outcomes with particular reference to controlling their emotions. Example items include "I interpret threats as positive opportunities" (confidence), "I give up in difficult situations" (constancy) and "I am overcome by self-doubt" (control). Within previous research, the value of Cronbach alpha showed acceptable internal consistency for each of the three sub-dimensions, confidence = .80, constancy = .74, and control = .71 (Kristjánsdóttir et al., 2018; Sheard et al., 2009). The questionnaire can be found in Appendix 4.

#SportPsychMapping. #SportPsychMapping is an exploratory interview framework specific to the field of sport and exercise psychology (Latinjak et al., 2021). The exercise aims to reveal participants' sporting experiences and the external factors, personal descriptors and psychological skills they perceive to encompass their experiences (see figure 6.1). #SportPsychMapping is a collaborative process between the researcher and the participant, as questions are posed by the researcher and answered solely by the participant (questions found in Appendix 2). The #SportPsychMapping interview consists of three parts.

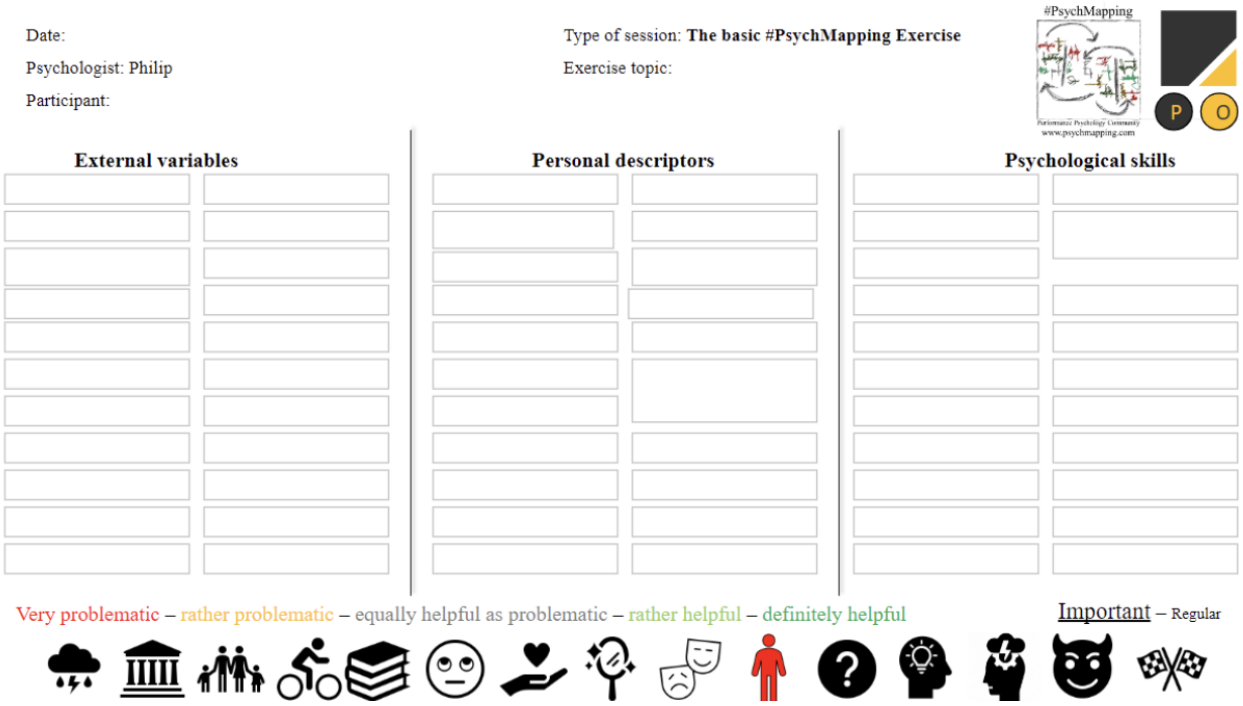


Figure 6.1. The #SportPsychMapping worksheet

Firstly, the participant and the researcher set the topic for the exercise (e.g., to explore performance in competition). Once confirmed, all questions within the interview would be based on the desired topic. In the main part of the exercise, 13 questions were answered by the participant. Questions are divided into three clusters: external factors (e.g., what are three

things about your club/organisation that you believe are relevant to [the exercise topic]), descriptive states and traits (e.g., what three aspects of yourself differentiate you from others in your sport which you believe to be relevant to [the exercise topic]) and psychological skills (e.g., what three mental skills do you believe you need to improve and that are most relevant to [the exercise topic]). With each answer, a key word from that answer was agreed upon by the researcher and the participant, and the key word was placed on the #SportPsych summary map (Figure 6.1). Once all questions were asked, participants were given the map, and they had the chance to add or remove entries that had been placed on the map.

In the last part of the #SportPsychMapping interview, the participant rates each entry on the map, rating their current beliefs and abilities of how each concept on the map impacts the agreed exercise topic. A 5-point colour code rating system was used for the interview. Red represents "very problematic", amber represents "rather problematic", grey represents "equally helpful as problematic", light green represents "rather helpful", and dark green represents "definitely helpful". Next the participant underlines, or increases the font size of concepts on the map that they believe are more relevant than others. It was very important that the participant felt that the map created represents their perception of their sporting experience and not the researcher's perceptions. Therefore, the researcher conducts a summary of the interview and the entries placed on the map, with the final question asking the participant if there are any last aspects of the map they would like to discuss.

A #SportPsychMapping interview was conducted at four-time points within the present study. These time points were pre, mid, post and follow-up from the RSTI intervention program. During the mid, post and follow-up #SportPsychMapping interviews, participants could evaluate their progression within the intervention program and adjust the entries on their map to reflect their current sporting experiences.

6.2.4 Reflexive Self-talk Intervention Program

The reflexive self-talk intervention was administered by the researcher (thesis author). The previous applied SEP experiences of the researcher involved undergoing certification as a mental performance consultant (CMPC Candidate). Undergoing this certification enabled the researcher to gain experiences developing rapport, using counselling skills and administering interventions to athletes of various ages, sports and experience levels. These experiences helped in implementing the reflexive self-talk intervention program that was conducted in the present study.

Within the contexts of the study, a reflexive self-talk intervention program was deemed successful if (1) the reflexive self-talk intervention aims were achieved, (2) the rating of concepts deemed important on athlete's #SportPsychMap improved from pre-intervention and (3) if the athlete was able to use the developed psychological techniques or skills without the assistance of the researcher (Latinjak et al., 2020).

Reflexive Self-talk Intervention Sessions. The reflexive self-talk intervention sessions consisted of working with the athlete to progress through the reflexive self-talk intervention (RSTI) tool. The RSTI tool is a 25-step board game format which enables participants to identify a psychological challenge, discuss the situational and contextual factors surrounding the challenge, select a psychological skill to positively affect the challenge and discuss potential goal-directed self-talk words and phrases which could aid in performing the psychological skill. The Intervention tool consists of eight phrases (see Figure 6.2).

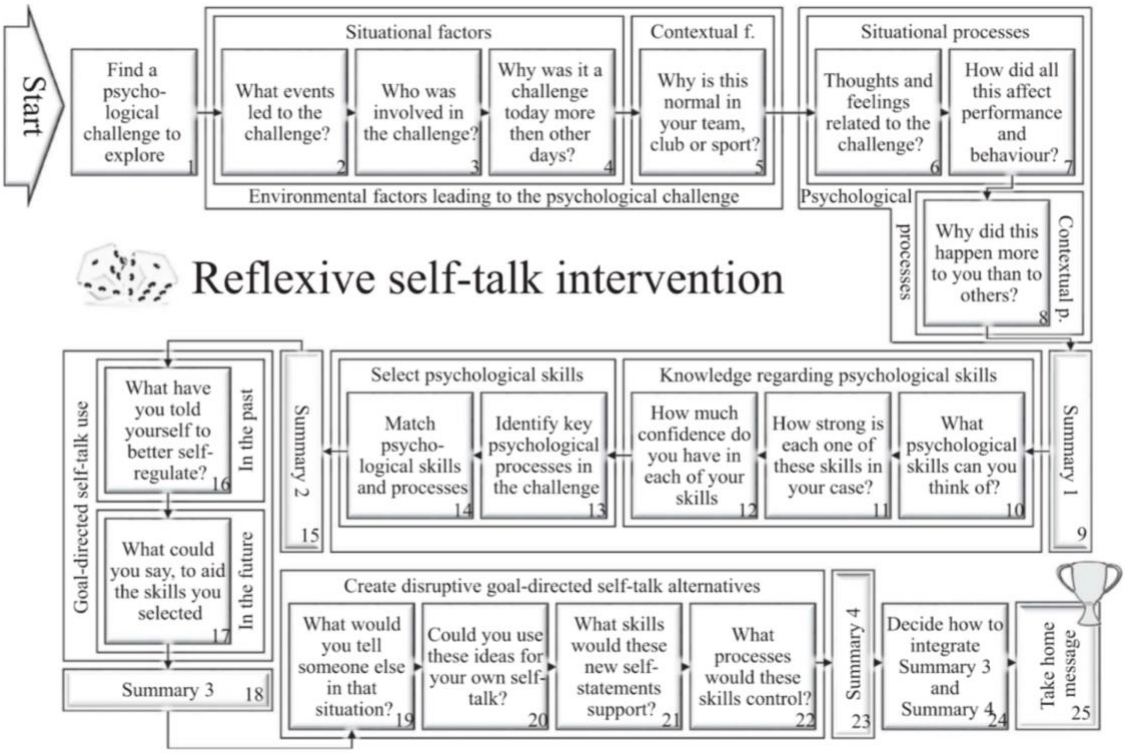


Figure 6.2. 25-Step board game reflexive self-talk intervention tool

Phase 1 (question 1) identifies a challenging situation the participant has experienced and would like to explore (e.g., feeling pressure due to crowd noise). Phase 2 consists of analysing the situation and context in which the challenge occurs (steps 2-5). Once completed, a summary of the information gained so far is assembled. Phase 3 focuses on the descriptive states and traits related to the challenge (steps 6-8). Phase 4 entails the participant exploring psychological skills (steps 10-12). The participant creates a list of skills that come to mind and rates those skills in terms of their strength and reliability in using them. Phase 5 focuses on the participant discussing the ideal psychological skills which could positively impact the discussed challenge (steps 12 - 14). Once complete, a summary of phases 3 - 5 is assembled. Phase 6 introduces the use of goal-directed self-talk. Potential words and phrases the participant could say to help them perform the chosen psychological skill are discussed. Once complete, a summary of the potential use of goal-directed self-talk is produced. Phase 7 focuses on changing the participant's perception to explore other goal-directed self-talk words and phrases

that could aid in the discussed challenge (steps 19-23). A summary of the discussion is produced if the discussion produces new goal-directed self-talk phrases. Lastly, phase 8 (steps 24 and 25) involves creating a takeaway message card, in which all the summaries are collated, and the participant has the opportunity to alter any aspects of the information gained. Once the summary is complete, the participant can take the takeaway message card from the session and review its contents whenever they see fit (information on the intervention tool format is found in Appendix 3).

Reflexive Self-talk Intervention Schedule. The materials and procedure of the reflexive self-talk intervention followed the protocol described in previous research (Latinjak et al., 2020). A minimum of four intervention sessions were planned, however a maximum number of sessions was not planned. Only confirming a minimum session amount occurred due to the present study's longitudinal format and due to various athletes of different sports and at different time points within their competitive season participating in the study. The maximum number of RSTI sessions was agreed upon on a case-by-case basis, and the number of planned sessions ranged between 4 - 9 RSTI sessions.

At the start of the RSTI intervention (all sessions before the midpoint of the RSTI program), the approach conducted within intervention sessions was that the researcher led in asking the questions on the RSTI board game. By doing so, the participant understood how to use the intervention tool. As the intervention program progressed (sessions after the midpoint of the RSTI program), transference of ownership occurred, where the participant progressed to adopt the leadership position within the intervention tool (Longstaff & Gervis, 2016). In practice, participants adopting the leadership position entailed the researcher first encouraging the participant to read questions on the board game. Tasks then progressed to asking participants to complete several steps autonomously. As the intervention program progressed, the participants started reading all the board game questions, rephrasing them and skipping questions they deemed unnecessary in the discussed challenge.

6.2.5 Reflection

After completing the RSTI program, the post and follow-up #SportPsychMapping interviews were the time points allocated for each participant to reflect on the intervention. An example question was, "Are there any entries which have been impacted more than others due to the reflexive self-talk intervention?" Participants were able to review the intervention overall and the tool specifically, evaluating what aspects of the intervention program helped or hindered their progression through the program (all questions can be found in Appendix 2).

The researcher kept a reflective journal detailing the researcher's perception of the intervention program. Reflexive journaling is a technique used to describe the researcher's experiences, reactions to situations and reflection on the research process (Barry & O'Callaghan, 2009). Reflexive journaling has often been used in sport and exercise psychology (Schinke et al., 2012). The benefits of utilising a reflexive journal include its ability to gain a deeper understanding of the progression an individual makes and to aid others when providing recommendations (Knowles et al., 2023). Reflexive journaling was conducted through a journal entry consisting of 200-500 words, which was completed by the researcher at the end of each session for each participant. The guidelines involved in completing a journal entry involved highlighting the researcher's experiences within the session, the initial reaction to the experience and how the experience either positively or negatively impacted the session.

6.2.6 Procedure

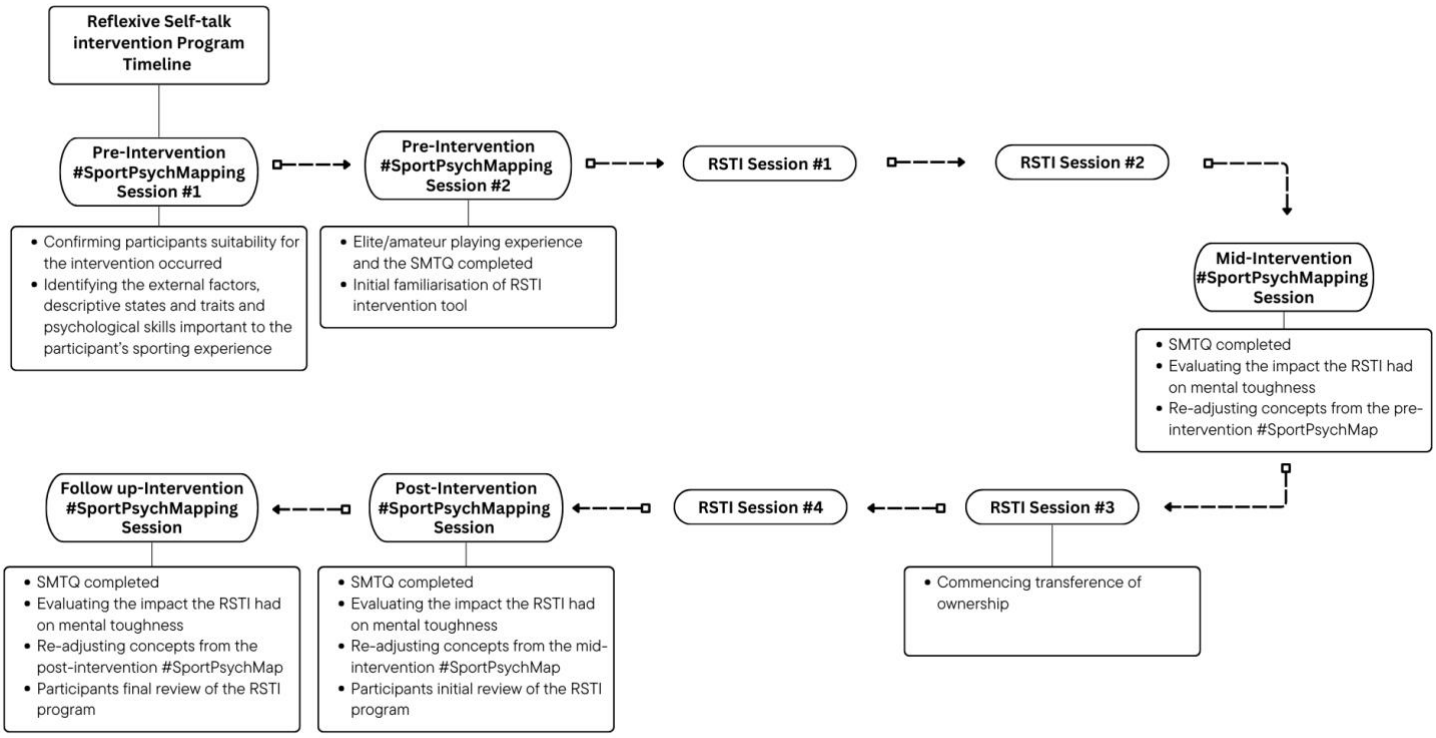


Figure 6.3. A timeline of the reflexive self-talk intervention program

Ethical approval for the current study was gained through the University of Suffolk Research Committee (RETH20/039). Potential participants who met the sampling criteria were informed about the present study. Once they had read, signed and returned the informed consent form, data collection began (see Figure 6.3).

Firstly, the pre-intervention #SportPsychMapping interview was conducted. The purpose of the session was that of a needs analysis session, as the exploration of participants' sporting experiences and confirming their suitability for the intervention occurred. In addition, the pre-intervention #SportPsychMapping interview identified the external factors, descriptive states and traits and psychological skills which would be evaluated throughout the intervention

program, as a measurement of the impact of the reflexive self-talk intervention on the athletes' sporting experience. Next, a second pre-intervention session occurred. The participant completed the elite/amateur playing experience (Swann et al., 2015) and the SMTQ (Sheard et al., 2009). They were then introduced to the reflexive self-talk intervention tool and given time to familiarise themselves with the board game.

The RSTI sessions were then conducted. Due to participants of different sports and playing experiences taking part at different time points of their season, a varied amount of intervention sessions were completed. The planned sessions ranged between 4 - 9 intervention sessions and occurred every 7 to 14 days. At the mid-way point of the intervention (approximately 6-8 weeks after pre-intervention), the SMTQ was completed, and a mid-intervention #SportPsychMapping interview was conducted. The interview served the purpose of evaluating the impact the RSTI had on mental toughness and the concepts which were placed and rated on the pre-intervention #SportPsychMap. Participants could add or take away entries on the map and change the colour rating of any concept on the map, thus generating an updated version of their #SportPsychMap.

RSTI sessions continued after the mid-intervention #SportPsychMapping interview. When the last RSTI session was completed (approximately 6-8 weeks after mid-intervention), the SMTQ and a post-intervention #SportPsychMapping interview were conducted. What occurred was the same process as the mid-point interview. Changes in mental toughness scores and concepts on the #SportPsychMap were explored now that additional RSTI sessions had been completed, and transference of ownership had been conducted. Lastly, the SMTQ was completed, and a follow-up intervention #SportPsychMapping interview was conducted approximately 12 weeks after post-intervention. The same process as the mid and post #SportPsychMapping interview was followed, exploring whether the colour ratings on the map were sustained/improved/diminished over time. In addition, time was allocated in both the post and follow-up intervention #SportPsychMapping interview for the participant to evaluate the RSTI program overall and specific aspects of the intervention sessions.

6.2.7 Data Analysis

Data analysis within the study was conducted through a mixed methods research methodological approach. Similar to the data collection methods of the study, both a quantitative analysis method and a qualitative analysis method of data analysis were utilised. Subsequently, both analysed data sets were synthesised within the discussion section.

Mental Toughness. The quantitative data collected (questionnaires) was analysed using the statistical package for social science (SPSS). Descriptive statistics were produced, providing a statistical summary of the data gained in the study. The data was gained from the SMTQ at the four time points: pre, mid, post, and follow-up intervention. By doing so, the changes in levels of mental toughness throughout the reflexive self-talk intervention program could be showcased.

#SportPsychMapping Interview. The completed #SportPsychMap for each time point (pre, mid, post, follow-up) was also analysed. The completed #SportPsychMaps were analysed by evaluating the colour rating assigned to each concept on the map across the four-time points. Maps were compared with regard to whether concepts on the map were rated more positively (very problematic to rather helpful) or negatively (very helpful to rather problematic) as the intervention program progressed. In addition, maps were compared to explore whether concepts on the map were added or taken away at different time points of the intervention. #SportPsychMapping was therefore utilised as a measure to assess the effectiveness of the RSTI program.

The #SportPsychMapping data was illustrated through a table showcasing concepts identified and explored in each participant #SportPsychMap. These were divided into four categories:

(1) concepts rated as light green/dark green (rather/very helpful) within the pre-intervention #SportPsychMapping interview and remained the same colour during the course of the RSTI.
(2) Concepts on the map which were colour-rated as red/amber (very/rather problematic) within the pre-intervention #SportPsychMapping interview and improved during the course of the RSTI.
(3) Concepts that were colour-rated red/amber (very/rather problematic) within the pre-intervention #SportPsychMapping interview and remained these colours during the course of the RSTI.
(4) Concepts which were rated dark/light green (very/rather helpful) and decreased during the course of the RSTI.

RSTI Session Evaluation. An expert within the field of sport and exercise psychology, independent to the researcher and PhD supervisors, reviewed the reflexive self-talk intervention sessions to evaluate the changes in these sessions as the intervention program progressed. Evaluation of these changes involved the expert providing a count of the number of questions asked by the researcher to aid the participant in progressing through the RSTI board game within the first and last RSTI sessions. An expert, independent of the study evaluating the RSTI sessions aligns with the mixed methods methodology adopted for the study, exemplifying the use of triangulation and complementarity to evaluate the application of a RSTI program (Doyle et al., 2009). It was theorised that if the researcher asked fewer questions as the intervention program progressed, it would provide an indication that the participant took more ownership over the RSTI sessions and that the intervention program progressed from a researcher-led to an athlete-led approach. This progression aligns with the aims of the reflexive self-talk intervention, to enable the athlete to build metacognitive knowledge and attempt to solve performance challenges (Latinjak et al., 2020). In addition, this progression aligns with previous research highlighting the benefits of progressing to an athlete-led approach when attempting to resolve issues (Tod et al., 2023).

Interpretive Phenomenological Analysis. Lastly, the discussion during the #SportPsychMapping interview was analysed using an interpretive phenomenological analysis (IPA). An IPA is a qualitative analysis method that places meaning as a central focus, aiming to try to understand the content and complexity of the data set (Smith & Osborn, 2007). An IPA involved the researcher engaging in an interpretative relationship with the interview transcripts. #SportPsychMapping aligned with an IPA, as the context, personal meanings and changes in participants' sporting experience could be highlighted. The rationale and justification for selecting an IPA and the benefits this method presents to the study were provided in Chapter 4.

An IPA was performed first through multiple readings of the interview transcript and comments were made on the similarities and differences, echoes, amplifications and contradictions in what a participant said. Next, initial notes were transformed into concise phrases which captured the essential quality of what was found in the transcribed text. Afterwards, the themes generated from the initial notes were listed, and the researcher looked for connections between them. Themes were checked in the transcript to ensure the connections worked for the primary source material – the actual words of the participant. In addition, themes were cross-checked against alternative explanations, and at this stage, themes were excluded if they did not align with the emerging structure or lacked a strong evidential basis. Next a table of the themes was collated which represented the subordinate themes. Subordinate themes were subsequently clustered into themes which captured most strongly the researched individuals perspective of their lived experience and any changes which had occurred during the intervention program. These clusters of subordinate themes were named and represented the superordinate themes.

The information gained from participants' reflections on the intervention program was analysed through an IPA. Each participant was analysed separately, and then convergence and divergence between participants were explored. An IPA was also conducted on the data gained

from the researcher's reflection. Therefore, two IPAs were performed within the present study's data set.

6.2.8 Judgement Criteria

A specific judgement criteria for the quantitative and qualitative components of the research data were employed separately for the study. Justification and the rationale behind the judgement criteria used were discussed in Chapter 4. The judgement criteria used for the quantitative component of the research data aimed to highlight the reliability of each method used. The judgement criteria included internal consistency and were measured through Cronbach Alpha scores revealing adequate scores for the SMTQ (Tavakol & Dennick, 2011).

The judgement criteria for the qualitative data followed the guidelines of trustworthiness described by Patton (2002), Poczwardowski et al. (2014) and Sparkes (1998). The judgement criteria included the researcher undergoing training in conducting #SportPsychMapping and reflexive self-talk intervention sessions. Furthermore, the process of member checking occurred. At the end of each #SportPsychMapping interview and reflexive self-talk intervention session, a summary of the discussion was produced, and the participant had the opportunity to confirm or deny that the interview accurately depicted their sporting experience. If they denied the summary's accuracy, participants had the opportunity to discuss and clarify any points made further.

The #SportPsychMapping interviews were transcribed verbatim by the researcher, and the transcripts were compared against the recordings to eliminate any transcription omissions or errors. Lastly, triangulation occurred through the use of multiple data collection methods at multiple time points and the use of multiple data analysis methods. Complementarity also occurred, as the categories generated in the IPA were audited, with rival explanations and

negative themes explored before confirming the results found. Complementarity could be seen in the stage of the IPA where emergent themes were evaluated and connected.

6.3 Results

The results section provides a detailed account of the implementation of the reflexive self-talk intervention and its impact on the eight participants. First, descriptive statistics are provided detailing the total scores of participants sport mental toughness questionnaire (SMTQ). Afterwards, a profile of each participant is provided, detailing their reflexive self-talk intervention (RSTI) program and the #SportPsychMapping data, answering the question of whether the RSTI program worked. Lastly, the results of the IPA conducted on the reflection of the intervention program are provided both from the participants and the researcher's perspective. The IPA answers the question of why did/did not the RSTI work.

6.3.1 Descriptive Statistics

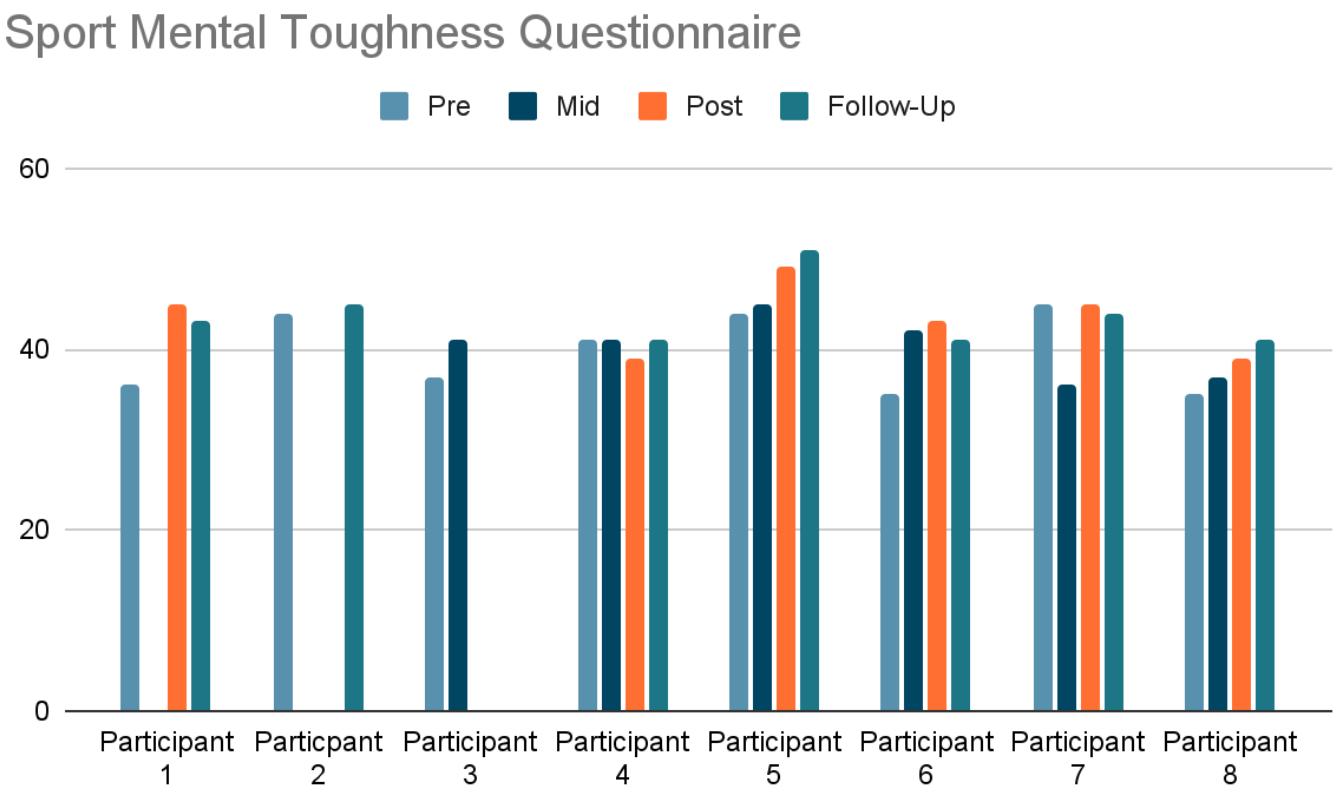


Figure 6.4: Total Scores of the SMTQ for pre, mid, post and follow-up intervention

The SMTQ was planned for all participants to complete at four time points (pre, mid, post, follow-up) within the RSTI program. Participants 4, 5, 6, 7 and 8 completed the SMTQ at all four timepoints and participants 1, 2 and 3 did not (seen in Figure 6.4). Reasons as to why some participants did not complete the SMTQ at all time points are provided in each participant's profile. Adhering to the entirety of a longitudinal study was a challenge for participants 1, 2 and 3, therefore, time points where the questionnaire was not completed is evident. Nonetheless, what can also be seen is that participants 1, 5, 6, and 8 SMTQ scores improved from their pre-intervention scores. Improved SMTQ scores suggest that the reflexive self-talk intervention can impact levels of mental toughness through either maintaining these levels or through improving

these levels. Further exploration into the ways in which mental toughness may have been impacted during the RSTI for each participant is explored in each participant's profile.

6.3.2 Participant Profile

Each participant profile details the experiences of each participant within their RSTI program. The sub-dimensions of each participant's SMTQ scores are first provided, showcasing in more detail the aspects of mental toughness which did or did not improve during the RSTI program. Afterwards, the data gained from the participant's #SportPsychMapping interview sessions at the four time points are revealed. The concepts on their map that fit into the four concept categories are provided. Lastly, each participant's profile concludes with exploration into specific concepts on their map. Due to the high number of concepts placed on each participants #SportPsychMap, only the concepts which the athlete deemed most important and wished to improve during the RSTI program are explored further within their participant profile. The participants in the RSTI program had the freedom to choose as many concepts on their map that they deemed important and wanted to improve upon.

Participant 1 - Emotion Regulation Development

Participant 1 was a 56 year old female triathlete and was classified as possessing semi-elite playing experience levels (2.33). Four RSTI sessions were planned and completed for the participant in the RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 14 and the number of questions asked in RSTI session four was 7.

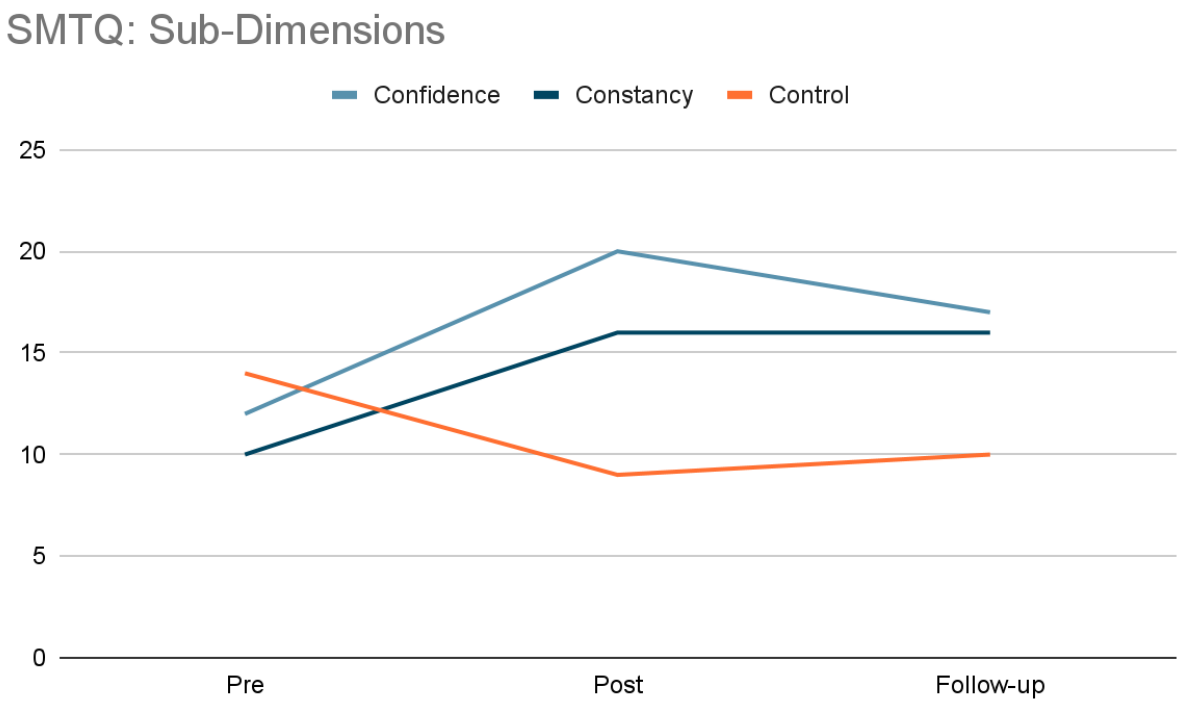


Figure 6.5: Participant 1 SMTQ Sub-Dimensions

Mental Toughness. Participant 1 completed the SMTQ and the #SportPsychMapping interview session at the pre, post and follow-up time points. A midpoint #SportpsychMapping session was not completed due to the time point of the participant's competitive season. Total scores within the SMTQ showcased that levels of mental toughness improved from pre-post intervention and decreased slightly during the follow-up intervention time point (seen in figure 6.4). Improvement of mental toughness is also showcased in the sub-dimensions of the SMTQ (seen in figure 6.5). The graph reveals that constancy and confidence were the two sub-dimensions of mental toughness which improved during the RSTI program.

#SportPsychMapping. Evaluating the three #SportPsychMapping interviews completed, a total of 37 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In

addition, the impact the reflexive self-talk intervention program had on the participant at three different time points was also revealed. Of those 37 concepts placed on the summary map, there were 8 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.1). There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. The concept was emotion regulation.

Table 6.1

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Running with friends (EF)	Envious (DST)	Self-compassion (PS)	
Persistence (PS)	Self-efficacy (PD)	Work (EF)	
Self-image (DST)	***Emotion regulation (PS)***		

*Note: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to improve through the RSTI program.*

Emotion regulation was a psychological skill which was identified in the pre-intervention #SportPsychMapping summary map. Emotion regulation was identified as a psychological skill which the participant wanted to develop and was colour rated as red, very problematic:

> *"I think to be honest, psychologically I'm a bit weak. I think that sounds awful, but weak. Not very resilient. I would say poor self-regulation in terms of emotions, poor emotional regulation…emotion regulation, god, that's awfully problematic. Yeah, I really need to get better at that."*

As the reflexive self-talk intervention progressed, emotion regulation was discussed in the post-intervention #SportPsychMapping session. Emotion regulation was rated as amber, rather problematic at the post-intervention time point. The participant mentioned how improvement

in this psychological skill had occurred, highlighting a positive sporting example where emotion regulation was used. Although improvement was mentioned, she believed that more time and effort was needed for this psychological skill to develop to a satisfactory level:

> *"So the emotional regulation I worked really hard on was with my run. And you know, whenever I started to feel a bit panicky because somebody was overtaking me or because I was feeling a bit nauseous, I stayed in the moment and that has massively changed (positively)... I definitely think emotional regulation is still something (to work on). It's a massive work in progress, but I definitely have it. It's still probably the most significant factor."*

Within the follow-up intervention #SportPsychMapping session, emotion regulation was again discussed. At this time point emotion regulation was rated as grey, equally helpful as problematic. The participant highlighted further improvement in this psychological skill and the control they had over their emotions:

> *"This is a grey now, it's getting there. I think it's because I'm not wearing my heart on my sleeve so much (not always showing emotions uncontrollably)"*

Participant 2 - Concentration When Stamina is Low

Participant 2 was a 54 year old male triathlete and was classified as possessing competitive elite playing experience levels (4.66). Four RSTI sessions were planned and three RSTI sessions were completed for the participants RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 13 and the number of

questions asked in RSTI session three was 6.

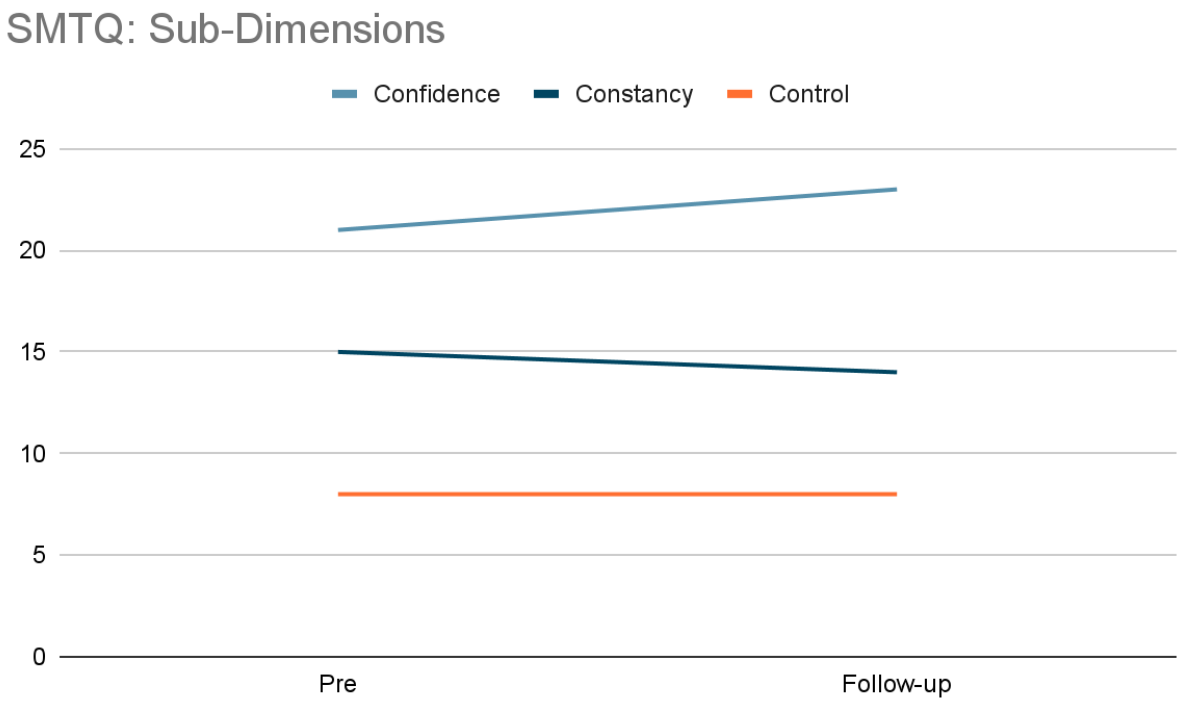


Figure 6.6: Participant 2 SMTQ Sub-Dimensions

Mental Toughness. Participant 2 completed the SMTQ and the #SportPsychMapping interview session at the pre and follow-up time points. A midpoint and a post #SportpsychMapping session was not completed. Participant 2 missed #SportPsychMapping sessions and 1 RSTI session due to life and family circumstances impeding his adherence to the program. Total scores within the SMTQ showcased that levels of mental toughness stayed the same from pre to follow-up intervention (seen in figure 6.4) and these results were also showcased in the sub-dimensions of the SMTQ (seen in figure 6.6).

#SportPsychMapping. Evaluating the two #SportPsychMapping interviews conducted, a total of 36 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In

addition, the impact the reflexive self-talk intervention had on the participant's performance at two different time points was also revealed. Of those 36 concepts placed on the summary map, there were 7 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.2). There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI program. This was concentration.

Table 6.2

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Self-talk (PS)	***Concentration (PS)***	Mental fatigue (DST)	
Managing challenges (PS)	Intimidation (DST)	Knee injury (DST)	
Self-belief (DST)			

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to be improved through the RSTI program.*

Concentration was a psychological skill which was identified in the pre-intervention #SportPsychMapping summary map. Concentration was identified as a psychological skill which the participant wanted to develop and was colour rated as red, very problematic:

> *"I would most likely like to see what I could gain whilst of course helping with your research, what I could gain out of it in terms of keeping myself focused and keep going*

> *forwards… most of the time there will be times on the bike where I'll think "okay where did I go (mentally) I'm only doing 175 Watts I should be doing 200, where did that go" and to bring it back to that effort level"*

Within the follow-up intervention #SportPsychMapping session, concentration was again discussed. At this time point concentration was rated as light green, rather helpful. The participant highlighted that the reflexive self-talk intervention aided in giving him a variety of psychological techniques which could aid his concentration abilities. This was evident in his recent training sessions:

> *"from the turbo (indoor) sessions, going back into a solid hard block of training, which started about the same time as we started this (intervention program), with the tools that I've got, I'm much more focused in my efforts. I'm not drifting off. I'm holding the power. I'm reaching into my bag to pull out the tools (psychological techniques) to keep me focused and stay there. So I think that I can put concentration green too."*

Participant 3 - Small but Monumental Improvements

Participant 3 was a 51 year old male triathlete and was classified as possessing competitive elite playing experience levels (4.66). Four RSTI sessions were planned and four were completed for the participant's RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 15 and the number of questions asked in RSTI session four was 2.

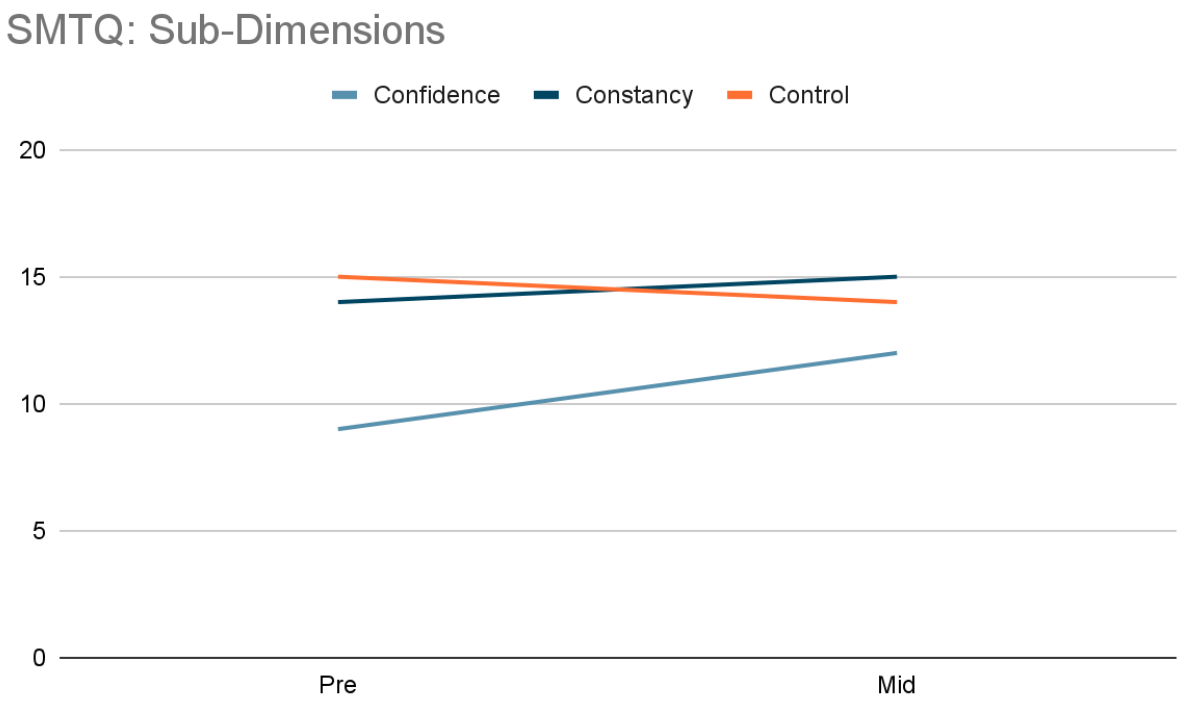


Figure 6.7: Participant 3 SMTQ Sub-Dimensions

Mental Toughness. Participant 3 completed the SMTQ and the #SportPsychMapping interview session at the pre and mid-intervention time points. A post and a follow-up #SportpsychMapping session was not completed due to the time point of the participant's competitive season restricting his availability. Total Scores within the SMTQ showcased that levels of mental toughness improved slightly from pre-mid intervention (seen in figure 6.4). Within the sub-dimensions of the SMTQ, the improvement was due to levels of confidence slightly improving (seen in figure 6.7).

#SportPsychMapping. Evaluating the two #SportPsychMapping interviews conducted, a total of 19 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant's performance at

two different time points was also revealed. Of those 19 concepts placed on the summary map, there were 6 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.3).

Table 6.3

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Perseverance (DST)	Self-critical (PD)	***Negative self-talk (DST)***	
Goal-setting (PS)		Self-belief (DST)	
Coach's support (EF)			

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to improve through the RSTI program.*

There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. Negative self-talk was identified and was rated as red, very problematic within the pre-intervention #SportPsychMapping Interview:

> *"I seem to have this thing where I do all the training and I can push through the swim, the bike but as soon as it gets difficult on the run, that little monkey jumps on my shoulder goes into my head and once he's there he just will not stop, he's just telling me how bad I am. Obviously it's me telling myself but it's just negative negative negative*

and it's just that little monkey on my shoulder and keeps telling me about how rubbish I am and unfortunately with running I can't get rid of that and so I'll start walking on the run and I really shouldn't be doing that because I don't normally do that in training, but it's just that psychological thing, It's definitely not a fitness thing it's definitely a psychological thing and it's always on the run and that's my biggest downfall I feel"

As the reflexive self-talk intervention progressed, negative self-talk was discussed in the mid-intervention #SportPsychMapping session. Negative self-talk at this time point was rated as amber, rather problematic. The participant mentioned how their ability to manage negative self-talk had improved and even though only one colour progression had occurred, the participant perceived this progression as a big improvement:

"negative self-talk at this moment in time again I think the negative self-talk could come up, it could go to an Amber…I know that it is a small progression and maybe it is because it's just one colour, but to me that's a huge progression just from how I felt (previously). I mean obviously it's gone up so even though there's one colour, that for me is a huge thing"

Participant 4 - Negative Self-talk Developments

Participant 4 was a 47 year old male triathlete and was classified as possessing semi-elite playing experience levels (3.66). Four RSTI sessions were planned and four were completed for the participant's RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 11 and the number of questions asked in RSTI session four was 4.

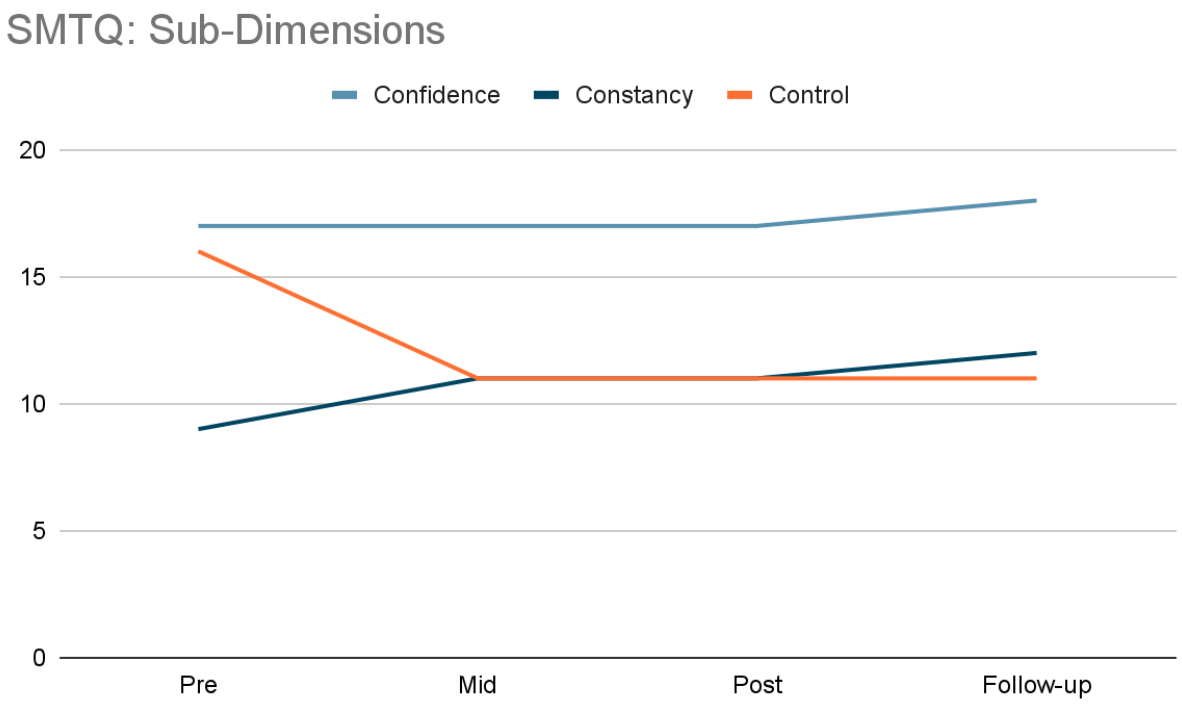


Figure 6.8: Participant 4 SMTQ Sub-Dimensions

Mental Toughness. Participant 4 completed the SMTQ and the #SportPsychMapping interview session at all four intervention timepoints (pre, mid, post, follow-up). Total scores within the SMTQ showcased that levels of mental toughness stayed relatively the same across the RSTI (seen in figure 6.4). The sub-dimensions of the SMTQ also showcased the consistency in results across four time points (seen in figure 6.8).

#SportPsychMapping. Evaluating the four #SportPsychMapping interviews conducted, a total of 36 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant's performance at four different time points was also revealed. Of those 36 concepts placed on the summary map,

there were 6 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.4).

Table 6.4

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Preparation (PS)	***Negative self-talk (DST)***	Self-worth (DST)	
Family support (EF)	Goal-setting (PS)		
	Self-reflection (PS)		

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to be improved through the RSTI program.*

There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. The concept was negative self-talk and was rated as red, very problematic within the pre-intervention #SportPsychMapping Interview:

> *"so I think the most detrimental thing is definitely that negative self-talk so that monkey going "this hurts" so for the FTP test (Functional threshold power) I've never done well, I hate them, it's you alone slogging away you've got this number that you want to chase but it's really hard and I can see that my heart rate, I can go harder and I've gone harder than that (previously), but my legs feel really hard and it's just getting into my head and I*

really can't shake that (negative self-talk). I don't have the tool to go "go away", "we can do this" I think that's definitely a big big thing because that negative self-talk hurts"

As the reflexive self-talk intervention progressed, negative self-talk was discussed in the mid-intervention #SportPsychMapping session. Negative self-talk at this time point was rated as amber, rather problematic. The participant mentioned how improvements in his negative self-talk have occurred and the RSTI session helped him to better manage negative self-talk in a recent performance. In addition to the positive situation, further improvements in negative self-talk were still desired by the participant:

"so negative self-talk, I'm still working on but there has been an improvement. I went out and did that 10K (race) and I went out there with a plan and it definitely silenced some of that (negative self-talk). Yeah so in terms of a performance on a race day that has definitely improved. I still find it hard on training days when you're sat there and you know you got to hit it but I definitely feel like it has improved and so I think it should be at maybe an orange but still definitely it is there"

As the reflexive self-talk intervention ended, negative self-talk was discussed in the post-intervention #SportPsychMapping session. The concept was rated light green, rather helpful. The participant highlighted the improvement in this area, as the RSTI sessions had increased the likelihood of him using goal-directed self-talk when faced with performance challenges, instead of generating negative self-talk:

"With the psychological tools work we did based around the 10k run and when completing tough sessions and getting out to go swimming, I've started to kick in and use it (goal-directed self-talk) to find different visual and benchmarking techniques (goal-setting) to good effect."

Lastly, within the follow-up #SportPsychMapping session, negative self-talk was discussed and this was rated an amber, rather problematic. This rating was given due to a recent performance which did not go according to the participant's plan. When met with several challenges, he did

not use the psychological skills developed within the RSTI sessions and felt like this negatively impacted his performance. This revealed his current ability levels of using goal-directed self-talk and psychological skills in various performance situations, as well as his level of self-awareness in finding positives in sporting situations:

> *"I have probably wavered more in the past couple of weeks having been to the world championships. The race didn't go to plan in terms of expected time delivery. I had planned to use the psychological tools (goal-directed self-talk) and I never committed the headspace to it pre-race… On the Bike I had a lapse, chasing the wrong priority and crashed. But I remained calm, processed what I needed to do, fixed me and the bike roadside and went through a process to be safe and not quit. On the run, I let it get in my head that the toilets were 8 km apart, (bad stomach leading into the race) so I lost a load of time. I recall I struggled to clear my head that I had lost time, but I still finished the race and did not quit"*

Participant 5 - Self-belief Deriving from Preparation

Participant 5 was a 29 year old male triathlete and was classified as possessing competitive elite playing experience levels (5.00). Four RSTI sessions were planned and completed for the participant's RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 6 and the number of questions asked in RSTI session four was 0.

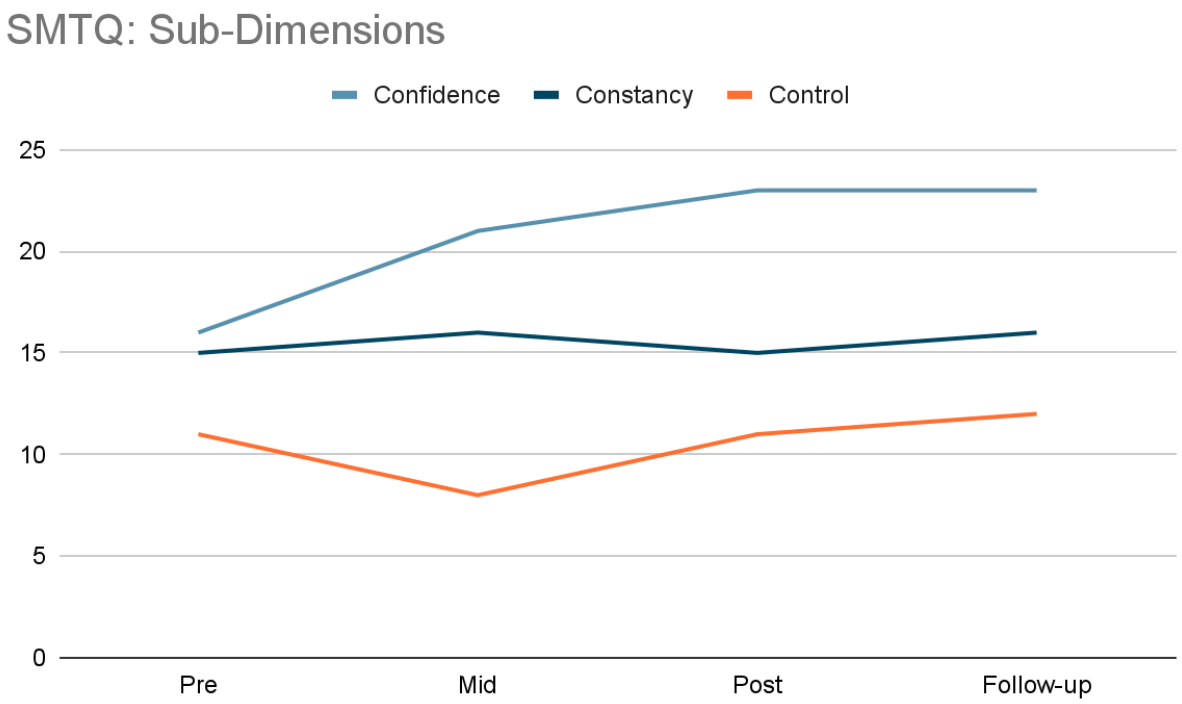


Figure 6.9: Participant 5 SMTQ Sub-Dimensions

Mental Toughness. Participant 5 completed the SMTQ and the #SportPsychMapping interview session at all four intervention timepoints (pre, mid, post, follow-up). Total scores within the SMTQ showcased that levels of mental toughness improved across the RSTI (seen in figure 6.4). Improvements in mental toughness were also showcased in the sub-dimensions of the SMTQ, specifically levels of confidence improved through the RSTI program (seen in figure 6.9).

#SportpsychMapping. Evaluating the four #SportPsychMapping interviews conducted, a total of 36 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant at four different time points was also revealed. Of those 36 concepts placed on the summary map, there were 7

concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI (seen in table 6.5).

Table 6.5

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Preparation (PS)	Self-awareness (DST)	Work training balance (EF)	Social person (DST)
Self-driven (DST)	Self-belief (DST)		
	Cycling power (DST)		

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to improve through the RSTI program.*

There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. The concept was preparation and was rated as light green, rather helpful, within the pre-intervention #SportPsychMapping Interview. The participant mentioned a challenging performance situation where preparation for a race was rushed, negatively impacting performance but also showcasing the participants resilience levels:

> *"preparation is probably the most important thing for me. I like to be super prepared… I tried to get in a good position like (for example) training for a half marathon for six weeks, there's no time to rest, you just have to volume volume and just get through the*

workout which is really hard. I definitely didn't feel good on Sunday, I got to the run and I was thinking "this is where I'm going to excel on the run". I started running and I was like "no I do not feel good I'm going to have to grind this out" but to be fair it was a course record on the run, it was the fastest I've ever run but yeah it was a grind."

As the reflexive self-talk intervention progressed, preparation was discussed in the mid-intervention #SportPsychMapping session. Preparation at the mid intervention time point was rated as dark green, very helpful. The participant mentioned how the RSTI sessions had enabled him to better understand how his week to week training regime was not only preparing him physically but also mentally with feeling prepared for upcoming races:

"preparation that's the number 1 thing I think from when we did this initially, with preparation being the number one thing for me to feel good. I think I know now that the (training) sessions are more important than ever because it makes me feel prepared"

As the reflexive self-talk intervention ended, preparation was rated in the end point #SportPsychMapping session. This rating remained as a dark green, very helpful. This concept was discussed and the participant stated that due to the RSTI, his level of self-awareness had improved which enabled him to better understand the psychological benefits of preparation:

"yeah it (preparation) just became a bit of a theme didn't it. I still feel like that's the number one important thing but it's just kind of from the stuff we spoke about in terms of what does preparation mean, it's not just having all your kit in a triathlon, it's more trusting the sessions that you've done, the process, the races, the weeks before there's just so much to the preparation and it's not all going to be 100% and perfect but I think as long as you know that you have done your best"

Within the follow-up #SportPsychMapping interview preparation was rated. The rating remained the same (dark green - very helpful) and was not discussed further as the participant believed that this had remain consistent, with no changes from the endpoint #SportPsychMapping interview.

Participant 6 - Confidence Development

Participant 6 was a 62 year old male table tennis athlete and was classified as possessing semi-elite playing experience levels (3.33). Five RSTI sessions were planned and completed for the participant's RSTI program. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 16 and the number of questions asked in RSTI session five was 10.

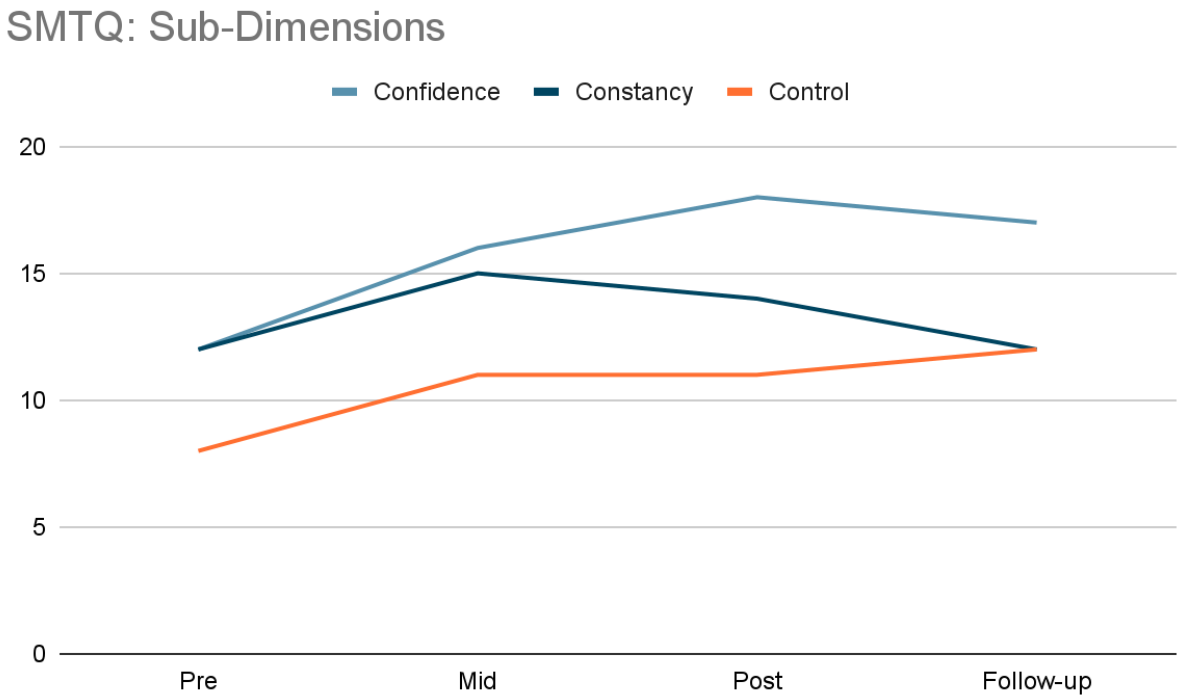


Figure 6.10: Participant 6 SMTQ Sub-Dimensions

Mental Toughness. Participant 6 completed the SMTQ and the #SportPsychMapping interview session at all four intervention timepoints (pre, mid, post, follow-up). Total scores within the SMTQ showcased that levels of mental toughness improved from pre-post and slightly decreased from post-follow-up (seen in figure 6.4). Improvements of mental toughness

were also showcased in the sub-dimensions of the SMTQ, specifically levels of control and confidence (seen in figure 6.10).

#SportPsychMapping. Evaluating the four #SportPsychMapping interviews conducted, a total of 40 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant's performance at four different time points was also revealed. Of those 40 concepts placed on the summary map, there were 7 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.6).

Table 6.6

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Supportive teammates (EF)	***Confidence (DST)***	Fatigue (DST)	
Self-talk (DST)	Self-critical (PS)	Physical health (DST)	
Perception (PS)	Technique execution (EV)		

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to be improved through the RSTI program.*

There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. The concept was confidence and was rated as amber, rather problematic, within the pre-intervention #SportPsychMapping Interview:

> *"my confidence is never really high I mean I've worked on it for so long and it doesn't take long to shoot it down… when I'm hitting the ball well is when I start building my confidence and as soon as my confidence goes (down) I don't play as well and I guess that's natural but it doesn't take me much to lose my confidence"*

As the reflexive self-talk intervention progressed, confidence was discussed in the mid-intervention #SportPsychMapping interview. Confidence at the mid-intervention time point was rated as light green, rather helpful. The participant mentioned how the reflexive self-talk intervention had helped their ability to evaluate performance situations, make effective decisions and feel more confident in the subsequent performance actions taken:

> *"parts of those points they (the RSTI board game) cover, the decision making, you're reinforcing the things that you can do and by reinforcing this it removes some of that negative feeling about your performance and I become more confident in what I'm able to do"*

As the RSTI program ended, confidence was rated in the end point #SportPsychMapping session. Confidence was rated as a dark green, very helpful. Confidence was discussed within the interview and it was mentioned that the performance effects of higher levels of confidence were experienced:

> *"in general confidence has gone up and self-belief has gone up, I definitely feel better about my technique… I played really well recently, he couldn't handle my serves, I felt*

> *really confident and we won five zero. Every target I set I achieved and played really well"*

In addition, it was highlighted in the end point #SportPsychMapping interview that although confidence had improved, maintaining high levels of confidence was still difficult in other performance situations, for example when competing against better competition. What was also revealed was the improved self-awareness of the participant when reflecting on this experience:

> *"It's difficult because my confidence takes a long time to gain and a little while to lose and that's always been the case. One part of me says well all the people that I was playing with last Friday were all technically better and faster players than I was so I tried to say to myself "look you know you held your own in those drills it was only when it came to the competitive elements that you are found lacking". So I don't know how I would fair against like a similar division type player"*

Within the follow-up #SportPsychMapping interview confidence was rated. The rating remained the same (dark green - very helpful) and was not discussed further as the participant believed that this had remain consistent, with no changes from the endpoint #SportPsychMapping interview.

Participant 7 - Deeper Understanding of Self and Pressure Management

Participant 7 was an 18 year old male football athlete and was classified as possessing successful-elite playing experience levels (8.66). Six RSTI sessions were planned and nine sessions were completed for the participant's RSTI program. Participant 7 opted to have more RSTI sessions then what was initially planned. The option for additional sessions was available to all participants. Participant 7 completed additional sessions due to believing that more sessions were needed to better experience the benefits of the intervention. RSTI sessions lasted

between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 35 and the number of questions asked in RSTI session nine was 9.

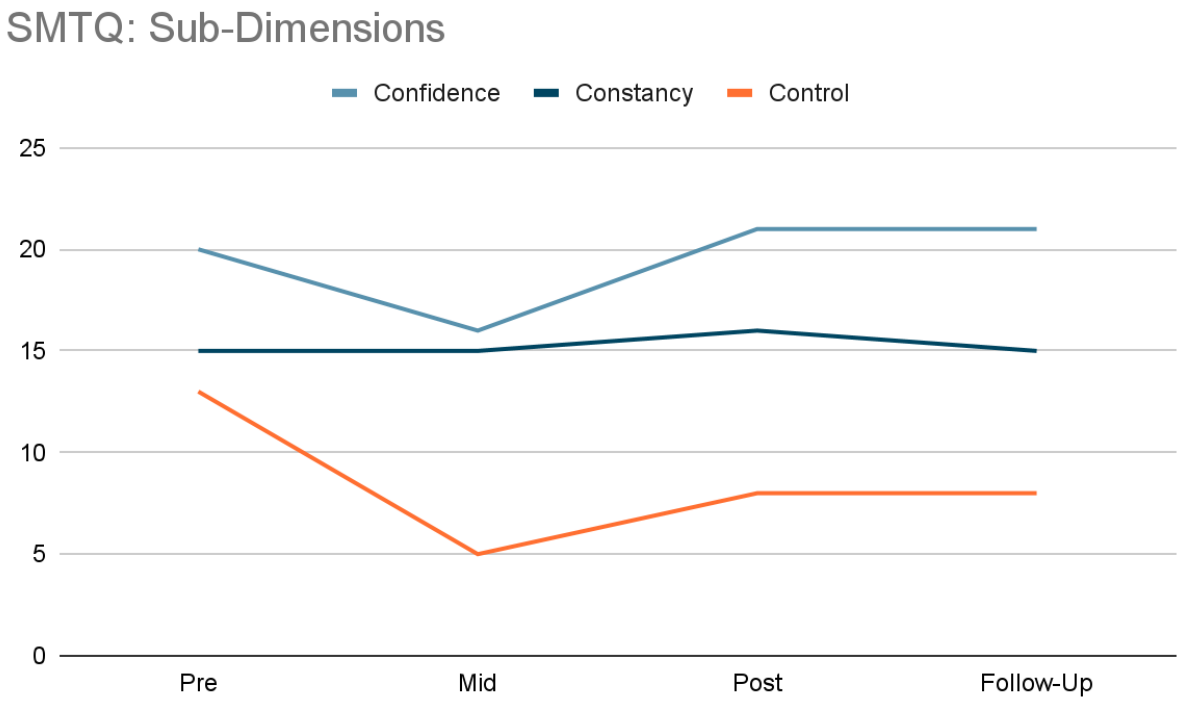


Figure 6.11: Participant 7 SMTQ Sub-Dimensions

Mental Toughness. Participant 7 completed the SMTQ and the #SportPsychMapping interview session at all four intervention timepoints (pre, mid, post, follow-up). Total scores within the SMTQ showcased that levels of mental toughness decreased from pre-mid and improved from mid-follow-up (seen in figure 6.4). These results were further depicted in the sub-dimensions of the SMTQ (seen in figure 6.11). Levels of control and confidence decreased from pre to mid and improved from mid to follow-up intervention. When discussing these differences in the results from pre-mid SMTQ scores, the participant highlighted that when completing the SMTQ at the pre-intervention time point, he completed it incorrectly and this may not have accurately showcased his levels if mental toughness at that time point:

> *"The areas around confidence in the questionnaire I don't know how it's gone down, looking at the questions, I think I answered it wrong the first time we did it. I feel more confident in myself now"*

Also when discussing the SMTQ scores, he stated that during the RSTI from pre-mid intervention that his ability to better understand his levels of mental toughness and accurately assess this had improved:

> *"And I feel like now I know when I'm feeling good or bad and I know how to control those emotions and calm myself down as well"*

#SportPsychMapping. Evaluating the four #SportPsychMapping interviews conducted, a total of 17 concepts were placed on the summary map. The interview revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant's performance at four different time points was also revealed. Of those 17 concepts placed on the summary map, there were 6 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.7).

Table 6.7

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Technique execution (EF)	Self-talk (DST)	Leadership (PS)	
Physical abilities (DST)	Confidence (DST)		
	Pressure management (PS)		

*Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in **bold italics** are concepts which the athlete deemed important to their sporting experience and wanted these to be improved through the RSTI program.*

There was one concept which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. The concept was pressure management and was rated as red, very problematic, within the pre-intervention #SportPsychMapping interview:

> *"in your brain you're saying like it's there like I have to do everything right and I think I put too much pressure on myself to do that. Like I just need to relax more … I would say there's constant pressure but like you can't really avoid that in football. Well you can it's just you've got to be able to cope with the pressure and I think that's one of the things that I really do need to improve"*

As the RSTI program progressed, pressure management was discussed in the mid-intervention #SportPsychMapping interview session. Pressure management at this time point was rated as grey, equally helpful as problematic. The participant highlighted that when experiencing a perceived pressurised situation, the RSTI aided in him coping with pressure even when performance mistakes were made:

> *"I was pleased with how I dealt with it. Training with the first team (professional team) and thinking "realistically I don't have any pressure on myself" and obviously like trying to keep up with them isn't really going to realistically happen at this time. I did make a mistake and like when you get them players like taking it (the ball) pass you and scoring I didn't feel like this is so annoying, I just thought "I'm doing my best and that's all I can do""*

As the RSTI program ended, pressure management was rated in the end point #SportPsychMapping interview. Pressure management was rated as a light green, rather helpful. The participant mentioned how during the reflexive self-talk intervention, his ability to cope with pressure had improved and he was able to utilise goal-directed self-talk within a performance situation and this aided his performance through reducing perceived pressure:

> *"Coping with pressure yeah that's probably like an eight out of 10, like a light green. I remember saying that (goal directed self-talk phrase) to myself in the match and when we were like 2 zero down and it helped"*

Within the follow-up #SportPsychMapping interview pressure management was rated. The rating remained the same (light green - rather helpful) and was not discussed further as the participant believed that this had remain consistent, with no changes from the endpoint #SportPsychMapping interview.

Participant 8 - Confidence Fluctuations and Resilience Enhancements

Participant 8 was a 29 year old male badminton athlete and was classified as possessing semi-elite playing experience levels (2.00). Five RSTI sessions were planned and seven sessions were completed for the participant's RSTI program. Participants 8 opted to have more RSTI sessions then what was initially planned. The option for additional sessions was available to all participants. Participant 8 completed additional sessions due to experiencing a sudden psychological challenge which they wished to explore within additional RSTI intervention sessions. RSTI sessions lasted between 50 - 70 minutes. The number of questions asked by the researcher in RSTI session one was 17 and the number of questions asked in the RSTI session seven was 3.

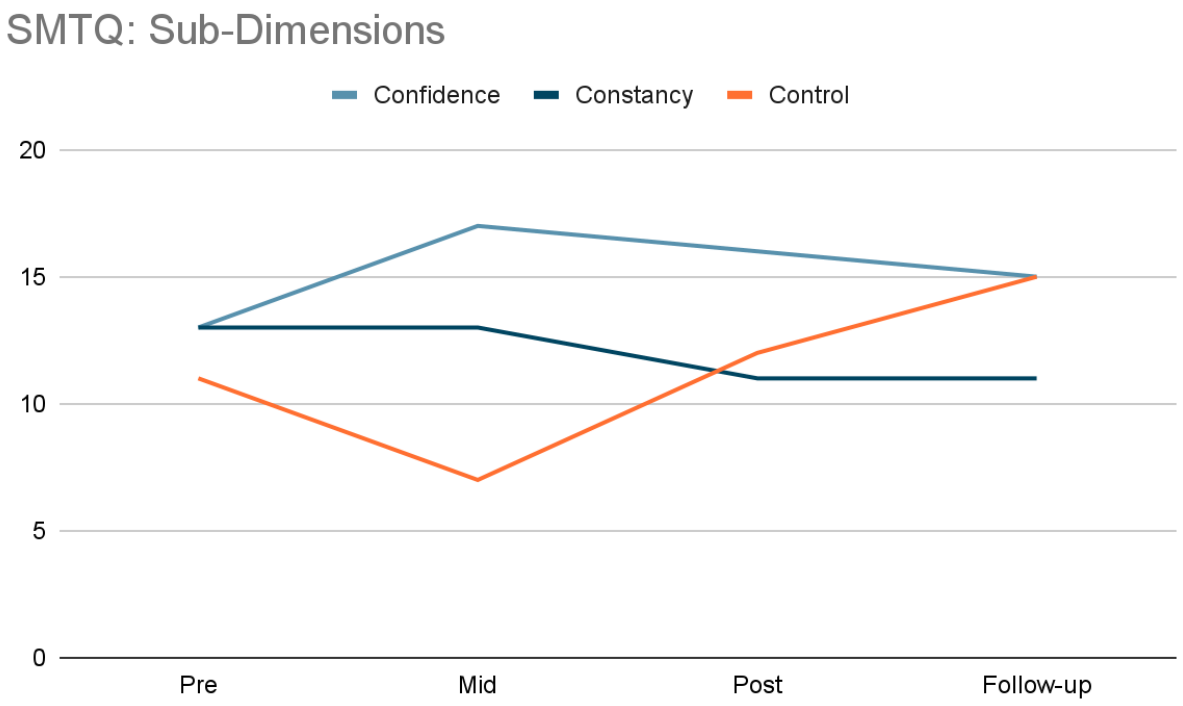


Figure 6.12: Participant 8 SMTQ Sub-Dimensions

Mental Toughness. Participant 8 completed the SMTQ and the #SportPsychMapping interview session at all four time points. Total scores within the SMTQ showcased that levels of mental toughness improved during the intervention (seen in figure 6.4). More details of the mental toughness improvements were showcased in the sub-dimensions of the SMTQ, as levels of control improved from pre to follow-up intervention (seen in figure 6.12).

#SportPsychMapping. Evaluating the four #SportPsychMapping interviews conducted, a total of 25 concepts were placed on the summary map. The interviews revealed the participant's sporting experience and the various external factors, descriptive states and traits and psychological skills which the participant perceived as important for their performance. In addition, the impact the reflexive self-talk intervention had on the participant's performance at four different time points (pre, mid, post, follow-up intervention) was also revealed. Of those 25 concepts placed on the summary map, there were 6 concepts that illustrated the changes in the participant's sporting experience that occurred during the RSTI program (seen in Table 6.8).

Table 6.8

Concepts on the #SportPsychMap which were good and stayed good	Concepts on the #SportPsychMap which were bad and got good	Concepts on the #SportPsychMap which were bad and stayed bad	Concepts on the #SportPsychMap which were good and got bad
Leadership (PS)	***Confidence (DST)***	Opponent skill level (EF)	
Reaction time (EF)	***Resilience (PS)***		
	Emotion regulation (PS)		

Notes: concepts which were identified and explored in each participants #SportPsychMap. EF = External Factors, DST = Descriptive States and Traits, PS = Psychological Skills. Concepts in ***bold italics*** *are concepts which the athlete deemed important to their sporting experience and wanted these to be improved through the RSTI program.*

Unique to participant 8, there were two concepts which the athlete deemed important to their sporting experience and they wished to improve during the RSTI. These were resilience and confidence.

Resilience. Resilience was a psychological skill which was identified in the pre-intervention #SportPsychMapping interview. The concept was identified as a psychological skill which the participant wanted to develop and was colour rated as amber, rather problematic:

> *"Resilience there's resilience like okay I'm playing bad and you're being resilient and you're just dealing with it and you lose. But there's also resilience like trying to pull*

yourself out of it (playing bad) and maybe that's what I need to work on, that you know pull myself out of it type of resilience"

As the RSTI program progressed, resilience was discussed in the mid-intervention #SportPsychMapping interview. Resilience at the mid-intervention time point was rated as amber, rather problematic. When asked whether there are any psychological skills which the participant believed had been impacted as a result of the RSTI, the participant highlighted two, controlling energy levels and resilience:

"I think energy levels probably, resilience yeah those two areas have improved"

Within the post-intervention #SportPsychMapping interview, resilience was again discussed. At this time point resilience was rated as light green, rather helpful. Although resilience was rated as rather helpful, improving overall from mid-post intervention, the participant did highlight that his levels of resilience had been negatively impacted recently, due to the recent losses he had sustained:

"Light green. But I think it's probably gotten worse just specifically thinking about those last two matches. It might be a bit biased because right now all I can think about is those last two matches that I performed poorly in … I'm just dwelling on those kind of bad matches and everything. I mean I'll play tonight and I'll text you later and probably everything will be all good"

Lastly, within the follow-up intervention #SportPsychMapping session, resilience was discussed. At the follow-up intervention time point resilience was rated as dark green, definitely helpful. The participant highlighted how he believes the RSTI aided in the development of his self-awareness which is a key characteristic of resilience:

"It (reflexive self-talk intervention) has perhaps helped actively identify my strengths and get me to start thinking about them"

Confidence. Confidence was a descriptive state which was identified in the pre-intervention #SportPsychMapping interview. At the pre-intervention time-point, confidence was rated as amber, rather problematic. When discussing confidence, this was identified as important to the participants' sporting experience and directly impacted the performance which he produces:

> *"100% far and away the most important. If you feel confident then you play well. Yeah confidence is so important and once you start making mistakes that confidence starts to lag and that's when you start to get into a negative cycle. Confidence for me is the absolute number one"*

Within the mid point-intervention #SportPsychMapping interview, it was revealed that confidence had improved during the course of the RSTI program. At the mid-intervention time point, confidence was rated as dark green, definitely helpful. Confidence was stated to improve alongside other personal descriptors (e.g., effort) and the participant's drive for improvement:

> *"I think confidence definitely has improved. I've had a good few performances and matches and I have continued to train well. And probably the effort and desire for self-improvement as well has improved with my confidence"*

Within the post-intervention #SportPsychMapping interview, confidence had decreased due to the recent performances of the participant. At the post-intervention time point, confidence was rated amber, rather problematic. Although there was a decrease in confidence levels, the participant was aware that there may be a bias towards his rating of confidence due to his recent performances:

> *"It might be a bit biased because right now all I can think about is those last two matches that I performed in…. I think playing at a higher level which I'm doing plays a factor in all of this (rating of confidence). I'm seeing that against good players I can put*

up a decent fight and still lose and that helps me see that I am improving but it's still disheartening".

Lastly, the follow-up intervention #SportPsychMapping session revealed that confidence had improved as the concept was rated as light green, rather helpful. When discussing whether the RSTI had impacted his levels of confidence, it was evident that although the use of organic goal-directed self-talk can be difficult at times, it did aid levels of confidence:

"When I can remember to use it (organic goal-directed self-talk), yes it has helped. Though it is somewhat lengthy and cumbersome to use in pressurised situations, it has helped my confidence by convincing myself I do have some strengths"

6.3.3 Participant Reflection

During the post and follow-up intervention #SportPsychMapping interview, time was allocated for each participant to reflect on the reflexive self-talk intervention program. By doing so participants could highlight aspects of the intervention overall as well as aspects of the intervention tool specifically which either helped or hindered their progression and ability to achieve the aims of the intervention program. The RSTI program aims were to develop participants metacognitive knowledge through participants identifying a psychological challenge, discussing the situational and contextual factors surrounding the challenge, select a psychological skill to positively affect the challenge and discuss potential goal-directed self-talk phrases which could aid in performing the psychological skill. Within the contexts of the study, an intervention program was deemed successful if (1) these intervention aims were achieved (2) the rating of concepts deemed important on athlete's #SportPsychMap improved from pre-intervention and (3) if the participant was able to use the developed psychological techniques or skills without the assistance of the researcher (Latinjak et al., 2020).

Performing an interpretive phenomenological analysis (IPA) on participants' reflections were clustered into three superordinate themes: intervention exercise strengths, intervention exercise challenges and transference of ownership (see Figure 6.13).

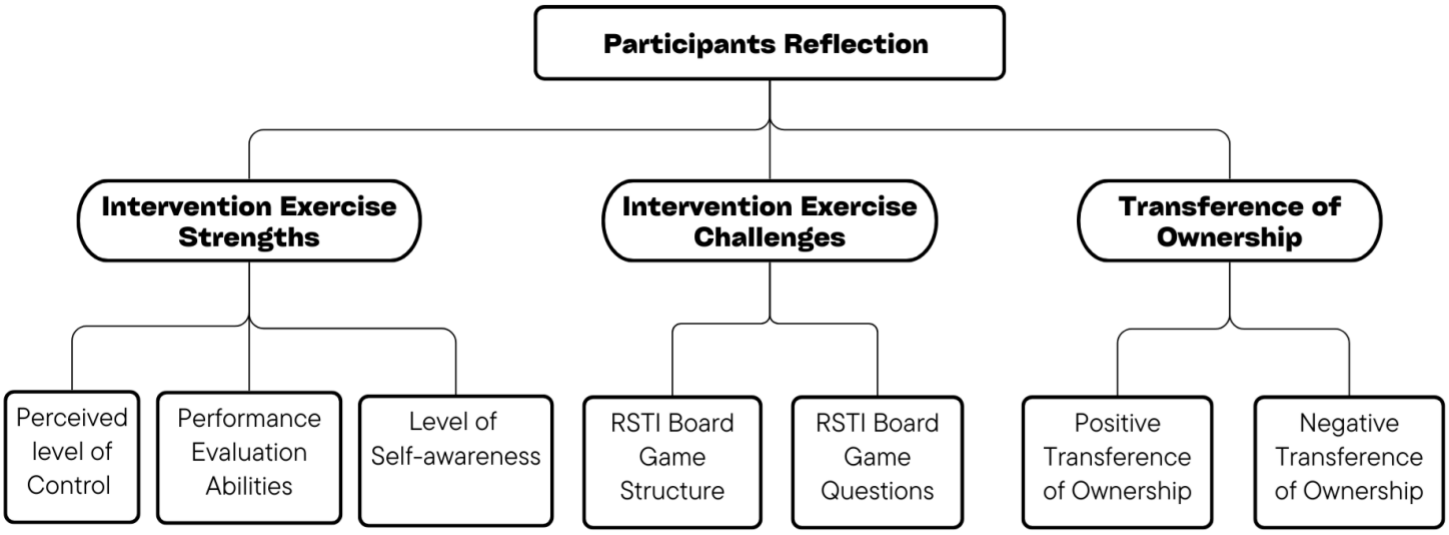


Figure 6.13. The superordinate themes and subordinate themes that were generated from participants reflection of the RSTI program

Intervention Exercise Strengths

Participants highlighted various benefits of the intervention program and how engaging with the intervention tool enabled them to develop several internal and external factors. Examples of these benefits centred around increased (1) perceived level of control, (2) performance evaluation abilities and (3) level of self-awareness. These three subordinate themes formed the superordinate theme *intervention exercise strengths*.

Within the perceived level of control, seven participants highlighted how the intervention changed their perception of challenging situations, identifying the aspects within a performance challenge which are within and not within their control. For instance, participant 6 highlighted their increased level of perceived control when he was competing within a table tennis match:

> *"it's (the RSTI) definitely had a positive impact on it (performance). So the pre shot routine, the positive (goal-directed) self-talk because that gives me a break within the points, it enables me to get more control and make a better decisions so yeah it has definitely had an impact and then when you win as a result of that it is sort of like a positive affirmation"*

Within the performance evaluation abilities, seven participants highlighted how the intervention increased their ability to explore a psychological challenge and select suitable strategies to manage the challenge. Participant 8 reflection provides an example of this increased ability due to the intervention:

> *"the board game helped structure and direct that process of evaluation, something I didn't have before"*

In addition, participant 2 highlighted the benefit of phase 7 of the intervention board game, as phase 7 aided the development of his performance evaluation abilities. Phase 7 involved changing the participant's perception to explore other goal-directed self-talk words and phrases that could aid in the discussed challenge. Phase 7 also bridged a gap between two subordinate themes, performance evaluation abilities and self-awareness:

> *"I actually quite like that somebody's thrown into it (a different perspective). "What would you tell someone else in that situation?" Because actually sometimes being able to put me in someone else's shoes gets you to think. It's not your (researcher) job to tell me what to think. It's for you to guide me to come up with my own answers"*

Within the self-awareness subordinate theme, seven participants highlighted how engaging in the RSTI board game improved their levels of self-awareness. For instance, participant 5 stated how the intervention enabled him to become more aware of the ups and downs which can

occur in a season and although a negative performance can occur, that does not mean a subsequent negative performance will certainly occur:

> *"100%, it (goal-directed self-talk) was a tool I didn't have in my toolbox before but I feel like I've trained the mind as well as my body to focus when it gets hard… It's given me composure and confidence… When I don't feel (I performed) good enough I know that I'm only a few good training sessions away from being where I want to be"*

This superordinate theme suggests that within participants of varying demographic variables, the common benefits of the reflexive self-talk intervention program were its ability to develop levels of perceived control, performance evaluation abilities and levels of self-awareness. The benefits of the RSTI program can be seen through seven participants generating codes in all three of the subordinate themes. This superordinate theme also showcases the benefits experienced through the structure of the RSTI board game and its ability to explore a psychological challenge from the participants' perceptive as well as from another athlete's perspective (phase 7).

Intervention Exercise Challenges

Participants highlighted various challenges of the intervention program and aspects of the intervention tool where further improvement could occur. Examples of these challenges centred around the (1) RSTI board game structure and (2) RSTI board game questions. These two subordinate themes formed the superordinate theme *intervention exercise challenges*.

The RSTI board game structure was mentioned by two participants when reflecting on the intervention. The board game consisting of 25-steps was perceived as time consuming and potentially reducing the amount of the steps on the board game was recommended. Participant 8 was one participant who mentioned this recommendation:

> *"I don't know if it's a fair point but the program and the board game is quite long so maybe if it could be made more concise somehow that would probably help it to be more useful"*

The second subordinate theme generated (RSTI board game questions) centred around participants finding it challenging at times to answer some of the RSTI board game questions. Answering some of RSTI board game questions was a challenge which was mentioned by three participants. It was stated that the level of questions which were asked were at a level in which participants already needed to possess a certain level of self-awareness in order to accurately answer them. For instance, participant 1 mentioned their challenge with some questions:

> *"For those who don't know so much about psychology, it sometimes could be difficult differentiating between what the different questions asked"*

This was also mentioned by participant 2, with specific aspects of the board game mentioned which he perceived to be difficult:

> *"I think it's the situational processes which are quite difficult (questions). Thoughts and feelings related to the challenge and how did this affect performance and behaviour? That's a really difficult one to think about, especially starting off."*

The superordinate theme suggests that the amount of steps in the board game as well as some questions which are asked within the board game are challenges which can be experienced when conducting a reflexive self-talk intervention program. These challenges are inherent parts of the intervention and so improving these challenges is of importance, as the challenges could hinder the benefits which could be experienced when undergoing the intervention program.

Transference of Ownership

The aim of transference of ownership was that as sessions continued, the researcher would be required less to lead the progression through the RSTI board game. In addition, the aim was for the participant to be equipped to complete RSTI board game independently, whenever and wherever they wished to do so. Participants highlighted their experiences of making the intervention tool their own and using the board game outside of the intervention sessions. Participants reflection on transference of ownership centred around the (1) positive transference of ownership and (2) negative transference of ownership. These two subordinate themes formed the superordinate theme *transference of ownership*. Examples did not necessarily divide into certain participants being able to use the tool themselves and certain participants not being able to. Instead, several participants highlighted various aspects of the intervention tool which either helped or hindered the transference of ownership.

The instances where transference of ownership were positive was mentioned by seven participants. Participants reflections focused on being able to easily understand and interpret the colour rating system of the #SportPsychmapping interview. In addition, making the intervention tool their own through shortening the RSTI board game to suit the psychological challenge explored, or changing the wording of questions to suit the participants' sport were also mentioned by participants. Furthermore, using the intervention tool and developing goal-directed self-talk outside of the intervention sessions was also mentioned by participants, for instance, participant 2:

> “I regularly use the tool (RSTI board game) we used and the coping strategies we discussed both in training and racing and after.”

Participant 5 also reflected on the intervention tool and how goal-directed self-talk phrases were generated outside of intervention sessions:

“It's (the RSTI) given me composure and confidence. In the Boston marathon I was saying on mile 20 “smile and enjoy yourself”, “no one gives a shit” and “you've done this before”.

repeating those 3 helped me not hit the wall (experiencing a sudden loss of energy in a long race)."

The instances where transference of ownership was negative was mentioned by three participants. Negative instances involved having difficulties progressing through the questions without the assistance of the practitioner. In addition, the use of numbers for each step, making it difficult to make the intervention tool their own was mentioned, for instance by participant 8:

> *"when I see something like this and it's also numbered I kind of feel like I have to go through every question and answer every question but obviously there may be some questions that aren't relevant. Also some other questions might overlap"*

The transference of ownership superordinate theme suggests that there are aspects of the intervention program which make transference of ownership smooth and aspects of the intervention program which make this challenging. Transference of ownership is important because it is a key component of the intervention program. The superordinate theme showcases that aspects of the positives and challenges of transference of ownership are due to the specific design of the intervention tool. However, the superordinate theme also showcases that the style of the practitioner may help or hinder a smooth transference of ownership as well. It is evident that a style which is both researcher (or practitioner)-led and participant-led may be useful at different time points within the intervention program.

6.3.4 Researcher Reflection

During the course of data collection, a reflective journal was kept by the researcher. A journal entry was made after each #SportPsychMapping interview and RSTI session. Each journal entry involved 200 - 500 words reflecting on the session the researcher conducted with the athlete, the strengths and challenges of the session and any further questions which were present. The

researcher completed the reflections with the perspective of an applied SEP practitioner. The researcher's reflection clustered into four superordinate themes: self-awareness, researcher approach, transference of ownership and intervention tool (see figure 6.14).

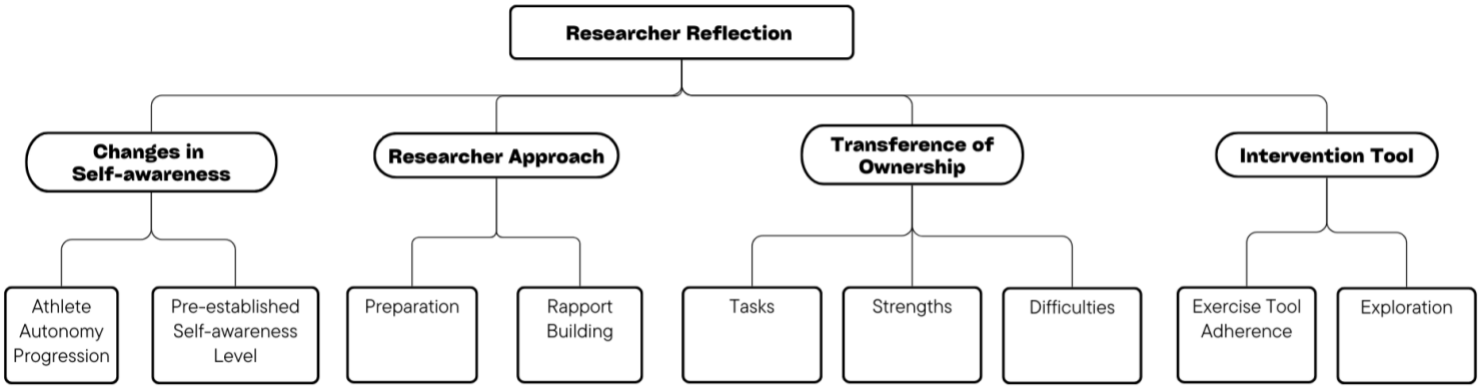


Figure 6.14. The superordinate themes and subordinate themes that were generated from the researcher's reflection of the RSTI program

Changes in Self-awareness

Various journal entries highlighted the changes of the participants level of self-awareness at different time points of the intervention program. Changes in self-awareness centred around two subordinate themes: (1) athlete autonomy progression and (2) pre-established self-awareness levels.

The level of autonomy evident when undergoing the RSTI program changed in all participants as the intervention progressed. Participants displayed more autonomy over the RSTI sessions as levels of self-awareness improved. In practice, progressing athlete autonomy involved participants becoming more proactive in their analysis of psychological challenges and attempting to explore a variety of psychological techniques. For instance, progression was

evident within a journal entry. When reflecting on an RSTI session, it was evident that the participant applied information from a previous session to a new challenge:

> *"The athlete has been able to see progress in their performance and they were in a situation where they used the information we discussed in our previous session (cycling training). When using the RSTI today, they explained the challenge which occurred but they also discussed the psychological skills they attempted to use when experiencing this challenge."*

Pre-established levels of self-awareness encompass one of the questions in which the researcher had whilst collecting data. There were some participants (participants 2 & 5) who achieved the aims of the intervention (raise self-awareness, improve choice of psychological skills, think about goal-directed self-talk content) at a rapid rate. A question as to why these improvements were occurring was asked and reflected on by the researcher. It was suggested that participants who already possessed high levels of self-awareness, were better equipped to learn and implement the information gained within RSTI sessions to their performance straight away. Attempts on how to measure these improvements was also reflected on after a post #SportPsychMapping interview session:

> *"Although one of the aims of the RSTI is to develop self-awareness, the athlete's feedback suggests that the athlete has to start with a good degree of self-awareness to begin with. Potentially by altering the board game to accommodate this may prove beneficial in having a smoother transference of ownership and psychological development through the RSTI. Gauging the levels of self-awareness the athlete possesses could be done through the sportpsychmap and questionnaire results."*

Researcher Approach

Researcher approach encompassed the techniques the researcher used whilst undergoing all sessions with participants. The techniques used mirror the practitioner techniques which are used in applied SEP practice, when working with athletes. Techniques included active listening, open-ended probe questions, affirming, reflection, and summarising. Researcher approach was centred around two subordinate themes: (1) Preparation and (2) Rapport building.

Preparation was often reflected on during the course of data collection. In practice, preparation included reviewing information from previous sessions, ensuring session tools were prepared, reviewing previous research and reviewing previous information about the athlete's sport which may be useful for the session. There were sessions in which the preparation which occurred beforehand enabled the RSTI session to run smoothly. Effective preparation also enabled the researcher to feel more confident utilising various practitioner techniques to help achieve the aim of the session. Conversely, there were sessions in which preparation for a session was not completed to an adequate level. For example, if previous research was not reviewed about the participant's sport or if additional resources were needed due to a sudden change for an imminent session.

Preparation which aided the progression of the session was evident in a reflective journal entry:

> *"This I believe was a really good session. I wasn't worried about time, or being perceived as the 'expert'. I allowed the intervention session to run its course and provided a structure for the athlete to explore their psychological challenge, making links with other aspects of their sport. I believe I did a great job explaining the whole program which gave him confidence as he liked having a structure. This session helped me realise that the more prepared I am the better I feel. Also, the more I have a set structure and goal for each session, the better I feel. In addition, Knowing the aims of the athlete helps as well"*

Rapport building was another aspect of the approach the researcher utilised whilst undergoing sessions. Rapport building involved focusing on making a connection with the participant. In practice, rapport building involved utilising the counselling techniques of open-ended questions, affirming, reflecting and summarising the comments made by the athlete and active listening skills. Counselling techniques aided in the progression of the intervention. For instance, a journal entry reflected on the positive rapport which had been built with a participant, helping both the researcher and participant feel comfortable in deviating from the intervention timetable:

> *"I originally had planned a session based on the midpoint evaluation of the intervention. This was postponed, as there was a more pressing issue the athlete wanted to discuss. I believe the decision to do this aligns with my personal professional philosophy, as well as the study aims of the intervention, as a vocal point within reflexive self-talk interventions is the autonomy given to participants. We used the board to go through the challenging situation experienced, which helped the participant identify what he could have done better."*

Transference of Ownership

Transference of ownership encompassed the aspects of the intervention where the researcher attempted to transfer ownership. As previously mentioned, the aim of transference of ownership was that as sessions progressed, the researcher would be required less to guide participants through the RSTI board game. In addition, the aim was for the participant to be equipped to complete the RSTI session independently, whenever and wherever they wished to do so.

Transference of ownership draws similarities to the superordinate theme generated in the participants reflection, as strengths and weaknesses of transference of ownership were evident. This superordinate theme differs however, as the individual who was reflecting on transference of ownership was different. The researcher was in the position of attempting to transfer ownership to the participant, whereas the participant was in a position to receive transference of ownership from the researcher. Transference of ownership centred around three subordinate themes: (1) Tasks, (2) Strengths and (3) Difficulties.

Various tasks were administered during participants' RSTI sessions to transfer the ownership of the intervention tool from the researcher to the participant. In practice, transference of ownership tasks involved tasks such as instructing the participant to complete phases 1 and 2 independently, progressing to the participant completing phases 3 - 5, phase 6 and then the entire RSTI board game independently. Further tasks involved completing the RSTI board game outside of the intervention session and discussing phases of the board game which were easy and difficult to complete. Lastly, tasks involved the participants attempting to make the RSTI board as concise as possible through eliminating steps on the map which they perceived as not relevant to their sporting experience and typical challenges they had discussed.

Administering transference of ownership tasks often occurred after the midpoint #SportPsychMapping interview. Indication as to when to progress through different transference of ownership tasks was subjective. If participants started to become more proactive (e.g., answering aspects of RSTI board game independently) or consistently succeed in a transference of ownership task, this warranted progression onto the next transference of ownership task. The positive application of one of these tasks was reflected on in a journal entry:

> *"I feel that this was still a positive session and the athlete seemed to be very happy with the session. The transferring of ownership has already started and this athlete was able*

to go from summary 1 to the take home message step by himself. This is good and it showed that this intervention tool works very well"

When attempting to transfer ownership of the intervention from the researcher to the participant, various strengths of transferring ownership were reflected on by the researcher. Strengths involved the participant feeling equipped to complete the RSTI board game independently. Another strength was that as transference of ownership occurred, levels of self-awareness improved from the researchers perspective:

"Transference of ownership has been completed and he is able to go through the map without my help. He is progressing well and using the psychological skills discussed. Self-awareness has developed, making it easier for him to progress through the board game and apply psychological skills to challenges. Seeing his progression positively impacts his confidence and makes him more hungry for further progression."

Instances where difficulties transferring ownership occurred were also reflected on by the researcher. These difficulties involved some participants finding it difficult to progress through different phases of the RSTI board game independently. Difficulties transferring ownership can occur due to the researcher leading intervention sessions, instead of the researcher allowing participants time to adjust to the new ownership they have over the intervention:

"I believe this session was very interesting with some positives and negatives. As the intervention progresses, more autonomy is being given to the athlete. I believe the athlete is taking more ownership into the analysis of psychological challenges and his own development. Although this has been occurring, he is not using the questions as a guiding point for this analysis. He is able to accurately provide information about the situation, context and performance impacts, but he is not able to select a psychological skill, apply this to an emotion and discuss how self-talk could help in the use of the psychological skill (unless prompted). I feel this may occur because instead of guiding the

athlete to generate this information, I am more 'telling' him what to do (practitioner-led) which is not good for the long term use of the psychological skill".

Intervention Tool

Intervention tool encompassed the journal entries made which focused on various aspects of the intervention. The intervention tool theme was centred around two subordinate themes: (1) Exercise tool adherence and (2) Exploration.

Participants adhering to the intervention and fully utilising the RSTI tool was often reflected on. When participants used the RSTI tool, it was evident that positives were experienced both by the participant and by the researcher. Positives mentioned by the participant involved an increased sense of confidence and ability to understand the takeaway message portion of the RSTI board game. Positives mentioned by the researcher involved reducing the challenges which are experienced by neophyte practitioners:

"I was a bit nervous with this athlete as within their initial #sportpsychmapping session they coloured a lot of keywords green. He stated that this is probably the case due to him serving in the armed forces for a number of years which developed his self-awareness and mental abilities. This means that potentially there is not a lot of room for development… I sometimes feel pressure from participants as I feel like they think that I can perform magic and radically change their performance. I feel the intervention tool helped me to manage these thoughts/emotions and produce an effective guidance for the session where the athlete had a clear take away message which developed their already well established self-awareness"

As the abilities of the researcher in administering the RSTI board game improved, different ways to explore the psychological experiences of participants became possible. In practice,

exploration of different experiences involved the researcher being able to utilise the RSTI board game when the participant wanted to explore both positive and negative performance situations. Progressing from only exploring psychological challenges was possible as the researcher was aware of the aims of the intervention and understood how these aims could be achieved through exploring a positive performance situation. When a positive experience was explored, the researcher reflected on the session and the observable impacts this type of session had on the participant:

> *"The session was really interesting as we went through a positive and a challenging situation which the athlete experienced this past week. I feel by us doing this the athlete's self-awareness has skyrocketed in comparison to other participants who only focus on challenging situations. The athlete has a wide variety of psychological skills and it feels that having a positive performance experience plays a big role on athletes adherence to the intervention and using the information which was generated from the session"*

The researchers reflection revealed that the intervention tool, its aims and the individual who is leading the intervention are important factors to consider within an RSTI board game. The researcher's reflection adds from the participants reflection. The combination of the participant and researcher reflection should give a holistic account of the method and results of the reflexive self-talk intervention program, the antecedents and consequences of the decisions made by the researcher and answers the question how did (or did not) the reflexive self-talk intervention work.

6.4 Discussion

The purpose of the present study was to gain a better understanding of reflexive self-talk interventions. In positive effect, the present study progressed previous research focusing on

applied SEP practice and reflexive self-talk interventions. Progression is seen through the present study measuring the impact of reflexive self-talk interventions, utilising a mixed methods research approach when investigating reflexive self-talk interventions, clearly defining the elite/amateur playing experiences of participants, and assessing the validity of an intervention tool (RSTI board game) when the tool is administered within reflexive self-talk intervention sessions. The results of the present study provide supporting evidence that the reflexive self-talk intervention program and its tools do work. In addition, the present study provides supporting evidence as to how the reflexive self-talk intervention works and how it could be improved.

There are four key areas of the present study which merit analysis within the discussion section: (1) Analysing the results of the RSTI program. The data gained through participants' sport mental toughness questionnaire (SMTQ) scores and #SportPsychMapping interviews provide information on the results of the RSTI program. (2) The analysis into how specific aspects of the intervention tool helped achieve the reflexive self-talk intervention's fundamental aims when it was implemented within applied SEP practice. In addition, areas in which the board game could improve are considered. (3) Analysing the reflections made by the participants and the researcher. (4) Synthesising the key findings to provide practical recommendations for applied SEP practitioners when administering a reflexive self-talk intervention program. Analysing these areas will indicate whether the results of the present study align with or refute previous research and how each aim of the present study was achieved.

6.4.1 Reflexive Self-talk Intervention Program

Reflexive self-talk interventions aim to develop metacognitive knowledge about the athlete's organic goal-directed self-talk content and the self-regulation strategies (psychological skills) required to manage psychological challenges. Within the contexts of the study, the researcher deemed the intervention program successful if (1) these intervention aims were achieved, (2)

the rating of concepts deemed important on athlete's #SportPsychMap improved from pre-intervention and (3) if the athlete was able to use the developed psychological techniques or skills without the assistance of the researcher (Latinjak et al., 2020).

By exploring the results of each participant, what is revealed is that the intervention program can be deemed successful for participants 1, 2, 4, 5, 6, 7, and 8. Success for these participants can be seen when breaking down each of the three criteria for a successful intervention in the context of the study.

Firstly, the success of seven participants reflexive self-talk intervention program is evident in achieving the reflexive self-talk intervention aims. Metacognitive knowledge was developed through participants frequently progressing through the RSTI board game. The development of metacognitive knowledge enabled participants to consistently discuss organic goal-directed self-talk and self-regulation strategies, which they perceived would have helped in the experienced psychological challenge. Previous research aligns with the indication of the development of metacognitive knowledge, as it is the reflection process that enables participants to better understand the declarative, procedural, and conditional metacognitive knowledge surrounding the experienced psychological challenge (Brick et al., 2016; Fleming et al., 2016; Tomporowski et al., 2015). Therefore, metacognitive knowledge could aid in accurately selecting psychological skills (self-regulation strategies) to positively impact future performances.

Mental toughness has been suggested by previous research to be a concept that, if measured, could reveal the development of metacognitive knowledge (Clough et al., 2002; Nicholls et al., 2009). Measuring metacognitive knowledge was an important consideration within the present study, as previous research has indicated that measuring the impact of a reflexive self-talk intervention is difficult (Latinjak et al., 2020). The results of the present study showcase that most participants' total SMTQ scores either remained consistent or improved from pre-intervention. The only participant where consistency was not evident was Participant 7, which

was due to a lack of self-awareness when first completing the SMTQ. Later within the RSTI, participant 7 highlighted improvements in their self-awareness. A lack of self-awareness when first completing the SMTQ was only revealed due to the study's mixed methods methodology, showcasing the benefit of complementarity this methodological approach possesses. The results of the present study indicate that in addition to showcasing the development of metacognitive knowledge through frequently completing the RSTI board game, the development of metacognitive knowledge was also evident through the measurement of mental toughness.

When exploring the impact of improved mental toughness (and metacognitive knowledge) on sport performance, previous research has suggested that mental toughness enables multiple benefits to be experienced. For instance, the controlled execution of the desired action, increased adaptability skills, ability to remain task-focused (Brick et al., 2015), ability to regulate emotions (Coulter et al., 2010) and ability to use various psychological techniques to manage performance challenges (Clark et al., 2022; Gucciardi et al., 2008). The present study's findings suggest that these performance benefits could be experienced through a reflexive self-talk intervention program.

Exploring the second part of the criteria for a successful intervention, it was evident within seven participants that the rating of concepts deemed important on their #SportPsychMap improved from pre-intervention. For example, Participant 4 identified 'negative self-talk' on their #SportPsychMap as a concept they wanted to improve during the reflexive self-talk intervention program. Developing negative self-talk was achieved, and it is suggested to have occurred due to the intervention program guiding participants to think about the content of their organic goal-directed self-talk.

Conversely, exploring Participant 3 #SportPsychMap, 'negative self-talk' was also a concept they wanted to improve during the reflexive self-talk intervention program. Although improvements were made, in the context of the present study and the four categories of the #SportPsychMap

concepts, 'negative self-talk' was a concept for Participant 3 which started and remained bad. The initial rating for 'negative self-talk' was bad (rather/very problematic) and remained bad during the intervention program. Therefore, the intervention program conducted with Participant 3 is not deemed a successful intervention within the context of the present study.

One interpretation of Participant 3 RSTI program not being deemed successful is that as the post and follow-up #SportPsychMapping interview sessions did not occur, an accurate account of Participant 3 negative self-talk was not measured post-intervention onwards. The RSTI program may have worked, but improvements could not be documented due to Participant 3 needing to complete the post and follow-up #SportPsychMapping interview sessions. These results emphasise the importance of previous research on the need to follow all intervention guidelines, as this can indicate the success of an intervention program and the development of an athlete (Keegan, 2016; Latinjak & Hatzigeorgiadis, 2020). The lack of adherence to the entire intervention program also showcases a challenge within longitudinal studies and the difficulties of all participants adhering to the study protocol (Thompson & Holland, 2003).

Exploring the final part of the criteria which indicated a successful intervention program, participants being able to use the developed psychological techniques or skills without the assistance of the researcher was evident within seven participants post and follow-up intervention #SportPsychMapping interview. Athletes provided examples of the use of developed psychological skills and techniques and how they have helped manage psychological challenges not discussed in intervention sessions. These results align with the literature in applied SEP and the importance placed on athletes needing to independently use the developed psychological skills and techniques (Mack et al., 2019). Participants independence was evident in the present study through the post and follow-up intervention #SportPsychMapping interview. Other ways participants progression was evident is in the reflections made by the participants and the researcher (transference of ownership), highlighted in the intervention reflection segment of the discussion section.

Analysing the first key area of the present study revealed that the reflexive self-talk intervention program was largely successful, specifically for seven participants. Using multiple data points to conclude the success of the reflexive self-talk intervention program showcases a more comprehensive picture of the effects of a reflexive self-talk intervention. Triangulation, complementarity and initiation were useful in providing these results. These are key characteristics within the mixed methods research methodology adopted for the present study (Moran et al., 2011; Sparkes, 2015).

Weighing the results of the present study against previous research in mental toughness and metacognition highlights how the present study has added to the knowledge within the researched area. In addition, analysing the first key area showcases how one study aim (to investigate the ability of a reflexive self-talk intervention in developing metacognitive knowledge) was achieved. With knowledge of the overall success of the intervention program, what can now be explored is how the intervention tool specifically achieved the intervention aims when applied within the intervention sessions.

6.4.2 RSTI Board Game Analysis

The results of the present study suggest that the RSTI board game is a valid tool to use to achieve the aims of the intervention program. Various phases of the RSTI board game enabled specific intervention aims to be achieved. For instance, declarative, procedural and conditional metacognitive knowledge was gained through phases 2 - 6 of the intervention tool. Organic goal-directed self-talk and self-regulation strategies (psychological skills) were discussed in phases 6 and 7 (Latinjak et al., 2020; Latinjak et al., 2019). Coinciding with previous research, the repeated use of the RSTI board game facilitated the development of metacognitive knowledge and self-regulation skills. The development of metacognitive knowledge and self-regulation skills was evident in participants SMTQ scores, #SportPsychMapping interviews and participants reflections on the intervention program. Synthesising these results showcases the validity of the RSTI board game, how previous research informed the creation of the

intervention tool and how the present study implemented the tool in a study format which mirrors applied SEP practice (Keegan, 2016; Latinjak et al., 2020).

Further exploring the intervention tool, it is interesting that the effects of the intervention tool did not differ amongst participants of various ages, sports and levels of playing experience. On the one hand, various applied SEP intervention studies have showcased similar results on the effects of intervention programs on athletes who differ in age, gender and sport (Brown & Fletcher, 2017). However, it was speculated that levels of playing experience may impact the effects experienced within the intervention program, a suggestion supported by previous research (Ong & Chua, 2021; Rumbold et al., 2012). The results of the present study did not allude to any differences in the effects of the intervention program. This suggestion derives from all data points which revealed the intervention program's effects. These were the SMTQ scores, #SportPsychMap and participant reflections.

Altogether, analysis of the RSTI board game provides efficacy of its use within applied SEP practice. Showcasing the use of the RSTI board game achieves an aim of the study, which was to investigate the application of the reflexive self-talk intervention tool in achieving the intervention aims. By showcasing how the RSTI board game helped achieve the intervention aims, how the present study has added to the knowledge of specific aspects (intervention tool) within the researched area (reflexive self-talk interventions) can be seen. From gaining new knowledge about the RSTI tool, what can now be explored is the reflections made about the intervention program and the impact the program had on participants and the researcher.

6.4.3 Intervention Reflection

The reflections conducted by both the participants of the study and the researcher revealed unique insights into the actual doing of the reflexive self-talk intervention program. Reflection was a method tool utilised within previous research (Latinjak et al., 2019), and its application

within the present study brings to life the perceptions of all individuals involved in the intervention program.

Participant Reflection

Intervention Exercise Strengths. The interpretive phenomenological analysis (IPA) revealed that participants believed the intervention possessed various strengths. Strengths included helping to develop levels of perceived control, performance evaluation abilities, and levels of self-awareness. These were subordinate themes within the superordinate theme intervention exercise strengths. The superordinate theme aligns with the aims of the intervention program and the inherent characteristics of the RSTI board game. Both showcase congruence between the reflections made by the participants and previous research which informed the creation of the intervention program (Latinjak et al., 2016; Latinjak et al., 2019; Latinjak et al., 2020). This congruence further strengthens the present study's findings and the intervention tool's abilities, with the positive results evident within the #SportPsychMapping data and the SMTQ scores now being showcased through the participants' perspective.

Intervention Exercise Challenges. In addition to the strengths of the intervention program highlighted, participants also highlighted aspects of the intervention program that were challenging, and these challenges were clustered into a superordinate theme: intervention exercise challenges. These challenges included certain questions within the RSTI board game and the structure of the board game overall. It was stated that specific questions on the RSTI board game (phase 2) required participants to have a high level of self-awareness to answer RSTI board game questions accurately. This reflection suggests that the wording of questions should be adjusted to participants as the wording of questions could present difficulties in progressing through the RSTI board game and impede participants ability to self-reflect. The need to accurately word questions is supported by previous research highlighting

the counselling techniques (e.g., active listening) and communication skills necessary when applied SEP practitioners conduct intervention sessions (Mack et al., 2017; Mack et al., 2019).

The RSTI board game structure consisting of 25 steps was perceived as time-consuming. Also, potentially reducing the number of steps on the RSTI board game was recommended. The duration of the intervention sessions typically lasted between 50 to 70 minutes. Previous research within applied SEP intervention studies has typically administered successful intervention sessions between 50 to 70 minutes (Saunders et al., 2022). Previous research, therefore, may not necessarily agree with the reflections made by participants. However, when attempting to plan a successful intervention, the content of the session and time needed for participants to progress through the intervention are aspects of the session that, in addition to session duration, need to be accounted for.

A recommendation was made by participants who felt that the intervention sessions were too long. The recommendation was to reduce the steps on the board game. This recommendation, however, may be difficult to implement. Each phase within the RSTI board game facilitates a specific goal within the intervention session. In addition, a certain level of understanding of the RSTI board game is necessary before any adjustments are made by the participants (e.g., transference of ownership). On the one hand, applied SEP interventions need to be tailored to the athlete's needs (Keegan, 2016; Latinjak & Hatzigeorgiadis, 2020). On the other hand, difficulties can arise within intervention studies as a level of consistency across participants is necessary to gain accurate results. Instead of reducing the steps on the RSTI board game, splitting the intervention session in two may be a viable option for athletes who wish to. In practice, two intervention sessions could be conducted to complete the 25 steps within the RSTI board game. Splitting the intervention sessions into two may be a desirable option for some athletes. The aims of the intervention would still be achieved whilst upholding the athlete-centred nature of the intervention program. Further details of the recommendation to split intervention sessions are highlighted within the practitioner recommendation segment of the discussion section.

Transference of Ownership. The last reflection made by participants centred around the transference of ownership. The superordinate theme, transference of ownership, highlighted positive experiences of transference of ownership. These were participants being able to easily understand and interpret the #SportPsychMapping colour rating system, making the RSTI board game their own, using the intervention tool and developing organic goal-directed self-talk outside of the intervention sessions. These positives align with what is deemed a successful intervention program in the context of the study.

Transference of ownership is an aspect of interventions that previous research suggests is important (Longstaff & Gervis, 2016) but is oftentimes not mentioned in depth within studies. Therefore, Neophyte practitioners are disadvantaged as to how they could apply knowledge from intervention studies to their practice (Martindale & Collins, 2013; Owton et al., 2014; Tod et al., 2017). The present study has taken neophyte practitioners into consideration, and reflections made by the participants reveal how attempts by the researcher to transfer ownership of the intervention have been received by the participants. The specific techniques which were utilised are reflected on in the researcher reflection segment of the discussion section, and recommendations for the techniques are mentioned within the practitioner recommendations segment of the discussion section.

Not all attempts of transference of ownership were received positively by participants, as negative instances of transference of ownership were reflected on. These reflections involved participants at times having difficulties progressing through the questions without the researcher's assistance. Also, a participant not liking the use of numbers for each step of the RSTI board game was a reflection made, as making the intervention tool their own became difficult due to the numbering system. Completing the RSTI board game and making the board game their own were two foundational pieces of transference of ownership within the intervention program. Both negative instances allude to the abilities of the applied SEP practitioner and what is required to help the athlete achieve the aims of the intervention

program. Although transference of ownership tasks were administered within the intervention program (e.g., instructing the participant to complete phases 1 and 2 independently), these tasks were not always successful and additional tasks or techniques may be necessary.

Researcher Reflection

Exploring the researcher's reflections, the IPA revealed that the researcher administering the intervention program believed that the strengths and challenges of the intervention centred around changes in self-awareness, the researcher's approach, transference of ownership and implementation of the intervention tool.

Changes Self-awareness. A reflection made by the researcher was how levels of self-awareness impacted participants' ability to progress through the intervention program. It was stated that participants who achieved the aims of the intervention at a rapid rate may have done so due to their pre-established levels of self-awareness. It was also stated that participants displayed more autonomy over the intervention sessions as levels of self-awareness improved. These reflections by the researcher align with the reflections made by the participants (intervention strengths and challenges), showcasing that both the participants and the researcher noticed the enhancement of self-awareness.

Several data points (researcher reflection, participant reflection, #SportPsychMapping) have alluded to the importance of self-awareness and its improvement within the intervention program. These data points and the self-awareness superordinate theme suggests that athletes do not necessarily need to be experts in their sport to progress through the reflexive self-talk program. However, athletes need to have a level of understanding of themselves in order to experience the benefits of a reflexive self-talk intervention program fully. Exploring previous research, heightened levels of self-awareness can improve athletes' ability to self-regulate on a psychological and physiological level (Dupee et al., 2016), improve intrinsic motivation (Chow & Luzzeri, 2017) and improve their ability to produce the desired performance (Latinjak et al.,

2016). Therefore, the present study's findings suggest that these experiences could occur through a reflexive self-talk intervention program.

Researcher Approach. Another reflection made by the researcher was the approach used within intervention sessions and the actions taken by the researcher, which either helped or hindered the progression of the intervention sessions. Reflections within the superordinate theme centred around the researcher being prepared for intervention sessions and rapport-building abilities. Preparation is a physical and psychological skill that can impact athletes' performance (Gould & Maynard, 2009). It is no surprise therefore that preparation can also impact the performance of practitioners when administering an intervention session. The researcher often reflected on preparation and how preparation impacted various aspects of the intervention, for instance the researcher's ability to utilise counselling techniques. In applied practice, there are times when practitioners are not as prepared as they would like for various reasons. For example, if the practitioner is informed 10 minutes prior that they will have a session with an athlete, or if an athlete requires support in the event of an emergency.

Counselling techniques aid in the progression of the intervention sessions, increasing the likelihood of achieving the intervention aims (Mack et al., 2017; Mack et al., 2019). The present study showcased the benefits of counselling techniques through the reflections made by the researcher. In addition, the results of the study revealed that counselling techniques also aided in rapport being built with the participants. Rapport building encompasses the connection made between the practitioner and the client. Previous research has suggested that building rapport with clients and a positive therapeutic relationship are important characteristics for applied SEP practitioners to consider (Lubker et al., 2008; Woolway & Hardwood, 2020). The reflection made by the researcher was supported by previous research and highlights the various benefits of utilising counselling techniques in conjunction with implementing an intervention.

Transference of Ownership. Transference of ownership was another reflection made by the researcher. These reflections centred around the tasks utilised when attempting to transfer ownership to the participant and the strengths and challenges pertaining to the transference of ownership. Interestingly, transference of ownership was a theme generated from both the researcher and the participants' reflections, indicating that both the attempt to transfer ownership and the reception of ownership being transferred was evaluated.

Evidently, the researcher administered tasks to transfer ownership from the midpoint of the intervention program onwards (e.g., instructing the participant to complete phases 1 and 2 independently). From the researcher's perspective, transferring ownership yielded positive results such as participants completing the RSTI board game independently and the development of self-awareness. These positives align with previous research which has explored the benefits when clients are placed in the leadership position within an intervention program (Tod et al., 2023). In addition, the data generated from the analysis conducted by the independent expert in sport and exercise psychology also supports the researcher's perspective. Within every participant's reflexive self-talk intervention program, the number of questions asked decreased from the first RSTI session to the last. Less questions asked by the researcher suggests that transference of ownership occurred, as the athlete required the researcher's assistance to progress through the RSTI board game less. These positives are supported by the positives of transference of ownership stated by participants, as participants believed they could make the RSTI board game their own and develop organic goal-directed self-talk independently, outside of intervention sessions.

Reflections made by the researcher on the difficulties of transference of ownership involved some participants finding it challenging to progress through different phases of the RSTI board game independently. Also, difficulties were experienced when the researcher did not give adequate time for the participant to become accustomed to the leadership position of the intervention session. These difficulties also align with the reflections made by the participants, as they perceived progressing through the RSTI board game and making the board game their

own as situations which negatively impacted transference of ownership. Synthesising both reflections, barriers in the transference of ownership can occur, as the athlete's progression needs to be carefully monitored. Previous research supports this suggestion, as athletes play an active role in interventions, practitioner flexibility and empowering athlete independence are characteristics of effective applied SEP practice (Fortin-Guichard et al., 2018; Sharp & Hodge, 2014). The present study has added to the knowledge of previous research, as it revealed the complexities of transference of ownership. The transference of ownership tasks utilised in the present study positively aided the transference of ownership. The reflections made by the researcher reveal the roadblocks that may impact a smooth transference of ownership.

Intervention Tool. Lastly, a reflection made by the researcher focused on the intervention tool specifically. A reflection of particular interest is the different ways the intervention tool was used. The RSTI board game typically explored a psychological challenge the athlete experienced, aligning with previous research utilising reflexive self-talk interventions and the procedure protocol described in previous research (Latinjak et al., 2019; Latinjak et al., 2020). In addition, the RSTI board game was used in the present study to explore positive sporting experiences. Positive results were revealed within the researcher's reflections that exploring positive experiences helped develop participants' levels of self-awareness and ability to generate organic goal-directed self-talk in different sporting situations.

Attempting to achieve the aims of a reflexive self-talk intervention through exploring a positive sporting situation is a notion that aligns with the strengths-based approach towards psychological development (Gordon, 2023). The strengths-based approach derives from positive psychology, and it is the approach used by applied SEP practitioners to solve challenges through the unique set of strengths an individual possesses. Previous research has indicated that the strengths-based approach can aid in developing self-awareness and mental toughness (Castillo & Bird, 2022; Gordon & Gucciardi, 2011). The present study supports the findings evident within previous research. It extends the knowledge of reflexive self-talk interventions

as it is evident that the intervention's aims can be achieved by exploring a positive sporting experience.

Altogether, the reflections made by participants and the researcher provide information on the application of a reflexive self-talk intervention program to achieve the third study aim. This aim was to provide a detailed account of the reflexive self-talk intervention program from the participants' and researchers' perspective.

6.4.4 Practitioner Recommendations

The results of the reflexive self-talk intervention program and the reflections made by both the participants and researcher have enabled new insights into administering a reflexive self-talk intervention to occur. From the results of the study, specific recommendations for its use can be provided. It is believed that these recommendations will aid applied SEP practitioners, regardless of their level of expertise, in administering a reflexive self-talk intervention program if they choose to. Four key recommendations are provided. These recommendations consider (1) the initial intake session, (2) familiarisation with the RSTI board game, (3) splitting the intervention sessions and (4) transference of ownership.

Initial Intake Session. A recommendation for applied SEP practitioners considering implementing a reflexive self-talk intervention is to carefully consider the initial intake session. Previous research has highlighted the importance of an initial intake session (Simons, 2023) and the different tools which can be used within this session (Ayogai et al., 2017; Latinjak et al., 2021; Taylor & Schneider, 1992). The importance of initial intake sessions is evident within the present study, as the use of #SportPsychMapping was a helpful tool within the intervention program to understand the athlete's sporting experience and measure their progression throughout the intervention program. Regardless of the tool used, the athlete's pre-established levels of self-awareness need to be considered within the initial intake session. The reflections

made by the participants and the researcher, and the challenges in a lack of understanding of the athlete's pre-established levels of self-awareness (difficulty in using the RSTI board game) inform this recommendation. Assessing pre-established levels of self-awareness can be conducted through a questionnaire (Carden et al., 2023; Sutton, 2016). An assessment could also be conducted more subjectively by assessing the client's answers during the initial intake session, as previous research has indicated that those with heightened levels of self-awareness can better understand and communicate their thoughts and emotions (Meyer & Fletcher, 2007).

Familiarisation with the RSTI Board Game. Once it has been agreed that a reflexive self-talk intervention program will be administered, an introduction session should occur before the applied SEP practitioner undergoes the RSTI board game. Familiarisation with the RSTI board game was attempted within the present study (pre-intervention session 2); however further attempts of familiarisation were needed. The reflections made by the participant showcased that further attempts of familiarisation were needed, as certain questions within the RSTI board game were perceived as challenging within the initial stages of the intervention program. The introduction session should give the client information about the board game, its various phases and give space for any questions the client may have regarding the meaning of different concepts and wording of specific questions to be answered. By doing so, a solid foundation could be built between the client and the RSTI board game, and this foundation will pay dividends when attempts to transfer ownership occur later within the intervention program.

Splitting the Intervention Sessions. Splitting the intervention session was a recommendation made within the participants reflection of the intervention program. Indications that the intervention sessions may need to be adapted to better suit the needs of the athlete can be revealed through an effective introduction session. If, after the intervention introduction session, the client indicates a lack of understanding of the RSTI board game and different concepts pertaining to the board game, the first few intervention sessions could be broken into two sessions to complete the 25 steps within the RSTI board game. In practice, an

intervention session could be conducted starting at phase 1 (identifying a psychological challenge) and ending at phase 5 (discussing the ideal skills which could positively impact the discussed challenge). The subsequent session could continue from phase 5 to the completion of the RSTI board game. If splitting the intervention session is attempted, clear communication between the practitioner and the athlete needs to occur so that a clear progression to how intervention sessions should be is conducted. Splitting intervention sessions is a recommendation which could make the reflexive self-talk intervention program more accessible for athletes of different abilities, whilst still upholding the aims of the intervention session and the athlete-centred nature of the intervention program (Latinjak et al., 2019).

Transference of Ownership. The fourth and final key recommendation for applied SEP practitioners pertains to the transference of ownership. It is recommended that the transference of ownership tasks used in the present study can be used by applied SEP practitioners when attempting to transfer ownership within the intervention. These three tasks were:

1. Instructing the participant to complete phases 1 and 2 independently, progressing to completing phases 3 - 5, phase 6 and then the entire board game independently.
2. Completing the RSTI board game outside of the intervention session and discussing phases of the board game which were easy and difficult to complete.
3. Participants attempting to eliminate steps on the board game that they perceive as irrelevant to the challenge they are discussing.

It is recommended that the three transference of ownership tasks start by the midpoint of the intervention program. It is also recommended that a criteria for indications as to when to progress through different transference of ownership tasks is created. The present study's criteria were if participants started to become more proactive (e.g., answering aspects of the RSTI board game independently) or consistently succeeded in a transference of ownership task, progression onto the subsequent transference of ownership task was warranted. These recommendations are highlighted due to the positive reflections made by the researcher about

transferring ownership and the participants' positive reflections on receiving ownership over the intervention. Furthermore, previous research has highlighted the importance of transference of ownership (Longstaff & Gervis, 2016), with the present study progressing from previous research to provide strategies for how transferring ownership could occur.

The present study has indicated that transference of ownership is not a one-session ordeal, but a continual process which starts when the applied SEP practitioner and the client believe it is the right time for this progression. The present study reveals that there will be time points where transference of ownership progresses smoothly, only for the participant to regress in a future session. Fluctuations in transference of ownership need to be considered, and continual communication of the progression of transference of ownership needs to occur. In practice, the conversation centred around transference of ownership could occur at the end of each RSTI session once transference of ownership has commenced.

6.4.5 Study Limitations and Directions for Future Research

The present study represents an attempt to progress the understanding of reflexive self-talk interventions. It is believed that the present study has advanced the knowledge of reflexive self-talk interventions, and the achievement of all three study aims is evident. From the present study, three limitations are mentioned, and one suggestion for future research is provided.

One limitation of the study was the imbalance of female athletes (1) compared to male athletes (7) within the study. Convenience and voluntary response sampling were used to gain participants for the study. Although the sampling strategy enabled participants of different ages, sports and levels of playing experience to participate in the study, the sampling strategy was ineffective in gaining female participants. Previous research has indicated that male and female athletes' expectations and attitudes towards interventions can differ (Martin et al., 2004; Martin et al., 2001). Due to the limited number of female participants, it is unknown

whether a reflexive self-talk intervention (with the use of the RSTI board game) is impacted by the gender of the athlete.

Another limitation of the present study was the lack of observable data used within the present study. Ideally, the psychological development gained within an intervention equates to enhancing sport performance. Data on participants' performance was not gained and used as a measurement of the effects of a reflexive self-talk intervention. Performance data would have been useful information to track as often within applied SEP practice, the athlete and stakeholders within the athlete's sporting experience (e.g., coach, parent) want performance enhancement to occur. With previous research suggesting that the development of metacognitive knowledge can impact sport performance (Brick et al., 2016), the observable improvements in participants' performance could have been evident if performance was measured.

The third limitation of the present study was that the researcher was the individual who conducted all RSTI sessions and #SportPsychMapping interviews. A separate individual could have conducted the #SportPsychMapping interviews at mid, post and follow-up intervention. These interviews at these time points evaluated the athlete's progression and the impact the RSTI program had on the athletes sporting experience. In addition, the #SportPsychMapping interviews at post and follow-up intervention time points gave participants time to evaluate the strengths and weaknesses of the RSTI intervention. The researcher conducting these interviews may have impacted the participants' answers. Therefore, it may be the case that there are further strengths and areas of improvement of the RSTI program which could have been revealed if these interviews were conducted by a separate expert in the field of applied SEP practice. A counter to this limitation is that within applied SEP practice, the same individual conducts all the sessions within an intervention program. By the present study attempting to mirror applied practice, the option taken for the researcher to conduct all the sessions was chosen.

A consideration for future research would be to explore a novel finding within the present study of using an adapted version of the RSTI board game to explore a positive sporting situation. Exploring a positive sporting situation yielded positive results within the researcher's reflections and is an area which future research could explore. Using the RSTI board game in its current form may not be the best option to frequently explore athletes' positive sporting situations to achieve the aims of the intervention program. Because of the current form of the RSTI board game, the use of the RSTI board game in a positive sporting situation was not mentioned within the practitioner recommendation segment of the discussion section. Future research could explore the creation and application of an adapted version of the RSTI board that encompasses investigating a positive sporting situation.

6.5 Conclusion

Investigating a reflexive self-talk intervention was of focus within the present study. Previous research has produced guidelines on how to conduct applied SEP intervention programs (Keegan, 2016). Applied SEP intervention studies have informed the literature on self-talk as various self-talk interventions have been created and implemented following these guidelines (Latinjak & Hatzigeorgiadis, 2020). A self-talk intervention that was created based on the guidelines of applied SEP intervention studies and the self-talk literature was a reflexive self-talk intervention program. Reflexive self-talk interventions focus on developing metacognitive knowledge and the content of organic goal-directed self-talk. Previous research has indicated the benefits a reflexive self-talk intervention program could offer (Latinjak et al., 2019), and exploring previous research revealed opportunities to progress the understanding of reflexive self-talk interventions.

In positive effect, all three study aims were achieved and the present study progressed the literature focusing on applied SEP practice and reflexive self-talk interventions. A reflexive self-talk intervention program was measured utilising a mixed methods research methodology, revealing that the aims of the intervention can be achieved when administered to participants of various ages, sports and levels of playing experience. The present study also gives validity to

a new intervention tool (RSTI board game), supporting its use within a reflexive self-talk intervention program.

The results of the intervention program and analysis of the RSTI board game, in addition to the reflections made by the participants and the researcher, provide new knowledge within the researched area. New knowledge was packaged together in the form of recommendations as to ways of how reflexive self-talk interventions could be conducted. It is the hope of the researcher that the results of the present study can be helpful information which could aid practitioners of all levels of expertise in administering reflexive self-talk interventions, as well as aid athletes in developing metacognitive knowledge to manage psychological challenges better (chapter summary provided in Table 6.9).

With the exploration of a self-talk intervention complete, the thesis now turns to another aspect of self-talk in the final study chapter of the thesis. The thesis so far has focused on self-talk generated within a sport performance context and the self-talk directed to a performance outcome. However, self-talk is not a cognitive process that begins and ends when the athlete is engaged in their sport. Nor is the self-talk which athletes generate always related to their sport performance. What is explored in the next chapter is how an athlete's thoughts impact their performance when these thoughts occur outside of the sporting context. Also, what is explored is how an athlete's thoughts impact their performance when those thoughts are not related to the present sport task or situation. The final study of the thesis explores mind wandering inside and outside a sport performance context.

Table 6.9

Chapter 6 Summary

Chapter	**Aims**
6	- To investigate the ability of a reflexive self-talk intervention in developing metacognitive knowledge - To investigate the application of the reflexive self-talk intervention tool in achieving the intervention aims - To provide a detailed account of the reflexive self-talk intervention program from the participants and researchers perspective
Chapter Rationale	
The opportunities for progression in the understanding of reflexive self-talk interventions to occur is through measuring the impact of reflexive self-talk interventions, utilising mixed methods research when investigating reflexive self-talk interventions, and applying a new reflexive self-talk intervention. The present study answers the questions of does the reflexive self-talk intervention work and how did (or did not) the intervention work.	
Key Research	
● Reflexive self-talk intervention program (Latinjak et al., 2019) ● Reflexive self-talk intervention tool (Latinjak et al., 2020) ● Metacognition (MacIntyre et al., 2014; Schraw & Moshman, 1995; Tomporowski et al., 2015)	
Findings	

- All study aims were achieved
- The aims of a reflexive self-talk intervention program can be achieved if it is administered to athletes of various ages, sports and levels of playing experience.
- The present study gives validity to a new intervention tool (RSTI board game), supporting its use within a reflexive self-talk intervention program.

New Knowledge Gained from Chapter 6

Practitioner recommendations

- Consider carefully the initial intake session. Use this session to assess athletes pre-established levels of self-awareness and the suitability of a reflexive self-talk intervention program.
- Consider an introduction session to the intervention program before an RSTI board game intervention session
- Consider splitting the RSTI board game intervention session for those clients who wish to
- Consider utilising various transference of ownership tasks during the reflexive self-talk intervention program

Chapter 7

Exploring Athletes Mind Wandering Experiences and the Mediating role of Four Dispositional Factors

7.1 Introduction

"Mentally and emotionally I haven't been here, my thoughts have been on her, everything I do is for her and she's watching over me. So that's all for Chyna".

These were the words of an emotional Isaiah Thomas in a post-match interview where he put forth a dominant performance for his team, the Boston Celtics. The 5 foot 8 inches (172 cm) National Basketball Association (NBA) star scored 33 points, 6 assists and 5 rebounds against the Chicago Bulls in the 2017 NBA playoffs. The performance would be deemed sensational for most players in the NBA, but for Isaiah Thomas, it was a typical night. However, the context in which this performance occurred was not typical.

Twenty-four hours before the match, Isaiah Thomas was notified after a training session that his sister (Chyna Thomas, 22 years old) was killed in a car accident. Knowing the additional context, Isaiah Thomas's performance was truly spectacular. Furthermore, his words in that post-match interview hold even more weight. Within this tragic situation and heroic basketball performance, what starts to become apparent is the performance impacts that can occur when the generated thoughts have no relation to the present task or situation.

The position revealed in the previous two study chapters indicated the various ways in which sport performance can be impacted through self-talk. The impact of self-talk could be through the use of pre-determined strategic self-talk cue words (Chapter 5) as well as through the development of organic goal-directed self-talk within a reflexive self-talk intervention (Chapter 6). Although the previous two studies have aided in gaining new knowledge about how athletes can be educated in using self-talk, both did not consider the self-talk generated outside of sport performance. In addition, both also did not consider the self-talk that athletes generate during performance which is undirected by the performance situation.

The thoughts unrelated to and outside of a sport performance context could impact psychological skills and athletes overall performance. For instance, within the reflexive self-talk intervention program conducted in Chapter 6, having frequent thoughts unrelated to the present performance may have inhibited participants' progression through the RSTI board game and discussing a psychological challenge. In addition, potentially using the generated organic goal-directed self-talk from the intervention sessions may have been difficult due to the mind drifting away from the present sport performance task. Therefore, the present study looks to explore the self-talk which is generated in these situations. Within literature, mind wandering is a term used to describe thoughts generated in these situations.

The exploration of mind wandering and its occurrence inside and outside a sport performance context was conducted in the present study. Previous research has indicated that mind wandering impacts the behaviours we produce in everyday life (Carriere et al., 2013). However, further insight is needed, especially within a sport performance context, regarding the antecedents, consequences, positives and negatives of mind wandering. The present study aimed to gain a deeper understanding of the behavioural impacts of mind wandering and the relationship between mind wandering and several dispositional factors within a sport performance context. Exploring self-talk through mind wandering inside and outside a sport performance context aligns with one of the thesis' aims:

- To explore the frequency, content, antecedents, effects of sport-related self-talk that occurs inside and outside the sport context.

The study chapter first explores the literature on mind wandering, first through the research conducted in a general psychology context and then a sport and exercise psychology context. Exploring the mind-wandering literature reveals the opportunities for further research from which the present study attempted to progress. A methods and results section then follows. Lastly, a discussion section is provided and draws links between the study's results and previous research, showcasing how the present study adds to the knowledge of the researched area.

7.1.2 Mind Wandering and Performance Relationship: A General Psychology Context

Mind wandering was first explored within a general psychology context and this is where the majority of research investigating mind wandering has occurred. Therefore, in order to understand mind wandering and sport performance, exploring mind wandering within a general psychology context is first undertaken. Mind wandering can broadly be defined as thoughts unguided by the present task or activity, thus unrelated to the situation (Irving, 2016; Seli et al., 2015). Mind wandering is a phenomenon that accounts for approximately 46% of our thoughts every day (Killingsworth & Gilbert, 2010). Mind wandering can occur for many reasons, for example following a traumatic event such as what was experienced by Isaiah Thomas' example. Other examples of mind wandering, which are more typical, include during the commute to work, to distract oneself from pain or when in a perceived boring lecture (Farley et al., 2013).

Mind wandering experiences and the explanation of their occurrence has been explained through multiple theories (Randall et al., 2014). For example, the executive attention theory of working memory capacity (McVay & Kane, 2012), load theory (Forster & Lavie, 2009), the decoupling hypothesis (Smallwood & Schooler, 2006; 2015) and the meta-awareness hypothesis (Smallwood, 2013). These theories present various similarities and differences, and have contributed to the understanding of mind wandering. These theories were reviewed by Seli et al. (2016) and a novel theory of mind wandering was created, building on the understanding from previous research. This novel theory proposes a distinction between mind wandering with and without intention, and this was the theoretical framework that informed the present study (Seli et al., 2016).

7.1.3 The Intentionality of Mind Wandering

Seli et al. (2016) theoretical framework explains mind wandering as a phenomenon that can occur due to one's attentional capacity and level of control over this. Mind wandering is an

experience that occurs when the present task is perceived not to require an individual's full attentional capacity. This perception leads to the individual processing task-irrelevant information, leading to mind wandering. Seli's theoretical framework highlights the importance of controlling attention through endogenous and exogenous attention. Endogenous attention refers to goal-driven attention, and exogenous attention is driven without a goal. From these attentional styles, two types of mind wandering are apparent, one which is unintentional and one which is intentional.

Unintentional Mind Wandering. Unintentional mind wandering is when an individual's mind inadvertently drifts away from the existing experience to an experience in the past or the future (Seli et al., 2015a; Seli et al., 2015b). Unintentional mind wandering does not have a distinct moment of conscious initiation, and during its occurrence, individuals are likely not to be aware of this mind wandering experience occurring (Seli et al., 2016). Previous research has suggested that there are links between unintentional mind wandering and dispositional factors, for example, low levels of task motivation (Seli et al., 2015b), depression, anxiety and stress (Seli et al., 2019).

It has been suggested that the perceived importance of the situation influences unintentional mind wandering. For example, a perceived important situation (e.g., delivering a lecture) decreases the likelihood of unintentional mind wandering occurring, and a situation which is not perceived to be important (e.g., commuting to work) increases the likelihood of unintentional mind wandering (Seli et al., 2015a). These differences in the likelihood of unintentional mind wandering are due to the amount of unused attentional capacity available for task-unrelated stimuli. The more unused attentional capacity, the greater the likelihood of unintentional mind wandering occurring (Seli et al., 2016). Seli's theoretical framework showcases that perception is an antecedent of mind wandering, and previous research has showcased the consequences of unintentional mind wandering, such as impaired performance on sustained attention tasks (Seli et al., 2015b).

Intentional Mind Wandering. In addition to mind wandering occurring unintentionally, mind wandering can also occur intentionally. Intentional mind wandering is defined as when the mind is deliberately altered and becomes distracted from the present experience (Seli et al., 2015a; Seli et al., 2015b). This mind wandering experience is associated with a conscious initiation and includes metacognitive awareness, self-regulatory functions and showcases a level of control present in this experience due to its intentional occurrence (Seli et al., 2016).

Intentional mind wandering has been linked to high levels of intrinsic motivation and an individual's metacognitive beliefs about the extent to which mind-wandering influences execution of physical and cognitive tasks. Intentional mind wandering has also been linked to the ability to strategically mind wander during a task perceived to require low attentional capacity (Seli et al., 2016). In addition, intentional mind-wandering has been suggested to occur more in an easy task than in a difficult task, with unintentional mind-wandering occurring more in a difficult task (Seli et al., 2016). Furthermore, intentional mind wandering can aid in reinterpreting past scenarios in light of new information and rehearsing upcoming scenarios that aid in executing the desired outcome (McMillan & Kaufman, 2013).

7.1.4 Exploring Seli's Theoretical Framework

Consideration of the internal and external experiences of the individual is evident within Seli's theoretical framework, as perception is a cognitive process formed through internal and external information working together (Bodenhausen & Morales, 2013). The notion of internal and external variables is consistent throughout the thesis, evident within the two foundational pieces of the thesis, the transdisciplinary self-talk model (Chapter 3) and critical realism (Chapter 4).

When evaluating previous research exploring unintentional and intentional mind wandering, it seems evident that defining the types of mind wandering is of heightened importance. Defining mind wandering is important due to the numerous ways in which mind wandering has been

referred to in literature. For example, task-unrelated thoughts, stimulus-independent thoughts, disunified thinking and zoning out (Irving & Thompson, 2018). Defining and distinguishing mind wandering from similar cognitive processes (e.g., rumination, visualisation) has been difficult. The ripple effect of researching concepts that are difficult to define is that inaccurate methods could be used to explore the researched phenomenon, negatively impacting study validity and causing unclear applied implications to be recommended, based on flawed results (Irving, 2016; Irving & Thompson, 2018). It is suggested that researchers put procedures in place to ensure that there is clarity, both by the researcher and the study participants, as to what is being investigated.

Distinguishing between unintentional and intentional mind wandering is also important because both types differ in their association with metacognitive awareness, self-regulatory functions and dispositional factors (Seli et al., 2015b; Seli et al., 2016; Seli et al., 2019). Different situations and consequences of unintentional and intentional mind wandering are produced depending on individuals' metacognitive awareness levels, self-regulatory functions and dispositional factors. Therefore, positive and negative impacts on physical and cognitive tasks can occur through unintentional and intentional mind wandering. For example, motivation is a dispositional factor that impacts task performance depending on the type of mind wandering that is experienced (Seli et al., 2015b; Seli et al., 2016). In addition, unintentional and intentional mind wandering negatively impacts the speed and accuracy trade-off during the completion of tasks, such as a singleton search task (Forster, 2013; Thompson et al., 2014). The results from these studies reveal the dynamic nature of mind wandering. Mind wandering is a phenomenon that impacts various behaviours and actions. Consequently, by better understanding the relationship between mind wandering, metacognitive awareness, self-regulatory functions, and dispositional factors, more positive behavioural consequences of mind wandering (both unintentional and intentional) could be experienced.

Distinguishing between different mind wandering types may call for various methods to be used with mind wandering studies as different methods could reveal new insights into the

phenomenon. Mind wandering literature appears to have not often utilised a mixed methods research methodology. The methods used within mind wandering studies include the separate use of a cognitive task (Thompson et al., 2014), interview (Latinjak, 2018) and questionnaire (Carriere et al., 2013). A mixed methods methodology could yield interesting results due to the combination of methods providing unique insights into the mind wandering experiences of individuals (further benefits of mixed methods methodology found in Chapter 3). For example, a mixed methods methodology could reveal how individuals mind wandering experiences (information gained through an interview), differ depending on specific dispositional factors (information gained through a questionnaire). This methodology was utilised within the present study, adding to the current understanding of this phenomenon.

Unintentional and intentional mind wandering are important concepts within the mind wandering literature. Therefore, distinguishing between the two was considered within the study's current investigation of mind wandering. Another consideration that occurred was the dispositional factors that were included in the study through exploring the literature within mind wandering. By exploring dispositional factors, a greater insight into the mind wandering experiences inside and outside a sport performance context could occur, growing the current understanding of this phenomenon.

7.1.5 Mind Wandering and Dispositional Factors

An important direction for the literature on mind-wandering is to explore whether certain dispositional factors can be used to explain unintentional and intentional mind-wandering (Seli et al., 2016). The present study attempted to add to the previous research exploring mind wandering and dispositional factors (McVay & Kane, 2009). In attempting to do so, various dispositional factors were investigated within the study. These include vitality, self-efficacy, affect and self-perception.

Vitality

Vitality is the state of being strong, energetic and active (Ryan & Frederick, 1997). Vitality impacts behaviour and action through increasing motivation and through individuals going the extra mile to produce the desired outcome (Garcia et al., 2019). The relationship between vitality and mind wandering has been explored within previous research. It has been suggested that mind wandering may be related to low vitality levels (e.g., fatigue), as previous research has suggested that the number of hours of sleep (the time point when energy levels are replenished) was a predictor of the frequency of mind wandering occurring when conducting a task (Walker & Trick, 2018).

When mind wandering is investigated through participants completing a task (e.g., sustained attention to response task, singleton search task), the likelihood of mind wandering occurring increases as the attention on the task increases (Forster, 2013; Pachai et al., 2016; Walker & Trick, 2018). A suggested reason for the increase in mind wandering tendencies could be due to ego depletion, which is the using up of cognitive energy (Baumeister & Vohs, 2007). As cognitive energy is used, one's tendency to mind wander increases. This increased occurrence of mind wandering as time on task increases has shown to be a significant predictor of changes in accuracy levels (Thompson et al., 2014). Although this research has been conducted, future research is warranted as not all previous research has distinguished between intentional and unintentional mind wandering. By making the distinction, a better understanding of the specific consequences (positive and negative) of intentional and unintentional mind wandering could be showcased (Seli et al., 2017).

Self-efficacy

Self-efficacy can be defined as an individual's belief in their ability to successfully perform skills for the desired outcome (Bandura, 2006). When an individual's self-efficacy is high, their ability

to maintain focus is also high due to their belief that they can execute the desired outcome (Major et al., 2013). Conversely, if an athlete's level of self-efficacy is low, their ability to maintain focus would be impaired. Low self-efficacy would lead to more focus being placed on task-irrelevant information, increasing the likelihood of mind wandering occurring. Previous research highlights the relationship between self-efficacy and mind wandering, as individuals with a higher tendency to mind wander experience impaired self-efficacy. The increased tendency to mind wander and impaired self-efficacy relationship can impact various situations, for example, student's academic achievement and self-concept (Desideri et al., 2019).

Although the relationship between self-efficacy and mind wandering has been investigated, future research is warranted as previous research has also not distinguished between intentional and unintentional mind wandering. It could indeed be the case that the increased tendency to mind wander and the impairment of self-efficacy is a mind wandering experience that occurs unintentionally. Unintentional mind wandering is suggested due to it being an experience which lacks conscious control (Seli et al., 2015). Furthermore, it could be possible that intentional mind wandering positively impacts levels of self-efficacy. Intentional mind wandering is suggested because it possesses self-regulatory functions (Seli et al., 2016). Exploring previous research investigating self-efficacy and self-regulation, both concepts have been positively linked to cognitive tasks and academic skills (Schunk & Zimmerman, 2007). There is a possibility that intentional mind wandering could positively impact levels of self-efficacy due to intentional mind wandering's self-regulatory functions.

Affect

Affect refers to the experience of feelings, emotions and mood reacting to stimuli (Barrett & Bliss-Moreau, 2009). Affect can range from positive affect (e.g., inspired, determined) to negative affect (e.g., upset, afraid), with these emotions occurring due to a variety of psychological and physiological reasons (Thompson, 2007). The relationship between mind wandering and affect has been explored in previous research. For instance, it is suggested that

individuals who more frequently unintentionally mind wander tend to experience more negative affect, low mood and lower psychological well-being (Seli et al., 2019). These results could be due to the individual's perceived lack of control and engagement in their environment. In addition, various examples of negative affect (e.g., anxiety, stress, depression) have been shown to link to unintentional mind wandering (Seli et al., 2019).

In positive effect, previous research exploring the link between mind wandering and affect has showcased a relationship (Smallwood et al., 2009) and has distinguished between unintentional and intentional mind wandering (Seli et al., 2019). Future research could still occur to explore the mind wandering and affect relationship however, as there is little research exploring positive affect and mind wandering (both unintentional and intentional) and exploring this relationship could present new insights within this phenomenon.

Self-perception

Self-perception can be defined as the concept one has of oneself which is formed from their perception of an experience and environment (Marsh & Perry, 2005). Self-perception is constantly refined through the evaluation of one's experiences. Evaluating one's experiences typically occurs outside the context of the experience (e.g., after it occurs) and this evaluation can impact the subsequent behaviour and actions produced.

The relationship between self-perception and mind wandering can be seen depending on the time point when an experience is evaluated. Evaluating one's experiences can be considered mind wandering, if done in a context where these thoughts are unguided by the present situation. For example, a student evaluating a recent presentation would be classed as mind wandering, if the evaluation occurred while they were driving home from delivering the presentation. The evaluation occurring through mind wandering could influence the

subsequent actions of the individual (e.g., future presentation skills used), thus altering their self-perception.

The relationship between mind wandering and self-perception has been explored in previous research. Previous research has suggested that when mind wandering occurs whilst individuals undergo a period of self-reflection, future-related thoughts are more likely to come to mind, rather than thoughts which dwell on the past (Smallwood et al., 2011). Future-related thoughts during a period of self-reflection have been suggested to aid in the setting and achievement of goals (Travers et al., 2015), highlighting the potential relationship between mind wandering, self-perception and future planning (Baird et al., 2011). Opportunities for future research are apparent due to previous research failing to replicate the findings linking mind wandering, self-perception and future planning (Murray et al., 2021). In addition, previous research has not distinguished between intentional and unintentional mind wandering. By distinguishing between intentional and unintentional mind wandering, further understanding and reliability could be added to the relationship between self-perception and mind wandering.

7.1.6 Mind Wandering and Performance Relationship: A Sport and Exercise Psychology Context

Previous research has progressed our understanding of the antecedents, consequences, and positives and negatives of mind wandering. In addition, the understanding of the relationship between dispositional factors, mind wandering and executing various physical (e.g., driving) and cognitive (e.g., concentration) tasks has been developed due to previous research. The previous research explored however has mainly occurred within a general psychology context. It can be suggested therefore that research should explore mind wandering and dispositional factors within other contexts to build on the level of understanding already present within the mind wandering literature. The present study has attempted to progress the understanding of the mind wandering literature, by investigating mind wandering within a sport performance context.

Many concepts associated with mind wandering in a general psychology context also apply to a sport performance context. For instance, anxiety (Mellalieu et al., 2009), the speed and accuracy trade-off (Liang et al., 2023) and planning one's future (goal-setting) (Locke & Latham, 1985) have been extensively researched in sport and exercise psychology. These concepts all influence sport performance in various positive (Lochbaum & Gottardy, 2015) and negative (Woodman & Hardy, 2003) ways. Therefore, by conducting a study utilising these concepts, what could be further understood is whether specific dispositional factors play a mediating role within the mind wandering and sport performance relationship. Researchers within the sport and exercise psychology field have agreed with this rationale behind exploring mind wandering within a sport performance context, and these studies have started to occur.

Different terminology has been used within a sport performance context, which draws similarities to mind wandering. For instance, task-irrelevant thoughts (Hatzigeorgiadis & Biddle, 2000) and attentional dissociation (Jones et al., 2014). These both, however indirectly explored mind wandering, with the main aims of these studies being to generate a self-talk questionnaire (Hatzigeorgiadis & Biddle, 2000) and to explore how external distractions impact performance (Jones et al., 2014). Previous research utilising the terminology task-irrelevant thoughts and attentional dissociation have not considered the mind wandering literature that has been conducted in a general psychology context.

Previous research which has directly investigated mind wandering has occurred, however a small number of studies have been conducted. At the point of writing the study, to the best of the researcher's knowledge, three research papers and one book chapter have been published that directly explore mind wandering within a sport performance context.

Latinjak (2018 a, b) conducted two studies. These studies started to paint a picture of the mind wandering experiences of athletes. Across the two studies, a performance task, questionnaire and semi-structured interview were employed. The first out of these two studies (Latinjak,

2018a) utilised a performance task and revealed that mind wandering does occur during athletes performance, and this disrupted the goal-directed thoughts athletes generated. The second out of the two studies (Latinjak, 2018b) revealed various time points (e.g., before, during, and after training/competition) and situations (e.g., boredom, fatigue, pain) when mind wandering occurred.

Miś and Kowalczyk (2021) explored mind wandering in a sport performance context, specifically long-distance running performance. It was suggested that participants whose mind-wandering experiences were negative may place more effort in reducing the likelihood of mind wandering subsequently occurring. Examples of negative mind wandering experiences include mind wandering associated with experiencing guilt, shame, fear, frustration and disappointment. In addition, participants with mind wandering experiences which were positive and focused on planning for the future, were more likely to engage in mind wandering deliberately (intentional mind wandering).

Lastly, Birrer et al. (2020) book chapter explored the link and the distinction between three phenomena related to self-talk: mindfulness, flow and mind wandering. The distinction between mindfulness and mind wandering was highlighted as a reduced tendency toward mindfulness, or a greater tendency toward mind wandering and increased problem-solving when problems were approached insightfully. However, mind wandering was impaired when problems were approached analytically.

Furthermore, the book chapter highlighted the link between mind wandering and self-talk, showcasing the link between mind wandering literature and the theoretical framework of the thesis, the transdisciplinary self-talk model (Latinjak et al., 2023). Mind wandering can be viewed as more complex than self-talk as mind wandering can take different forms. For example through imagery, which could be producing pictures in one's mind that are unguided by the present situation. However, it is the verbally produced thoughts that are unguided by the present situation which is where mind wandering and self-talk link.

Additional links between mind wandering and self-talk are apparent, as unintentional mind wandering draws similarities to organic spontaneous self-talk through both being undirected and being able to occur unguided by the current situation. Differences between these two are still evident however, as spontaneous self-talk can be related to the current situation (e.g., reaction to a performance mistake), whereas unintentional mind wandering cannot. Intentional mind wandering also draws similarities to organic goal-directed self-talk by possessing a controlled, deliberate nature in their occurrences. Differences between these two however are evident, as regardless of whether mind wandering is intentional or unintentional, it is still fundamentally unrelated to the present task or situation (Seli et al., 2015c). Organic goal-directed self-talk however, is still fundamentally related to the situation, whether that is in the present (e.g., the start of the match) or the future (e.g., the anticipation of the last moments of the match) (Latinjak et al., 2020).

Evaluating the current literature on mind wandering in a sport performance context, the literature has been developed from the understanding gained of mind wandering within a general psychology context. Considering the context of the present thesis, previous research has showcased how exploring mind wandering is congruent with the thesis, as similarities and differences between self-talk and mind wandering have been explored. What has started to be revealed within a sport performance context are the frequency, antecedents, consequences, positives and negatives of mind wandering's occurrence. Previous research has also utilised different methods and distinguished between unintentional and intentional mind wandering (Birrer et al., 2020; Latinjak, 2018 b). By doing so more accuracy is provided to understand mind wandering within a sport performance context.

When evaluating previous research, opportunities to progress the current understanding of mind wandering in a sport performance context can be seen. Not all previous research has distinguished between unintentional and intentional mind wandering (Miś & Kowalczyk, 2021), suggesting that making this distinction could impact the results found. In addition, previous

research employing an interview conducted this through utilising one question (Latinjak, 2018b). With the information found through one question, it is suggested that a more developed interview could reveal further insights into the mind wandering experiences of athletes from their perspective.

Another opportunity to progress from previous mind wandering research is through the limited amount of dispositional factors (only affect) investigated in a sport performance context (Latinjak, 2018b; Miś & Kowalczyk, 2021). Exploring the dispositional factor of affect revealed unique insights into the relationship between mind wandering and sport performance. Investigating other dispositional factors could progress the understanding of mind wandering in a sport performance context to reveal further what other dispositional factors impact mind wandering and how this impacts sport performance.

An additional opportunity to progress from the mind wandering literature can be seen when examining the participants who have taken part in previous research. The participants in previous mind wandering studies within sport and exercise psychology have all be classified as amateur athletes. As the performance impacts of various dispositional factors and cognitive processes have been shown to be different when comparing elite to amateur athletes (Ruiz-Esteban et al., 2020), research could indeed explore whether the mind wandering tendencies and experiences are influenced by athletes levels of playing experience.

A final consideration for an opportunity to progress the mind wandering literature is exploring the relationship between mind wandering and sport performance when mind wandering occurs outside the sport performance context. Within general psychology, mind wandering occurring when evaluating an experience and mind wandering's impact on self-perception have been investigated (Smallwood et al., 2011; Travers et al., 2015). Mind wandering occurring as an evaluation of an experience has not been explored in a sport performance context. Furthermore, investigating mind wandering in anticipation of an experience or performance has not been explored in a sport performance context. For example, an athlete is at home watching

TV, and their mind wanders to an upcoming competition. Exploring whether this mind wandering experience impacts their performance, once they are performing in this competition has not occurred.

Exploring the mind wandering experiences which occur when evaluating one's performance or in anticipation of a performance, derives from previous research exploring passion and sport performance. It has been suggested that athletes with an obsessive passion relentlessly pursue their sporting goals to the point where their goals consume them as they cease to have the ability to pursue other goals (Vallerand et al., 2003). It is suggested that to have an obsessive passion, thoughts would be directed to the passion when the athlete is in that context (e.g., training) and when they are not in that context (e.g., at home). The latter would be classed as mind wandering. Obsessive passions have been shown to be positive predictors of deliberate practice, which in turn, is a positive predictor of objective performance (Vallerand et al., 2008). Therefore, exploring mind wandering experiences outside the sport performance context may reveal whether subsequent sports performance is impacted by this mind wandering experience. Previous research has alluded to the impact of mind wandering outside the performance context (Birrer et al., 2020; Latinjak, 2018 b). However, further exploration can occur into these situations from athletes of different sports and levels of playing experience.

7.1.7 The Present Study

The landscape of mind wandering literature in a general and sport psychology context has informed us of the dynamic nature of mind wandering. Opportunities to progress the mind wandering literature are evident, such as mind wandering's impact on subsequent performance, mixed methods research, distinguishing between intentional and unintentional mind wandering, exploring the mind wandering tendencies of elite athletes and exploring how dispositional factors impact mind wandering in a sport performance context could provide unique insights into individuals mind wandering experiences. These opportunities evident

within previous research were explored in the present study and it is through this exploration that the present study adds to the current understanding of mind wandering.

The present study investigated the mind wandering experiences of athletes inside and outside a sport performance context. The study was exploratory in nature and was conducted in an attempt to develop an understanding of the mind wandering experiences of athletes. In addition, the relationship between mind wandering and several dispositional factors (vitality, self-efficacy, affect, self-perception) was also explored within a sport performance context. The research questions (RQs) for this study chapter are as follows:

- RQ 1: What are the sport performance effects of elite/amateur athletes mind wandering experiences when it occurs unintentionally/intentionally and inside/outside the sport performance context
- RQ 2: How do dispositional factors impact the unintentional/intentional mind wandering experiences of elite/amateur athletes
    - Vitality
    - Self-efficacy
    - Positive and Negative Affect
    - Performance self-perception

7.2 Methods

7.2.1 Participants

Participants were recruited through the sampling strategy of non-probability sampling and voluntary response sampling similar to the sampling criteria in Study 1 and Study 2 (Etikan et al., 2016; Murairwa, 2015). Participants were eligible to take part in the study depending on meeting a specific sampling criteria. Sampling criteria for participation into the study was that participants had to (1) be aged 18 and above and (2) be regularly training and competing in a sport setting.

The participants within the present study were 24 athletes (19 Males, 5 Female). Participants age ranged between 18 - 69 years (M = 30.75, SD = 14.50). Athletes from a range of different sports took part in the study. These sports included Football (N = 4), Basketball (N = 8), Track and Field (N = 1), Triathlon (N = 2), Gymnastics (N = 1), Badminton (N = 4), Table Tennis (N = 2) and Tennis (N = 2).

7.2.2 Materials

The present study adopted a mixed methods approach (Moran et al., 2011; Sparkes, 2015) to gain a more comprehensive picture of mind wandering through triangulation (using multiple methods to seek confirmation), complementarity (clarification of findings), and initiation (deeper insights through multiple methods of data analysis). The two methods which were used in the study were questionnaires and a semi-structured interview.

Questionnaires were used to gain the quantitative data for the present study. Justification for the use of a questionnaire and the benefits the method offers were provided in Chapter 4. The value of Cronbach Alpha scores were used to provide a measure of internal consistency. There are different reports as to the acceptable values of alpha, however scores closer to 0.95 indicate high internal consistency (Tavakol & Dennick, 2011).

Mind Wandering. The deliberate (intentional) and spontaneous (unintentional) experiences of mind wandering were measured in an 8 item questionnaire (Carriere et al., 2013). The questionnaire had a 7-point Likert scale (1 = not at all true to 7 = very true). This questionnaire encompassed questions exploring participants deliberate (e.g., I allow my thoughts to wander on purpose) and spontaneous (e.g., I mind wander even when I'm supposed to be doing something else) mind wandering tendencies. The value of Cronbach Alpha reliability for the deliberate mind wandering subscale was found to be 0.71 within this study's data set. The value of Cronbach Alpha reliability for the spontaneous mind wandering subscale was 0.85 within this study's data set. The questionnaire can be found in Appendix 6.

Elite and Amateur Athletes. A 5-item model was used to classify participants playing experience for the present study (Swann et al., 2015). This model had a 4-point Likert scale (1 = amateur sporting experiences to 4 = elite sporting experiences) and five questions. These five questions were (A) athlete's highest standard of performance, (B) success at the athlete's highest level, (C) experience at the athlete's highest level, (D) competitiveness of sport in athlete's country and (E) global competitiveness of sport. The value of Cronbach Alpha reliability for the scale was found to be 0.70 within this study's data set. High scores represented more elite athlete experiences and lower scores represented more amateur athlete experiences. Participants playing experiences were classified utilising the following equation:

Eliteness/expertise of athletic sample = [(A+B+C/2) /3] X [(D+E) /2]
Classification: 1 - 4 = Semi elite; 4 - 8 = Competitive elite; 8 - 12 = Successful elite; 12 - 16 = World class elite

Semi-elite represented athletes training and competing regularly at a level below the top standard within their sport (local/regional level). Competitive elite represented athletes who regularly competed at the top standard nationally within their sport but had infrequent success at that level. Successful elite represented athletes who regularly competed at the top standard within their sport and succeeded at that level. World class elite represented athletes with sustained success at the highest level of their sport, with repeated wins over a prolonged period within world sporting events (e.g., Olympics) (Swann et al., 2015). The questionnaire can be found in Appendix 7.

Semi-Structured Interview. A semi-structured interview was used to gain the qualitative data in this study. The creation of the semi-structured interview was tailor made for this study. This creation was informed by previous research (Latinjak et al., 2018b), the aims of the study and discussions with the researchers PhD supervisors (interview script found in Appendix 5).

The interview script for the study included a list of questions and issues pertaining to (1) unintentional mind wandering, (2) intentional mind wandering and (3) mind wandering in relation to the dispositional factors (vitality, self-efficacy, positive and negative affect and self-perception) explored in the study. Within these three different sections of the semi-structured interview, a definition for each section was provided to participants. Providing a definition ensured a consistent level of understanding of the aspect of mind wandering and the dispositional factor which was about to be discussed was understood by the participant. The semi-structured interview builds on previous research of administering a one-question interview and participants appearing to not fully understand the concept which was being explored (Latinjak, 2018b). During the interview, probing statements and questions were used to aid participants in expanding on the initial responses they gave (e.g., can you tell me more about this situation please). Justification for the use of a semi-structured interview and the benefits the method offers were provided in Chapter 3.

7.2.3 Procedure

Ethical approval for the current study was gained through the University of Suffolk Research Committee (RETH19/058). Potential participants who met the sampling criteria were informed about the present study. Once they had read, signed and returned the informed consent form, data collection began. First, participants completed the two questionnaires exploring mind wandering and elite and amateur playing experiences. After the questionnaires were completed, the semi-structured interview was conducted where participants were questioned on their experiences of mind wandering in different contexts.

7.2.4 Data Analysis

Questionnaires. The quantitative data gained through questionnaires was analysed with the statistical package for social science (SPSS). Descriptive statistics were produced and this provided a statistical summary of the data which was gained in the study. Descriptive statistics summarised the demographic variables and the dispositional factors of the data set. The demographic variables were age, sport, gender and the dispositional factors were deliberate and spontaneous mind wandering, elite/amateur playing experiences. Participants' scores within the dispositional factors were ranked amongst each other from 1st, representing the highest score amongst participants, to 24th, representing the lowest score amongst participants. By conducting a ranking analysis, the mind wandering experiences of each participant could more clearly be brought to life, indicating whether their mind wandering experiences were (or were not) congruent with other participants of similar demographic variables and similar dispositional factors scores. Justification for the use of ranking analysis and the benefits the method offers were provided in Chapter 4.

Semi-structured Interview. Data saturation was achieved in the data collected through semi-structured interviews. Data saturation can be defined as the point in data collection when no additional insights are identified and information begins to repeat, suggesting that further data collection is redundant, signifying that an adequate sample size is reached (Francis et al., 2010). Previous research has suggested that approximately 9 - 17 interviews could achieve data saturation (Hennink & Kaiser, 2022), however there is no one size fits all model. What is important to consider within data saturation is the researched phenomenon and the context of the study (Hennink et al., 2017; Saunders et al., 2018). Data saturation was represented in the present study by participant repetition, and when the researcher felt no new information about the mind wandering experiences of athletes was emerging.

The data collected through the semi-structured interview was analysed through the use of a content analysis (Vears & Gillam, 2022). A content analysis is a qualitative research analysis method which aims to produce an understanding of the meaning of the content of the data set. A content analysis was conducted through identifying the occurrence of specific words, phrases

and themes within the analysed text (Hambrick et al., 2010; Harwood & Garry, 2003). A hybrid content analysis was conducted, meaning that both a deductive and inductive approach was utilised. Codes, sub-categories and content categories were generated based on the actual content within the interview transcripts (inductive approach) and previous research (deductive approach). The same approach was followed as conducted in Chapter 5. Justification for the use of a content analysis and the benefits the method offers were provided in Chapter 4.

Data Analysis Structure. Data analysis began once all the quantitative (questionnaire) and qualitative (interview) data had been collected. Data analysis involved a two stage process. Stage 1 involved producing descriptive statistics and ranking participants based on their questionnaire scores. Stage 2 of data analysis involved conducting a hybrid content analysis. Both stage 1 and stage 2 of data analysis combined well together, as the demographic and dispositional factors provided clarity (supporting or refuting) from the codes which were generated from the qualitative date.

7.2.5 Judgement Criteria

A specific judgement criteria for the quantitative component of the research data and a specific criteria for the qualitative component of research data was employed for this study. Justification and the rationale behind this decision was discussed in chapter 4 and was the same judgement criteria used within the previous study chapters. The judgement criteria used for the quantitative component of the research data, aimed to highlight the reliability of each method used and this was measured through Cronbach Alpha scores (Tavakol & Dennick, 2011). The judgement criteria for the qualitative data followed the guidelines of trustworthiness (Patton, 2002; Poczwardowski et al., 2014; Sparkes, 1998).

7.3 Results

Descriptive statistics of participants age, sport, gender, playing experiences and mind wandering tendencies can be found in table 7.1. Participants were ranked based on their scores

within the mind wandering and playing experiences questionnaires completed. The descriptive statistics revealed that participants ranging in age, sport and playing experience (elite/amateur) took part in the study. These descriptive statistics coupled with the content analysis revealed the link between athletes mind wandering experiences, their sport, and playing experience.

7.3.1 Descriptive Statistics

Table 7.1

Participant	Age	Sport	Gender	Rank						
				Deliberate Mind Wandering		Spontaneous Mind Wandering		Playing Experience		
				Ranking	Mean (SD)	Ranking	Mean (SD)	Ranking	Classification	Scores
1	26	Tennis	Male	5th (Joint)	4.70 (0.95)	1st (Joint)	6.20 (0.5)	8th (Joint)	Semi-elite	2.91
2	34	Basketball	Male	16th (Joint)	3.50 (1.29)	11th (Joint)	5.00 (1.82)	16th (Joint)	Semi-elite	3.00
3	20	Football	Female	22nd (Joint)	2.25 (0.50)	9th (Joint)	5.20 (0.95)	4th (Joint)	Competitive elite	7.33
4	20	Track and field	Male	7th (Joint)	4.50 (1.00)	5th	6.00 (0.81)	8th (Joint)	Semi-elite	2.91
5	24	Basketball	Male	5th (Joint)	4.70 (0.95)	15th (Joint)	3.75 (0.95)	20th	Semi-elite	3.00
6	24	Gymnastics	Female	7th (Joint)	4.50 (2.51)	15th (Joint)	3.75 (1.25)	4th (Joint)	Competitive elite	7.33
7	31	Basketball	Male	22nd (Joint)	2.25 (0.50)	9th (Joint)	5.20 (0.95)	4th (Joint)	Competitive elite	7.33
8	46	Badminton	Male	16th (Joint)	3.50 (1.73)	7th (Joint)	5.50 (1.29)	21st (Joint)	Semi-elite	2.50
9	29	Badminton	Male	7th (Joint)	4.50 (1.29)	20th (Joint)	3.20 (1.50)	23rd (Joint)	Semi-elite	2.00
10	22	Basketball	Male	11th (Joint)	4.20 (1.70)	11th (Joint)	5.00 (1.82)	16th (Joint)	Semi-elite	3.00
11	21	Tennis	Female	7th (Joint)	4.50 (1.00)	18th (Joint)	3.50 (1.29)	8th (Joint)	Semi-elite	2.91
12	28	Football	Male	13th (Joint)	4.00 (1.82)	22nd (Joint)	2.00 (0.81)	1st	Successful elite	12.00
13	18	Badminton	Male	13th (Joint)	4.00 (0.81)	6th	5.75 (1.25)	8th (Joint)	Semi-elite	2.91
14	24	Badminton	Male	15th	3.75 (0.95)	15th (Joint)	3.75 (0.50)	16th (Joint)	Semi-elite	3.00
15	21	Basketball	Male	4th	5.00 (1.41)	7th	5.50 (1.29)	7th	Competitive elite	5.00
16	19	Football	Male	21st	2.50 (0.57)	22nd (Joint)	2.00 (0.81)	2nd	Successful elite	11.33

17	21	Football	Female	2nd	5.50 (0.57)	1st (Joint)	6.20 (0.50)	8th (Joint)	Semi-elite	2.91
18	22	Basketball	Male	20th	3.20 (0.95)	14th (Joint)	4.20 (2.06)	8th (Joint)	Semi-elite	2.91
19	45	Basketball	Male	16th (Joint)	3.50 (1.29)	18th (Joint)	3.50 (1.29)	16th (Joint)	Semi-elite	3.00
20	61	Table Tennis	Male	3rd	5.20 (1.50)	20th	3.20 (0.95)	23rd (Joint)	Semi-elite	2.00
21	18	Table Tennis	Male	16th (Joint)	3.50 (1.91)	13th	4.50 (0.57)	8th (Joint)	Semi-elite	2.91
22	39	Basketball	Male	1st	6.25 (1.70)	1st (Joint)	6.20 (1.50)	3rd	Successful elite	8.50
23	69	Triathlon	Male	24th	2.00 (1.41)	24th	1.50 (0.57)	8th (Joint)	Semi-elite	2.91
24	56	Triathlon	Female	11th (Joint)	4.20 (1.70)	1st (Joint)	6.20 (1.50)	21st (Joint)	Semi-elite	2.50

Note: *descriptive data of participants age, sport, gender and between subject rank of deliberate mind wandering, spontaneous mind wandering and playing experience scores. M = Mean, SD = Standard deviation.*

7.3.2 Content Analysis

A hybrid (both inductive and deductive) content analysis was performed on the raw data which was generated from the qualitative transcripts. 7 content categories were deductively categorised as these were based on the aims of the study and the topics of discussion within the semi-structured interview. These were (1) mind wandering occurrence, (2) mind wandering and the sport performance relationship, (3) mind wandering and vitality, (4) mind wandering and affect, (5) mind wandering and self-efficacy, (6) after the mind wandering and experience and (7) mind wandering outside the sport performance context. Two sub-categories within each content category were deductively categorised. These sub-categories were also based on the aims of the study and the topics of discussion within the semi-structured interview. These were: (1) intentional mind wandering and (2) unintentional mind wandering. Lastly, 458 codes were generated inductively, through close reading of the interview transcripts. Figures 7.1 to 7.8 illustrate the content categories, sub-categories and codes of each cluster group, with a number beside each code indicating the frequency in which each code was generated.

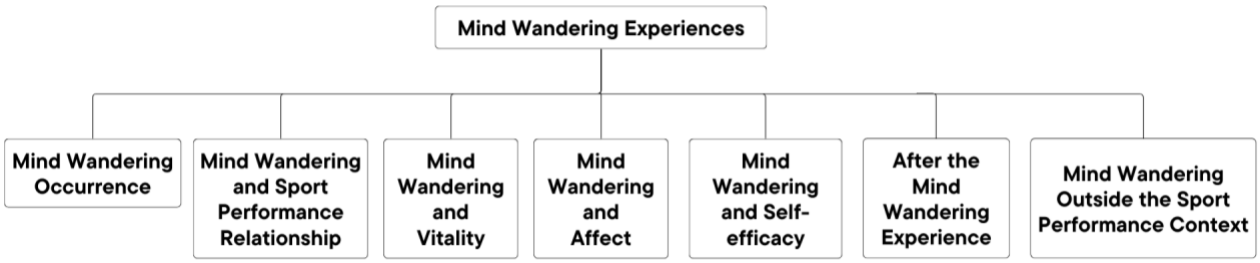


Figure 7.1: the seven content categories (N = 24)

Each content category has been structured to provide information about the similarities and differences within the codes generated in each sub-category. Codes generated within the same sub-category which can be perceived as opposing one another are also elaborated on. Lastly, the ranking analysis is used to provide additional information and a suggestion as to why specific codes were generated within the content categories.

Mind Wandering Occurrence

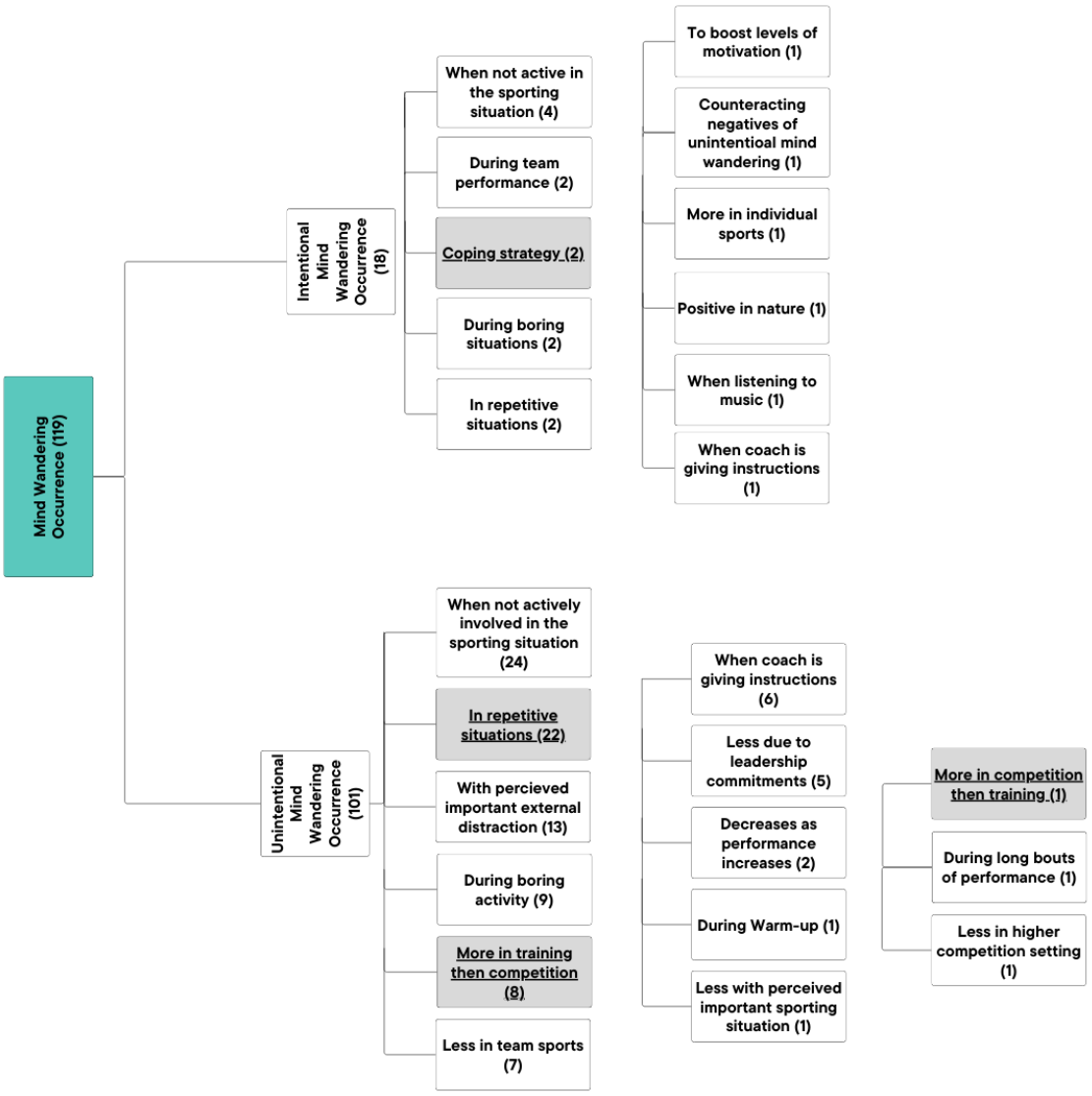


Figure 7.2: Mind wandering occurrence. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

Mind wandering occurrence was the content category which encompassed the situations and time points when mind wandering occurred within the sport performance context (seen in Figure 7.2). This content category was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. Similarities between the two were evident, as both types of mind wandering occurred when participants were not active in the sporting

situation, when they were involved in a perceived boring situation, when the coach was giving instructions, during team performance and when participants were in a repetitive sporting situation.

Unintentional mind wandering occurring when participants were in a repetitive sporting situation was a code generated 22 times. One example of the code can be seen by a badminton athlete (participant 13) who stated that this occurred through the repetitive nature of a performance task:

> *"yes I think the scenarios that it (unintentional mind wandering) happened to me were in training so if I'm just hitting the shuttle so many times my mind unintentionally wanders from that moment. So if I've done it so many times it's just like I can't be bothered to try anymore, let me just play badminton and then think about something else"*

Differences between unintentional and intentional mind wandering occurrences was also evident within the content category. The total number of codes generated in the unintentional mind wandering sub-category was 101 compared to 18 codes generated within the intentional mind wandering sub-category. The discrepancy between sub-categories suggests that mind wandering tendencies are oftentimes unintentional. Unintentional mind wandering was found to occur during warm-up, with a perceived important external distraction, more in training then competition, less due to leadership commitments, less with a perceived important sporting situation (e.g., final), more in competition then training, less in a higher competition setting and found to decrease as performance progresses. For instance, a football athlete (participant 3) highlighted how her leadership commitments (n=5) on her team forced her to stay focus more, decreasing the likelihood of her unintentionally mind wandering:

> *"so this season I've been named interim captain and one of my roles as such is to communicate effectively with the team and make sure that everyone is doing their job so I would say that makes me more switched on"*

In addition, differences were also evident within the intentional mind wandering sub-category. Intentional mind wandering was found to occur to counteract the negatives of unintentional mind wandering, to boost levels of motivation, as a coping strategy, more positive in nature and when listening to music. For instance, when discussing intentional mind wandering, a tennis athlete (participant 11) highlighted how intentional mind wandering can occur to help cope with performance situations (n=2):

> *"I think it's because in singles you are by yourself so it's almost like you (intentionally) mind wander to kind of support yourself but when you're playing doubles you have that physical person to talk to you or you're not quite left to yourself quite as much"*

A difference in opinion was found within the content category. Unintentional mind wandering was stated to occur both more in training then competition and more in competition then in training. Unintentional mind wandering occurring more in training then competition was a code generated 8 times within the data. For instance, this was stated by a badminton athlete (participant 8):

> *"so definitely it (unintentional mind wandering) happens more so in training as there's less focus on actually winning the game, it's more a social thing whereas when we are in a competition then there is more focus on what we are there to do which is (to) win the match"*

In comparison, unintentional mind wandering occurring more in competition then training was a code generated once. This was stated by a basketball athlete (participant 7):

> *"Not in training it doesn't happen (unintentionally mind wander). I'm very focused during a training session but I'm aware during games that my mind does wander"*

The codes generated that unintentional mind wandering occurring more in training then competition and conversely more in competition then training showcases the dynamic nature of mind wandering, and how both these experiences can occur depending on the individual. The results suggest that unintentional mind wandering occurring more in training then competition is a mind wandering experience more typical in athletes. The results also suggest that unintentional mind wandering occurring more in competition than in training is a mind wandering experience more unique to the individual. The combination of demographic and dispositional factors unique to the individual may be the reasoning behind why differences in unintentional mind wandering experiences occurred.

Mind Wandering and Sport Performance Relationship

Mind wandering and the sport performance relationship was the content category which encompassed the situations when mind wandering affected the performance of athletes in training and competition. This was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. Similarities between unintentional and intentional mind wandering and sport performance were evident, as they both negatively impacted performing techniques and team cohesion. They both were also found to positively aid the development of performance strategies and endurance activities. For instance, a tennis athlete (participant 1) stated how an unintentional mind wandering experience during performance would negatively affect their technique execution:

> *"well it's like if I'm mind wandering (unintentionally) things will just go wrong, like I might miss time a forehand or if I'm playing doubles for example, if I don't hit it (the ball) into the tram line then they (opponent) will smack it at my partner"*

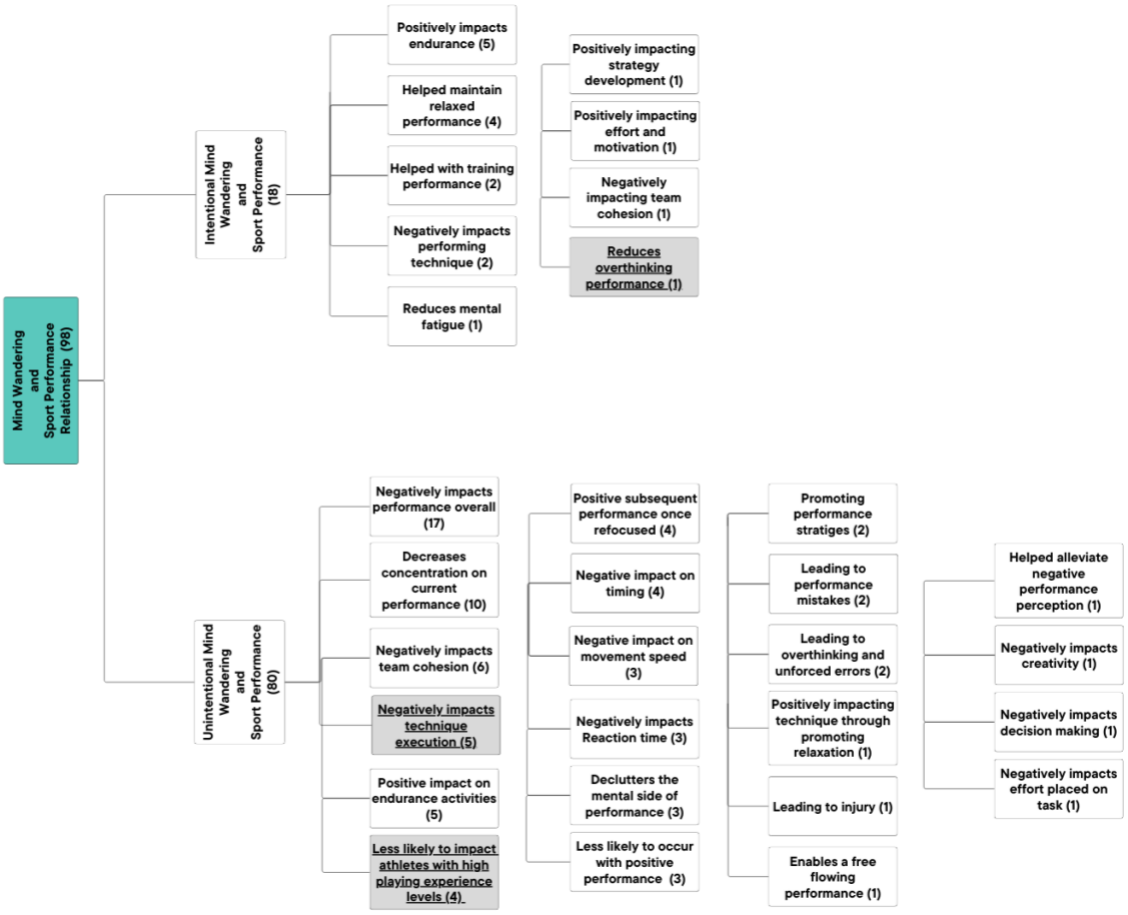


Figure 7.3: Mind wandering and sport performance relationship. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

Differences between unintentional and intentional mind wandering within this content category were also evident (seen in Figure 7.3). The total amount of codes generated in the unintentional mind wandering sub-category was 80 compared to 18 codes generated within the intentional mind wandering sub-category. The discrepancy between sub-categories suggests that mind wandering tendencies that relate to sport performance are oftentimes unintentional. Unintentional mind wandering was less likely with more playing experience, it led to overthinking, it negatively impacted reaction time, creativity, concentration and decision making. Unintentional mind wandering positively enabled a free and loose performance and it also helped alleviate a negative performance perception. In addition, intentional mind

wandering was stated to reduce overthinking (n=1). This was evident when a tennis athlete (participant 11) highlighted how intentional mind wandering effects her performance through reducing overthinking:

> *"I think for me it (intentional mind wandering) helps me because if it's a stressful situation and I'm intense it just takes me away from it (performance situation). Obviously I'm still in it but it takes my mind away from it because I often think way too much about the point or where I'm going to hit next or how large my take back is going to be. So if I can take my mind off of it then I'm actually more relaxed and I would probably play a bit better because I'm not overthinking so I think intentionally mind wandering is quite beneficial for me"*

Lastly, a code linking unintentional mind wandering, sport performance and playing experience was generated. Unintentional mind wandering was believed to impact athletes less who had more playing experience and more for athletes who had less playing experience. This code was generated 4 times, for instance through a track and field athlete (participant 4):

> *"I would say when you get to the level of training that I'm sort of doing with the guys, we have olympians in our squad, we have people in our squad out in Tokyo (2020 Olympics) at the moment so it (unintentional mind wandering) doesn't really happen but then I found that at lower levels like when I was at my club people were doing it all the time just before doing a rep or something… so it does happen in my sport from what I've experienced but it happens at a lower level"*

In addition to the code generated through the qualitative data, both unintentional (spontaneous) mind wandering and playing experience were explored quantitatively. Investigating the generated code further, participant 4 elite/amateur playing experiences scores classed him as semi-elite (2.91). In addition, within the ranking analysis participant 4 scored the 8th highest within the elite/amateur playing experience questionnaire. These results

suggest that within the context of the study, he possessed high levels of playing experience in comparison to other participants. Exploring his spontaneous mind wandering questionnaire scores, he ranked the 5th highest. Therefore, the notion of high levels of playing experiences and low spontaneous mind wandering tendencies is not supported by his quantitative data. The point raised by the code generated however, was supported in some participants, as they ranked high in levels of playing experience and low in spontaneous mind wandering. For instance, participants 23 (triathlete) ranked 8th in playing experience levels and 24th in spontaneous mind wandering, participant 12 (football athlete) ranked 1st in playing experience levels and 22nd in spontaneous mind wandering, and participant 16 ranked 2nd in playing experience levels and 22nd in spontaneous mind wandering. In addition, the point raised by the code generated was also supported inversely, as some participants ranked low in playing experience levels and high in spontaneous mind wandering. For instance, Participant 8 (badminton athlete) ranked 21st in playing experience and 7th in spontaneous mind wandering. Also participant 24 (triathlete) ranked 21st in playing experience levels and 1st in spontaneous mind wandering.

Mind Wandering and Vitality

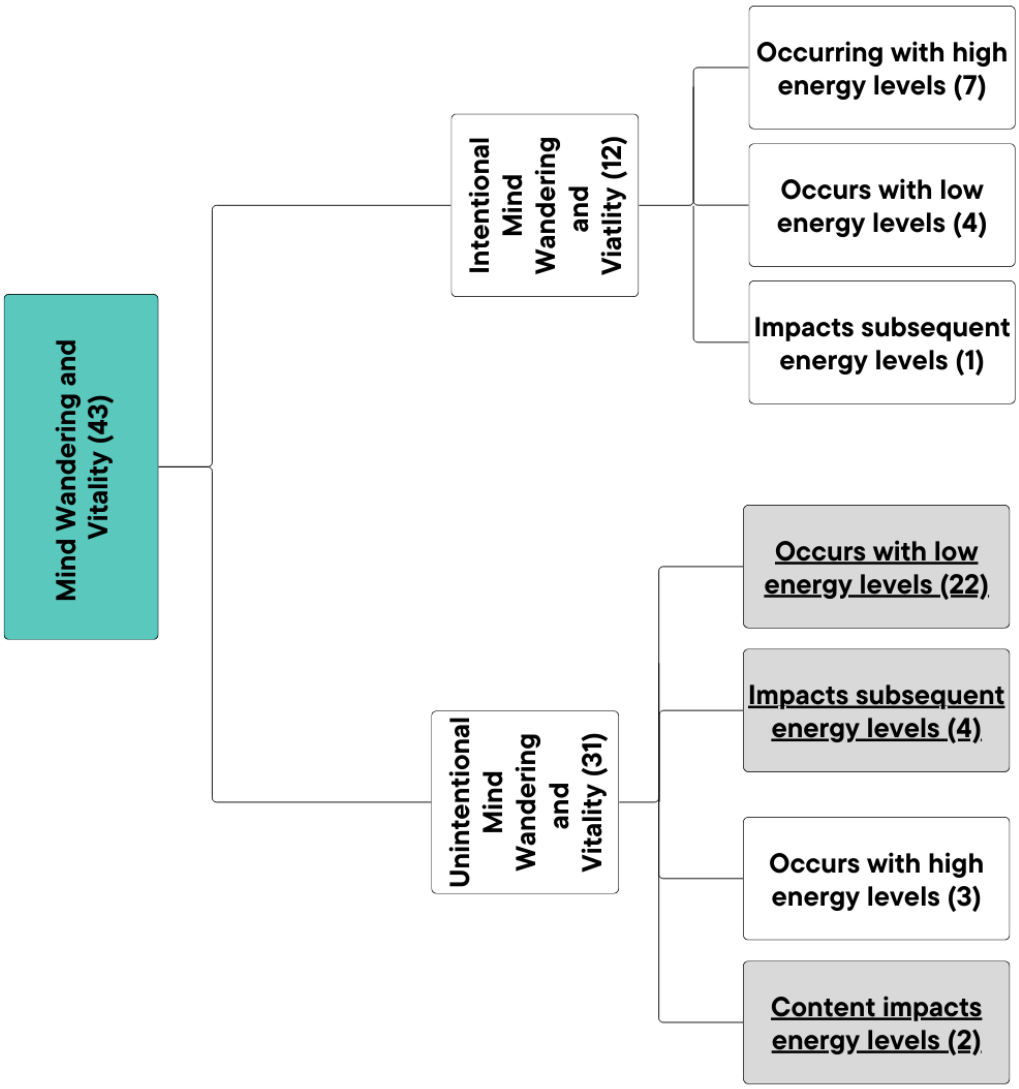


Figure 7.4: Mind wandering and vitality. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text

Mind wandering and vitality was the content category which encompassed the situations when a mind wandering experience was linked to athletes energy levels (seen in Figure 7.4). This content category was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. Similarities between unintentional and intentional mind wandering and vitality were evident, as they both were stated to occur with high energy levels,

could impact subsequent energy levels and occur with low energy levels. For instance, a football athlete (participant 17) stated how unintentional mind wandering often occurs when she experiences low energy levels (n=22):

> *"so when you're actually in that kind of mind-wandering phase you're less active and less energetic so obviously you spend more time focusing and thinking about other things"*

In addition, a badminton athlete (participant 13) stated how his subsequent energy levels were linked with unintentional mind wandering:

> *"I guess in a way I think when I come back from mind-wandering (unintentionally) I'm more alert and I feel a lot more energetic"*

Mind wandering impacting subsequent energy levels was a code generated once within the intentional mind wandering sub-category and four times within the unintentional mind wandering sub-category. It could be suggested therefore that mind wandering impacting subsequent energy levels is an experience which can occur both through unintentional and intentional mind wandering and this is dependent on the individual.

Differences were also evident between unintentional and intentional mind wandering and vitality. Unintentional mind wandering's impact on vitality depends on the mind wandering content. For instance, a basketball player (participant 15) highlighted the link between the content of unintentional mind wandering and vitality levels:

> *"so if I'm randomly thinking about food for example, that would definitely increase my energy but conversely if I'm randomly thinking about negative thoughts it would decrease my energy so I think it really depends on what my mind wanders to"*

Mind Wandering and Affect

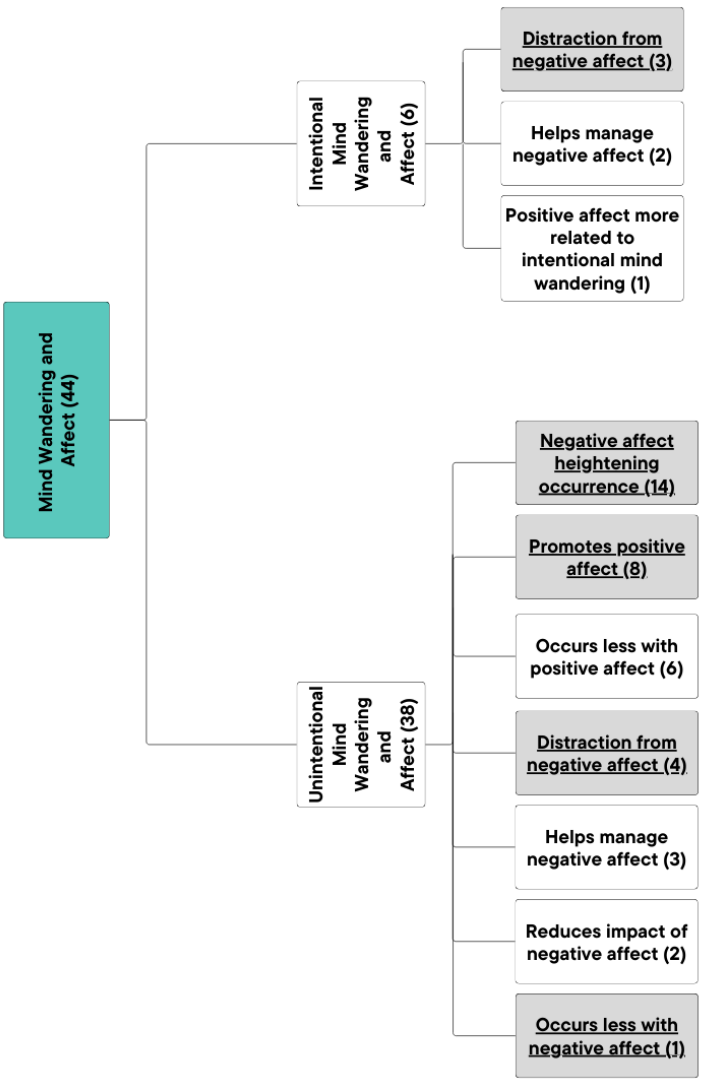


Figure 7.5: Mind wandering affect. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

Mind wandering and affect was the content category which encompassed the situations when a mind wandering experience was linked to athletes positive and negative affect (seen in Figure 7.5). The content category was broken down into unintentional mind wandering and intentional mind wandering. Similarities between unintentional and intentional mind wandering and affect were evident as they both were stated to help manage negative affect, and also distract oneself

from the current experience of negative affect. For instance, a gymnastics athlete (participant 6) highlighted the benefit unintentional mind wandering has on distracting oneself from the current experience of negative affect:

> *"it's like a distraction from the task that you have got to complete I find it really useful for getting anxiety and stress out of my mind"*

In addition, intentional mind wandering was stated to occur to distract oneself from negative affect (N=3), for instance by a gymnastics athlete (participant 6):

> "It's (intentional mind wandering) more positive when it's helping you feel productive. So like in training, being able to intentionally like distract yourself (intentional mind wandering) to push yourself physically and to manage your nerves before competing"

Differences between unintentional and intentional mind wandering were also evident within the content category. The total amount of codes generated in the unintentional mind wandering sub-category was 38 compared to 6 codes generated within the intentional mind wandering sub-category. The discrepancy between sub-categories suggests that mind wandering tendencies that relate to affect are oftentimes unintentional. Positive affect was stated to be more related to intentional mind wandering. Unintentional mind wandering was stated to be less related to positive affect and unintentional mind wandering was stated to be able to promote positive affect. For instance, a track and field athlete (participant 4) highlighted the dynamics between positive and negative affect and how unintentional mind wandering could positively impact this:

> *"it comes to a point where I mind wander (unintentionally) as it helps me to relax because otherwise you put too much pressure on yourself and then you end up rushing things, which in a race when you want to be as fast as possible you do not want to rush it, you do actually want to take your time"*

In addition, codes were generated which showcased the uniqueness of mind wandering. Unintentional mind wandering was stated to occur more with negative affect (n=14), which was mentioned, for instance, by a football athlete (participant 16):

> *"I feel like it (negative affect) could affect it (unintentional mind wandering) a lot because obviously if you are worrying and feeling upset, your mind is constantly wandering about that situation and not letting you focus on the task at hand"*

In addition, unintentional mind wandering was stated to occur less with negative affect (n=1). This experience was stated by a basketball athlete (participant 15):

> *"so say I'm feeling pressured I feel like I'm more likely to mind wander less"*

These codes highlight the uniqueness in mind wandering experiences. The codes generated within this content category showcase the mediating role of positive and negative affect on the occurrences of mind wandering. These mind wandering experiences are dependent on the individual and the results of this content category suggest that unintentional mind wandering occurring more with negative affect could be a more typical experience amongst athletes.

Mind Wandering and Self-efficacy

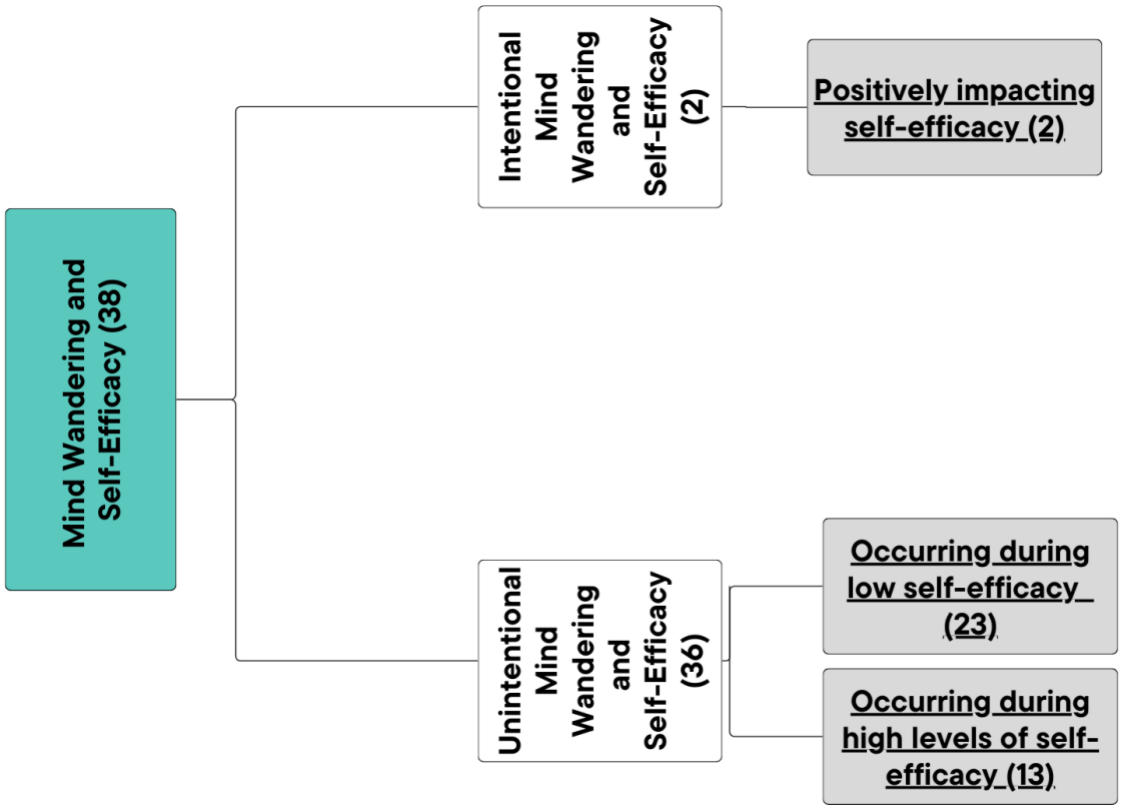


Figure 7.6: Mind wandering and self-efficacy. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

Mind wandering and self-efficacy was the content category which encompassed the situations when a mind wandering experience was linked to athletes self-efficacy (seen in Figure 7.6). This content category was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. The total amount of codes generated in the unintentional mind wandering sub-category was 36 compared to 2 codes generated within the intentional mind

wandering sub-category. The discrepancy between sub-categories suggests that mind wandering tendencies that relate to self-efficacy are oftentimes unintentional.

Intentional mind wandering was found to positively impact self-efficacy (n=2) as stated by a football athlete (participant 17):

> *"I feel like that (intentional mind wandering) gives me much more confidence (self-efficacy) then I initially had so if I intentionally mind wander I feel like I actually perform better because I'm getting in the mood and my confidence goes higher"*

Intentional mind wandering was a dispositional factor in which data was also gained quantitatively through the deliberate mind wandering sub-scale. Exploring this sub-scale reveals that participant 17 ranked 2nd amongst participants in the deliberate mind wandering sub-scale. The code generated of intentional mind wandering positively impacting self-efficacy is strengthened therefore when weighing this code against the quantitative data. This code however, was a code only generated twice. It could be suggested that this mind wandering experience is unique to certain individuals and may not be an experience common amongst those with high intentional mind wandering tendencies.

Unintentional mind wandering was found to occur during low levels of self-efficacy, for instance stated by a table tennis athlete (participant 21):

> *"if I am feeling less confident and I was not playing well and I started to doubt myself then some thoughts kind of come into my head, just general thoughts just come into my head (unintentional mind wandering) then my play starts to drop a little bit"*

Unintentional mind wandering was also found to occur during high levels of self-efficacy, for instance stated by a basketball player (participant 5):

> *"If I'm pretty confident that I could make 10 out of 10 (shots) I can let my mind wander then and obviously if there's something easy that I know I can do, I can just let my mind wander and go into autopilot"*

Unintentional mind wandering occurring during high and low levels of self-efficacy may indicate the increased tendency for participants to mind wander when the extreme ends of self-efficacy are experienced. The link between mind wandering and self-efficacy could therefore be an inverted U model similar to previous research exploring arousal and anxiety (Arent & Landers, 2003).

After the Mind Wandering Experience

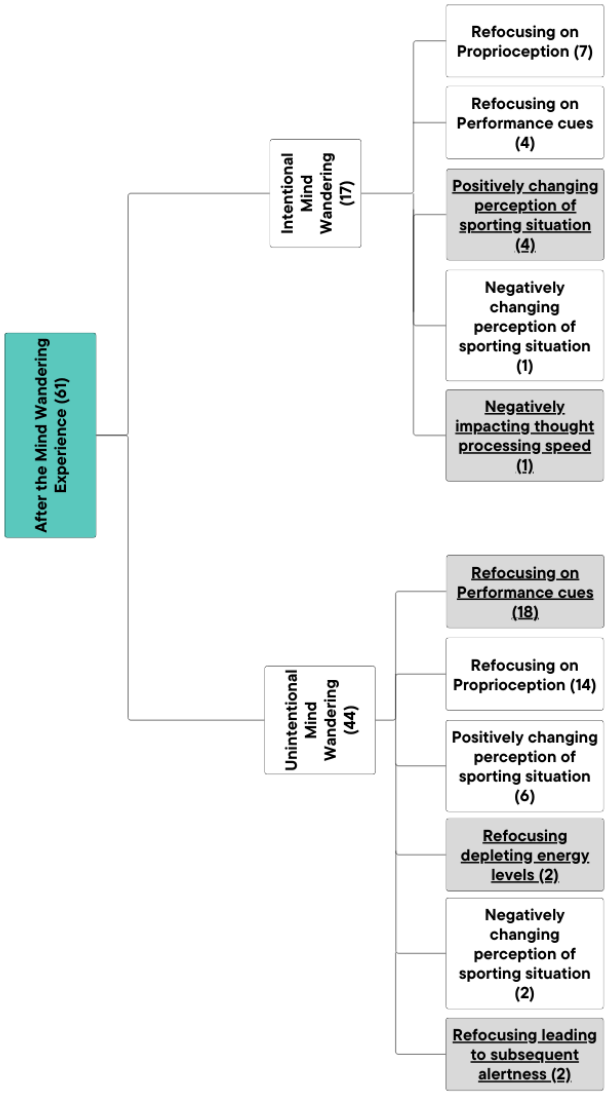


Figure 7.7: After the Mind wandering experience. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

After the Mind Wandering Experience was the content category which encompassed what occurs when athletes mind wandering experiences end and what are their refocusing tendencies (seen in Figure 7.7). This content category was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. Similarities between the two were evident, as both types of mind wandering led to participants refocusing

on proprioception (position and movement of their body), performance cues as well as positively and negatively changing the participants perception of the situation. For instance, when discussing what occurs after an intentional mind wandering experience, a table tennis athlete (participant 20) stated how intentional mind wandering positively led to a change of perception within the sporting situation (n=4):

> *"yes definitely you could start thinking that someone is coming back and they are only two points back or whatever. But then if you switched off and mind wandered somewhere else, you come back and you think you are 2 points ahead here and I've only got one more (point) to get or something like that so you put it into a different focus"*

In addition, when discussing what occurs after an unintentional mind wandering experience, a basketball athlete (participant 18) stated that after unintentional mind wandering, he often focuses on a performance cue (n=18) and this refocus could help with technique execution:

> *"if I catch myself (unintentionally mind wandering) it might actually force me to think more about my technique then if I was just going about the action normally. I guess it's because if I catch it it forces me to make sure that I'm doing this (technique) as right as possible and sort of build my confidence"*

Differences between unintentional and intentional mind wandering were also evident, as intentional mind wandering was seen to negatively impact thought processing speed when the athlete refocused (n=1), as stated by a football athlete (participant 16):

> *"Yeah you might not be as aware of what is going on (when unintentionally mind wandering), you've missed out. So when I am in the drill and it (unintentional mind wandering) happens it can really kind of slows my thoughts down"*

Refocusing after an unintentional mind wandering experience was seen at times to deplete energy levels (n=2). For instance, a basketball athlete (participant 2) stated:

> *"I think for me like individually it would require more physical energy for me to get myself back to the point that I need to be at, yeah you're just kind of playing catch up a little bit is a best way I can put it"*

Refocusing after an unintentional mind wandering experience was also seen at times to lead to subsequent alertness (n=2) as stated by a badminton athlete (participant 13):

> *"I don't know if it has affected my physical performance whilst I'm mind-wandering, because I'm mind-wandering, but no I don't think it has as I think I just become a little bit more alert"*

Refocusing after an unintentional mind wandering experience depleting energy levels at times as well as leading to subsequent alertness at times showcases the different consequences which could be experienced due to unintentional mind wandering. Exploring these codes through the quantitative data (descriptive statistics) gained, it was apparent that the participants who stated refocusing after a mind wandering experience depletes energy levels, all performed in the same sport (basketball). In addition, athletes who stated that refocusing after a mind wandering experience led to subsequent alertness, all performed in the same sport (badminton). Synthesising both the qualitative and quantitative data, it is suggested that the sport an athlete competes in could impact subsequent energy levels after a mind wandering experience ends.

Mind Wandering Outside the Sport Performance Context

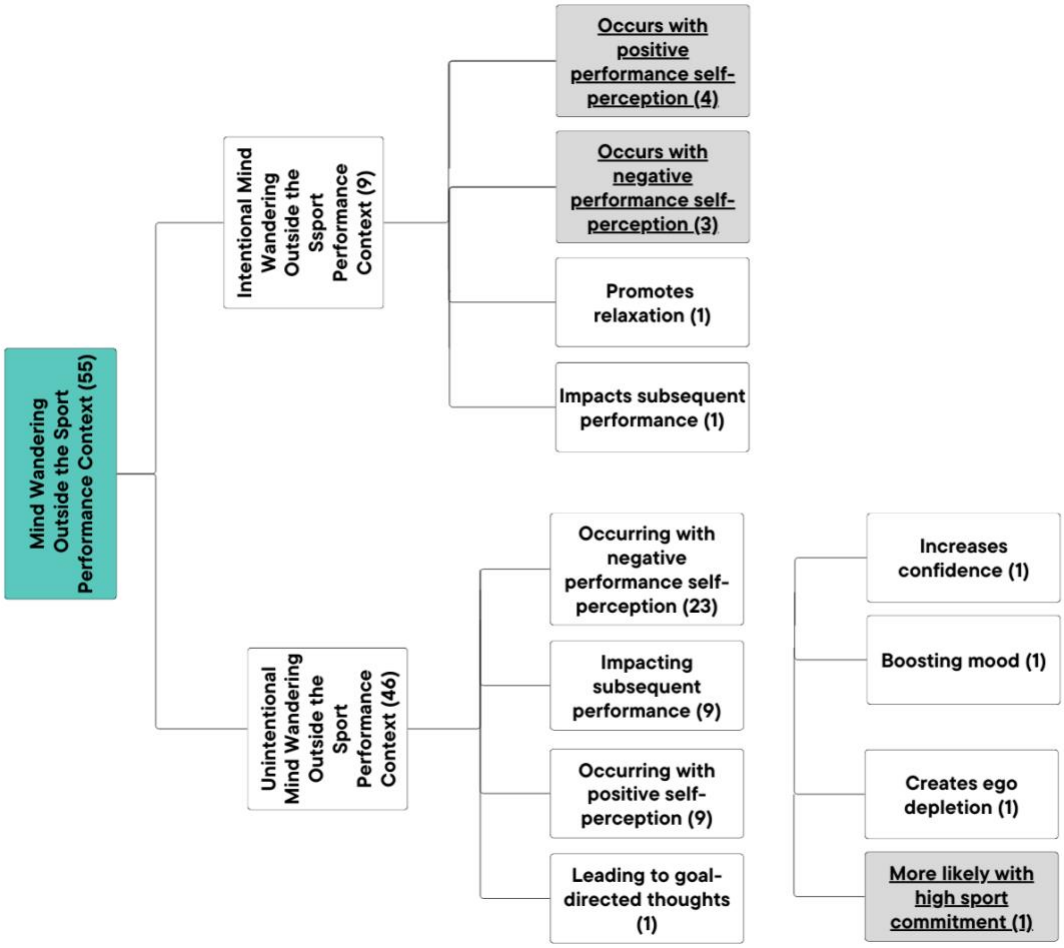


Figure 7.8: Mind wandering outside the sport performance context. Codes have been ordered based on the number of participants who generated that code. Codes that are coloured in grey and underlined are elaborated on in the text.

Mind wandering outside the sport performance context was the content category which encompassed the situations when a mind wandering experience occurred, when the athlete was not training or competing in their sport (e.g., post performance or in anticipation of a performance). This content category also encompassed situations when athletes were evaluating their performance, due to performance evaluation typically occurring outside of the

performance context, and whether their self-perception influenced their mind wandering tendencies (seen in Figure 7.8).

This content category was broken down into two sub-categories, unintentional mind wandering and intentional mind wandering. Similarities between unintentional and intentional mind wandering were that both were stated to occur with a negative performance self-perception, a positive performance self-perception and have an impact on subsequent performance. For instance, when discussing intentional mind wandering outside the sport performance context, a table tennis athlete (participant 23) highlighted its occurrence with a negative self-perception (n=3):

> *"It is fairly intentional I think, quite often we travel as a team or even if you are just going home on your own you are still thinking about it (sport performance) you are thinking about what you could have done better next time and how it went"*

In addition, intentional mind wandering was stated to occur with a positive self-perception (n=4), highlighting the uniqueness between participants' mind wandering experiences and their self-perception. For instance a football athlete (participant 16) stated that:

> "it's more when I've performed well I just imagine these games again and again in my head it's more like positive (intentional) mind wandering rather then negative, yeah it's something that I realised I do the night before a match"

Differences between unintentional and intentional mind wandering was also evident. The total amount of codes generated in the unintentional mind wandering sub-category was 46 compared to 9 codes generated within the intentional mind wandering sub-category. The discrepancy between sub-categories suggests that mind wandering tendencies that occur outside the sport performance content are oftentimes unintentional.

Further differences can be seen as intentional mind wandering was found to promote relaxation. In addition, unintentional mind wandering was found to lead to goal-directed thoughts, increase confidence, boost mood, create ego depletion and was more likely with high sport commitment (n=1). For instance, a track and field athlete (participant 4) highlighted how unintentionally mind wandering which occurred outside the sporting context and was leading up to a performance, could create ego depletion, negatively impacting subsequent performance:

> *"I feel like if I'm focused on the race and I'm thinking about the race the whole time throughout the week and leading up to it, I would be knackered mentally. I would have essentially run the race so many times in my head that when I'm actually going to run the race I'm knackered and I can't do it"*

7.4 Discussion

The present study investigated the mind wandering experiences in a sport performance context. In positive effect, the present study has contributed to the growing research within the mind wandering literature in general and sport and exercise psychology. Exploring mind wandering's impact on subsequent performance, utilising a mixed method research methodology, distinguishing between intentional and unintentional mind wandering, exploring elite and amateur athletes playing experience and exploring how several dispositional factors impact the unintentional and intentional mind wandering experiences of athletes were integrated into the present study.

7.4.1 Insights of the Study Results

The results of the study as a whole revealed various antecedents, consequences, positives and negatives of mind wandering, which were common amongst all participants and unique to

specific participants. The study's results also indicated that vitality, self-efficacy, affect, self-perception, and playing experience are dispositional factors that impact the unintentional and intentional mind wandering experiences of athletes. In addition, of the demographic variables utilised in the present study (age, gender, sport), the results indicate that sport was a demographic variable that could impact athletes' intentional and unintentional mind wandering experiences.

Evaluating the results as a whole reveals that there are various positives and negatives of both intentional and unintentional mind wandering. The study's results showcasing positive and negative mind wandering tendencies are congruent with previous research within both a general and sport and exercise psychology context (Thompson et al., 2014; Latinjak, 2018a). These results also add to previous research, as the positives and negatives evident within the study's results have been distinguished between unintentional and intentional mind wandering. An example of these progressions can be seen in the study of Latinjak et al. (2018b). A mind wandering occurrence that was revealed in the Latinjak et al. (2018b) study was that mind wandering occurred whilst athletes were listening to music. This mind wandering occurrence was also stated in the present study (within the content category of mind wandering occurrence). The present study, however, progresses from identifying the occurrence of mind wandering whilst athletes are listening to music, as the present study has revealed that the type of mind wandering that occurs when athletes are listening to music is intentional mind wandering.

The study results as a whole showcase the importance of distinguishing between unintentional and intentional mind wandering, as various codes unique to the different types of mind wandering were generated within the content categories. Previous research has suggested that distinguishing between different types of mind wandering is important due to different types of mind wandering differing in their association with metacognitive awareness, self-regulatory functions and dispositional factors (Seli et al., 2015; Seli et al., 2016; Seli et al., 2019). The combination of metacognition, self-regulation, and dispositional factors equates to different

occurrences and consequences of unintentional and intentional mind wandering, which is evident in the results of the present study.

Exploring the study's results as a whole reveals that various codes were generated multiple times and various codes were also only generated once. The results of the present study highlight the dynamic nature of mind wandering and, at times, its uniqueness for groups of athletes and each individual. However, when mind wandering is explored through the lens of each content category, a deeper understanding of how each research question was answered could be better understood.

7.4.2 Mind Wandering Occurrence

Mind wandering occurrence was the content category which encompassed the situations and time points when mind wandering occurred within the sporting context. The code generated the most was unintentional mind wandering occurring when athletes were not actively involved in the sporting situation. For example, if the athlete was on the substitution bench in the sport of basketball or if an athlete was away from the possession of play in the sport of football.

The occurrences of mind wandering indicated in the present study align with previous research findings within a sport performance context (Latinjak, 2018b). For instance, both the present study and previous research highlighted that mind wandering in a sport performance context can occur before, during, and after performance, when bored, tensed, fatigued, relaxed, when not involved in the sporting situation and when the coach is giving instructions. The present study adds to previous research, suggesting what distinct type of mind wandering (unintentional and/or intentional mind wandering) accompanies specific mind wandering occurrences.

The mind wandering occurrences content category also adds to previous research as occurrences of mind wandering were stated within this content category, which has not been

stated in previous research. For instance, unintentional mind wandering was found to occur less due to athletes' leadership commitments on the team. Athlete's leadership commitments align with the mind wandering literature, specifically Seli's theoretical framework (Seli et al., 2016). The intentionality of mind wandering suggests that unintentional mind wandering is an experience which occurs when individuals perceive a situation as low in importance and when levels of task motivation are low (Seli et al., 2016; Seli et al., 2015b). Athletes in leadership positions are more likely to experience high task motivation levels due to their team responsibilities (Charbonneau et al., 2001). In addition to task motivation, high levels of communication skills have also been typical characteristics shown within team leaders (Gould et al., 2013). Communication skills are a characteristic that decreases the likelihood of unintentional mind wandering, suggesting that unintentional mind wandering is an experience that occurs less in athletes who are in leadership positions.

On the other hand, when synthesising the qualitative and quantitative components of the results, unintentional mind wandering occurring less in athletes in leadership positions was not a suggestion supported by the quantitative data. Five participants generated this code: participants 2, 3, 8, 13, and 17. Exploring these participants' spontaneous mind wandering sub-scale scores revealed that they all ranked in the top half among participants, suggesting that they have high unintentional mind wandering tendencies (compared to the group). With these incongruent results, it appears that various factors impact individuals' mind wandering occurrences and leadership positions may impact these occurrences. The mind wandering occurrence content category answered research question one, showcasing the sport performance effects of elite/amateur athletes mind wandering experiences when they occur unintentionally/intentionally and inside the sport performance context.

7.4.3 Mind Wandering and Sport Performance Relationship

Mind wandering and sport performance was the content category which encompassed the situations when mind wandering affected the performance of athletes in training and

competition. The code generated the most was when athletes stated that unintentional mind wandering negatively impacted their performance overall. This could be for example unintentional mind wandering influencing the inability to focus on performance cues.

A code was generated linking unintentional mind wandering, sport performance and playing experience. Unintentional mind wandering was believed to impact athletes less who had more playing experience (elite athletes) and more for those who had less playing experience (amateur athletes). Exploring these results through Seli's theoretical framework (Seli et al., 2016), it would be suggested that unintentional mind wandering is less likely to occur, as the attentional capacity of elite athletes would be taken up by performance-related information. These results are supported by previous research suggesting that elite athletes can better attune and maintain their concentration on performance-related information (Vaughan & Laborde, 2021). In addition, the code generated is strengthened when synthesising the study's quantitative and qualitative data. Both unintentional (spontaneous) mind wandering and playing experience were explored quantitatively. Multiple athletes ranked high in elite/amateur playing experiences and low in spontaneous mind wandering (participants 12, 16 and 23). In addition, the code was supported inversely (low playing experience, high spontaneous mind wandering) by athletes spontaneous mind wandering and playing experience rankings (participants 8 and 24). Further research however is still necessary as some participants' results did not support the notion of high scores in elite/amateur playing experiences and low scores in spontaneous mind wandering. For instance, participant 22 ranked high in elite/amateur playing experiences (3rd) and spontaneous mind wandering (1st).

According to the study results, a code evident in unintentional and intentional mind wandering sub-categories was that they both negatively impacted team cohesion. Team cohesion can be defined as a team's ability to work together, embrace their role, and commit to the team's goal (Carron et al., 2002). Exploring the results through Seli's theoretical framework, one's ability to work cohesively within a team would be impaired due to one's focus not being on the present task. The present study suggests that mind wandering negatively impacts athletes performance,

regardless of whether the mind wandering experience is unintentional or intentional in nature. Synthesising both data sets, it was evident that the participants who generated the code ranked in the top three of elite/amateur playing experiences (participants 12, 16, 22). The quantitative results therefore strengthen the suggestion that mind wandering negatively impacts team cohesion, as multiple athletes with high playing experience (competitive elite and successful elite) generated this code.

Interestingly, a code evident in unintentional and intentional mind wandering was that they both positively aided performance within endurance activities. These experiences were for example in drills which require physical and technical stamina. It was suggested that mind wandering aided the performance of endurance tasks, as mind wandering distracted athletes from the challenges of endurance tasks (pain, fatigue, boredom), which are experienced more when focused on the present experience. Distraction and endurance tasks have been studied within a sport and exercise psychology context, supporting the notion that a form of distraction (e.g., mind wandering) could aid the performance of endurance tasks (Brick et al., 2015; Latinjak et al., 2018b; Miś & Kowalczyk, 2021).

The results of the content category indicate that positive and negative performance consequences of both unintentional and intentional mind wandering can occur in various situations. The content category therefore answered research question one. Synthesising both data sets developed the understanding of the sport performance effects of elite and amateur athletes' mind wandering experiences, when this occurs inside the sport performance context and when this occurs unintentionally and intentionally.

7.4.4 Mind Wandering and Vitality

Mind wandering and vitality was the content category encompassing situations when a mind wandering experience was linked to the athlete’s vitality levels. The code generated the most was when athletes stated that unintentional mind wandering experiences occurred when they

had low energy levels. For example, if an athlete was experiencing fatigue or exhaustion during performance. The content category started to reveal the subsequent impacts of mind wandering and this was further explored within the After the Mind Wandering Experience content category.

Mind wandering occurring when athletes have low levels of vitality is a suggestion that aligns with previous research (Walker & Trick, 2018). Seli's theoretical framework suggests that as time on task increases, one's ability to remain focused on the task can decrease due to ego depletion, therefore, the likelihood of mind wandering increases (Forster, 2013; Pachai et al., 2016; Walker & Trick, 2018). Previous research showcased these results within a general psychology context, with the present study now showcasing these results within a sport and exercise psychology context. The present study has also showcased that increased time on task leading to increased mind wandering tendencies can occur intentionally and unintentionally.

The mind wandering and vitality content category showcased the link between mind wandering and vitality levels. Synthesising both data sets, it appears that the codes generated were not unique to athletes age, sport, gender, mind wandering and playing experience levels. The results suggest that intentional and unintentional mind wandering is an experience which can occur in many athletes who experience high levels of vitality, low levels of vitality and can impact subsequent levels of vitality depending on the mind wandering content. The results of the content category therefore answer research question 2, showcasing how a dispositional factor impacts the unintentional and intentional mind wandering experiences of elite and amateur athletes.

7.4.5 Mind Wandering and Affect

Mind wandering and affect was the content category encompassing situations when a mind wandering experience was linked to athletes positive and negative affect. The code generated

the most was when athletes stated that unintentional mind wandering experiences occurred with the experience of negative affect. For example, if the athlete was experiencing guilt, shame or disappointment during the performance.

The results within the content category revealed a range of negative affect (e.g., stress, anger, frustration, guilt) were linked with mind wandering. These codes align with previous research in a general and sport and exercise psychology context (Miś & Kowalczyk, 2021; Seli et al., 2019; Smallwood et al., 2009). The present study progresses from previous research, as these negative affect were linked specifically with unintentional mind wandering within a sport and exercise psychology context.

The results within the content category revealed examples of positive affect (e.g., feelings of inspiration, joy, excitement) that could be experienced through unintentional and intentional mind wandering. Showcasing the link between positive affect and mind wandering provides new insights within the mind wandering literature as previous research has mainly focused on exploring mind wandering and negative affect. Previous research has showcased the benefits of positive affect on performance, including greater levels of self-efficacy, motivation, attention, problem-solving, and coping with adversity (McCarthy, 2011). It could be suggested that mind wandering could aid in the experience of positive affect, leading to subsequent performance benefits.

An argument could be made that experiencing positive affect occurs more typically with intentional mind wandering rather than unintentional mind wandering. This argument is based on multiple participants stating that unintentional mind wandering occurs less with positive affect (6) and a participant stating that positive affect is more related to intentional mind wandering (1). On the other hand, multiple participants did state that unintentional mind wandering could promote positive affect (8), suggesting that mind wandering's ability to promote positive affect could occur unintentionally and intentionally, however it is dependent on the individual. Synthesising both data sets, it was evident that the participants who stated

that unintentional mind wandering occurs less with positive affect and participants who stated that unintentional mind wandering could promote positive affect were not distinguished by age, sport, gender, mind wandering and playing experience levels. With codes generated for both cases, it could indeed be the case that both types of mind wandering could facilitate the experience of positive affect, with positive affect potentially being experienced more often in intentional mind wandering, due to intentional mind wandering's conscious initiation and level of control in its occurrence (Seli et al., 2015).

The results from the intentional mind wandering sub-category revealed that codes were generated that allude to the self-regulatory functions of intentional mind wandering (Seli et al., 2016). These codes were distraction from negative affect helps manage negative affect, and positive affect is more related to intentional mind wandering. Intentional mind wandering is an experience that helps the athlete cope with the negative affect experienced, enabling the athlete to have a sense of control over the present situation. Interestingly, this content category also showcased the self-regulatory functions of mind wandering within the unintentional mind wandering sub-category. Unintentional mind wandering was stated to help participants distract oneself from negative affect and help manage the experience of negative affect. The content category results suggest that unintentional mind wandering may also possess self-regulatory functions.

7.4.6 Mind Wandering and Self-efficacy

Mind wandering and self-efficacy was the content category encompassing situations when a mind wandering experience was linked to athletes self-efficacy. The code generated the most was that unintentional mind wandering experiences occurred when they had low levels of self-efficacy. For example, if athletes believed that they were not able to perform the desired technique during performance, unintentional mind wandering was more likely to occur.

Previous research showed the tendency to mind wander during impaired self-efficacy (Desideri et al., 2019). The results within the content category align with previous research, as mind wandering occurring with low levels of self-efficacy was a code generated (n=23). The results within the content category progress from previous research, as mind wandering occurring with low levels of self-efficacy were indicated within a sport and exercise psychology context. Further progression from previous research can be seen as the type of mind wandering which occurs with low levels of self-efficacy was revealed, unintentional mind wandering.

The study results indicate that intentional mind wandering positively influenced levels of self-efficacy, aligning with previous research (Schunk & Zimmerman, 2007). Explaining these results through Seli's theoretical framework, intentional mind wandering positively influencing levels of self-efficacy could be evident due to intentional mind wandering's self-regulatory functions (Seli et al., 2016). However, future research is warranted, as intentional mind wandering positively impacting self-efficacy levels was a code generated once. It could indeed be the case that this mind wandering experience could be unique to the individual, instead of an experience typically occurring within a sport performance.

The mind wandering and self-efficacy content category has showcased the link between mind wandering and levels of self-efficacy. Synthesising both data sets, it was evident that the codes generated were not unique to athletes age, sport, gender, mind wandering and playing experience levels. The results suggest that intentional and unintentional mind wandering is an experience which can occur in many athletes who experience high levels of self-efficacy, low levels of self-efficacy and can positively impact levels of self-efficacy. This content category therefore answers Research Question 2.

7.4.7 After the Mind Wandering Experience

After the Mind Wandering Experience was the content category encompassing what occurs when athletes mind wandering experiences end and what were their refocusing tendencies.

The code generated the most was athletes stating that after an unintentional mind wandering experience, the first thing athletes often refocused on was performance cues (e.g., opponent positioning).

Typically when exploring the consequences of mind wandering, what is explored is how mind wandering impacts the task being conducted (Latinjak et al., 2018 a, b; Miś & Kowalczyk, 2021). *After the Mind Wandering Experience* is a content category that enables a unique exploration into the consequences of mind wandering, as the content category showcased how athletes respond to mind wandering experiences. For instance, the content category showcased that once an athlete has refocused after a mind wandering experience, athletes could feel more fatigued, more alert and experience a change in how they view the present sporting situation.

Athletes change of perception of the present sporting situation was a code generated both positively and negatively, as well as within both unintentional and intentional mind wandering sub-categories. These results align with Seli's theoretical framework, as perception is a cognitive process that impacts mind wandering (Seli et al., 2016). Previous research has suggested that perception is an antecedent of mind wandering (Forster & Lavie, 2009), a suggestion supported in the present study through the mind wandering occurrence content category. However, within the after the mind wandering experience content category, it is suggested that perception (and the change of perception) can be a consequence of mind wandering, occurring through intentional and unintentional mind wandering. This change in perception could sometimes be the athlete reappraising the current situation, influencing the subsequent action produced. Another example could be unintentional mind wandering leading to a change in perception, making the athlete aware that they must force themselves to change.

The results within the content category showcased that refocusing after an unintentional mind wandering experience can deplete energy levels at times, as well as lead to subsequent alertness at times. Exploring both data sets, the participants who stated these codes could be

distinguished by sport. Refocusing after a mind wandering experience depleting energy levels was stated by participants who competed in basketball. In addition, athletes who stated that refocusing after a mind wandering experience led to subsequent alertness competed in badminton. Synthesising both data sets revealed that the sport an athlete competes in could impact the subsequent energy levels experienced once they have refocused from an unintentional mind wandering experience. These results align with previous research, as perception is a cognitive process formed through external and internal information working together (Bodenhausen & Morales, 2013). As each sport differs in external task demands, the perception athletes of different sport have, will also differ.

After the mind wandering experience is a content category which showcases how athletes are influenced by mind wandering and how they respond to mind wandering experiences. Synthesising both data sets, it was evident that the codes generated may be unique to athletes sport. The results suggest that intentional and unintentional mind wandering is an experience that impacts what athletes refocus on, their subsequent energy levels, and their perception of the sporting situation, with the sport the athlete competes in influencing this. The results of the content category, therefore, answer Research Question 2.

7.4.8 Mind Wandering Outside the Sport Performance Context

Mind wandering outside the sport performance context was the content category encompassing the situations when a mind wandering experience occurred when the athlete was not training or competing in their sport. For example, post-performance or in anticipation of a performance. The content category also encompassed situations when athletes evaluated their performance, as performance evaluation typically occurs outside of the performance context. The code generated the most was that unintentional mind wandering experiences were more likely to occur with a negative performance self-perception.

The impact of mind wandering outside the performance context has been alluded to in previous research (Birrer et al., 2020; Latinjak, 2018 b). The results within this content category progress from previous research to reveal these mind wandering experiences in more detail. The codes generated within the content category indicate that both unintentional and intentional mind wandering occur with a negative performance self-perception, a positive performance self-perception and can have an impact on subsequent performance. The results suggest that after a performance, regardless of whether the athlete evaluates the performance as positive or negative, their mind could wander back to the events of the performance (e.g., during the commute home from the performance).

Synthesising both data sets, it was evident that the participants who stated that intentional mind wandering occurred with a positive performance self-perception all competed in the same sport (football) and were ranked in the top 4 in either playing experience or the deliberate mind wandering sub-scale (participants 3, 12, 15, 16). The results suggest that sport and deliberate mind wandering tendencies could impact the occurrence of mind wandering after a performance is deemed positive.

The results generated in the content category provided novel findings, one being that athletes do mind wander about future sporting events. Previous research exploring self-perception and mind wandering suggested that when mind wandering occurs whilst individuals undergo a period of self-evaluation, future-related thoughts are more likely to come to mind (Smallwood et al., 2011). The present study is congruent with previous research, showcasing that unintentional mind wandering outside the sport performance context could impact subsequent performance, lead to goal-directed thoughts, increase confidence and boost mood about the future sporting situation. Intentional mind wandering further supports this suggestion as it was found to promote relaxation and impact subsequent performance. The distinction between unintentional and intentional mind wandering progresses the understanding of the relationship between self-perception and mind wandering within a sport performance context.

The mind wandering outside the sport performance context is a content category that revealed athletes mind wandering experiences after a sporting performance and in anticipation of a sporting performance. Synthesising both data sets, it was evident that some codes generated were unique to athletes sport, playing experiences and deliberate mind wandering tendencies. This content category suggests that unintentional and intentional mind wandering is an experience that occurs outside the sporting context and can impact dispositional factors (e.g., confidence, mood, relaxation), cognitive processes (e.g., goal-directed thoughts) and subsequent performance regardless of a positive or negative performance self-perception. The results of the content category therefore answer research question 1.

7.4.9 Limitations and Future Research

Analysing the study's results contributed to the progression of the mind wandering literature within a sport and exercise psychology context. The combination of the quantitative and qualitative data showcased how various dispositional factors and demographic variables impact mind wandering inside and outside of sport performance. However, limitations did arise from the research design employed and the study results.

Exploring the methods employed for data collection, some limitations are evident. Data collection heavily relied on self-reports both quantitatively and qualitatively. Also, mind wandering experiences were all retrospective. These limitations could present issues as participants may not always realise that their mind is wandering and may be reluctant to report it when it happens (Seli et al., 2015c). Therefore, retrospective self-reports could be perceived as an approach that may obscure critical differences between intentional and unintentional mind wandering. With the use of retrospective self-reports, ways to mitigate these limitations were attempted through the use of a mixed method research methodology. Using a mixed method approach, a more holistic understanding of the researched area could be gained and the critical differences in individuals mind wandering experiences were revealed due to the

ranking analysis and content analysis. In addition, previous research has highlighted that questionnaires are a good way of measuring the types of thoughts that individuals may have experienced during different tasks, as they contain questions relating to the contents and emotions behind mind wandering experiences (Walker & Trick, 2018).

A further suggestion to mitigate the limitation of retrospective self-reports would be to conduct a study where the mind wandering and performance relationship is explored during a current task. Previous research exploring mind wandering through a current task has been conducted within general psychology (e.g., SART tasks, computerised tasks; Forster, 2013; Thompson et al., 2014) but this might be challenging to do within a sport performance context. These procedures have the advantage of capturing data in real time, but they cannot provide detailed information about the mind-wandering experience without disrupting performance. Potentially conducting a mixed method study where a sport performance task occurs (Miś & Kowalczyk, 2021), followed by a post-performance interview where the participant watches back their performance and are asked whether there were time points where unintentional and intentional mind wandering occurred, maybe a procedure which presents a state of equilibrium when researching mind wandering.

Following these limitations, future research could explore the common time points in which mind wandering negatively impacts sport performance and investigate how developing the explored dispositional factors (vitality, self-efficacy, affect, self-perception) potentially reduces this. Similarly, future research could also explore how the development of psychological skills (e.g., concentration) and techniques (e.g., mindfulness) increase the self-regulatory functions and benefits of mind wandering (Birrer et al., 2020). Lastly, future research could explore mind wandering outside the sport performance context in more detail. Specifically, when mind wandering occurs outside the sport performance context, how do mind wandering experiences impact skill acquisition or the performance of specific techniques.

7.5 Conclusion

The wandering mind is an occurrence which impacts many individuals and within the present study, the mind wandering experiences of athletes were explored. Within a general psychology context, it was revealed that perception is an important cognitive process which impacts the likelihood of mind wandering occurring. It was also revealed that mind wandering can occur intentionally and unintentionally (Seli et al., 2016). Various dispositional factors had been individually investigated within a general psychology context and opportunities to progress the understanding of mind wandering were evident. For instance, various dispositional factors had not been researched in a sport and exercise psychology context, and the distinctions between unintentional and intentional mind wandering had not been made consistently.

The present study has made an original contribution to research by revealing that vitality, self-efficacy, affect, self-perception, playing experience and sport are dispositional factors and demographic variables which are important in better understanding the intentional and unintentional mind wandering tendencies of athletes. The present study also revealed several performance effects of intentional and unintentional mind wandering, as well as the performance impact of mind wandering, when mind wandering about performance occurs outside the sporting context. With the present study exploring the self-talk generated unguided by the ongoing task (chapter summary provided in Table 7.2), the focus now shifts to the next and final chapter which explores and synthesises the results of the three study chapters.

Table 7.2

Chapter 7 Summary

Chapter	**Aims**
7	● RQ 1: What are the sport performance effects of elite/amateur athletes mind wandering experiences when it occurs unintentionally/intentionally and inside/outside the sport performance context ● RQ 2: How do dispositional factors impact the unintentional/intentional mind wandering experiences of elite/amateur athletes ○ Vitality ○ Self-efficacy ○ Positive and Negative Affect ○ Performance self-perception
Chapter Rationale	
Previous research has suggested that mind wandering impacts the behaviours we produce in different contexts. However, further insight is needed, especially within a sport performance context, as to the antecedents, consequences, positives and negatives of mind wandering. Exploring the self-talk which athletes generate outside the sport performance context and the self-talk athletes generate during performance which is undirected by the performance situation warrants investigation. These situations of self-talk are mind wandering and these could impact the use of psychological skills and athletes overall performance.	
Key Research	
● The intentionality of mind wandering (Seli et al., 2016) ● Mind wandering within a sport performance context (Latinjak, 2018 a, b)	

Findings
● All study aims were achieved ● Seven content categories emerged from the semi-structured interviews conducted. Within these categories, various antecedents, consequences, positives and negatives of mind wandering were common amongst all participants, as well as unique to specific participants were revealed.
New Knowledge Gained from Chapter 7
● The present study revealed that vitality, self-efficacy, affect, self-perception, playing experience and sport are dispositional factors and demographic variables which are important in better understanding the intentional and unintentional mind wandering tendencies of athletes. ● The present study revealed several performance effects of intentional and unintentional mind wandering, as well as the performance impact of mind wandering, when mind wandering about performance occurs outside the sporting context.

Chapter 8

General Discussion

8.1 Introduction

The present thesis is formed of three studies, all focused towards exploring the inner voice of the athlete. The thesis investigated the researched and applied nature of self-talk directed and undirected towards sport performance, and new knowledge within the researched area was gained. The final chapter of the thesis aims to expand on the findings within the three thesis studies, further showcasing the present thesis's contributions to the researched area. In addition, the final chapter seeks to display the link within the three thesis studies and how these contribute to the overall picture of the thesis. By doing so, the chapter reveals the achievement of the thesis' final aim:

- To build on the understanding of the entities and models established within the self-talk literature

The general discussion chapter reveals the new knowledge gained in the thesis by first exploring each study's results. Study results are explored through the research paradigm and the theoretical framework which governs the thesis. Next, the selected methods for each study are discussed, and justification for their use is provided. Exploring the results of each study in this manner synthesises each study's results with the three foundational pieces of the thesis: the self-talk literature, the transdisciplinary self-talk model (TDSM), and critical realism (see figure 8.1). In addition, the researcher's decision-making process is further revealed by justifying the methods used for each study. Lastly, what is explored in the chapter is the link between the results of the three thesis studies and their relation to the broader sport and exercise psychology literature now that the three studies have been performed and interpreted.

8.2 The Thesis Results and the Foundational Thesis Pieces

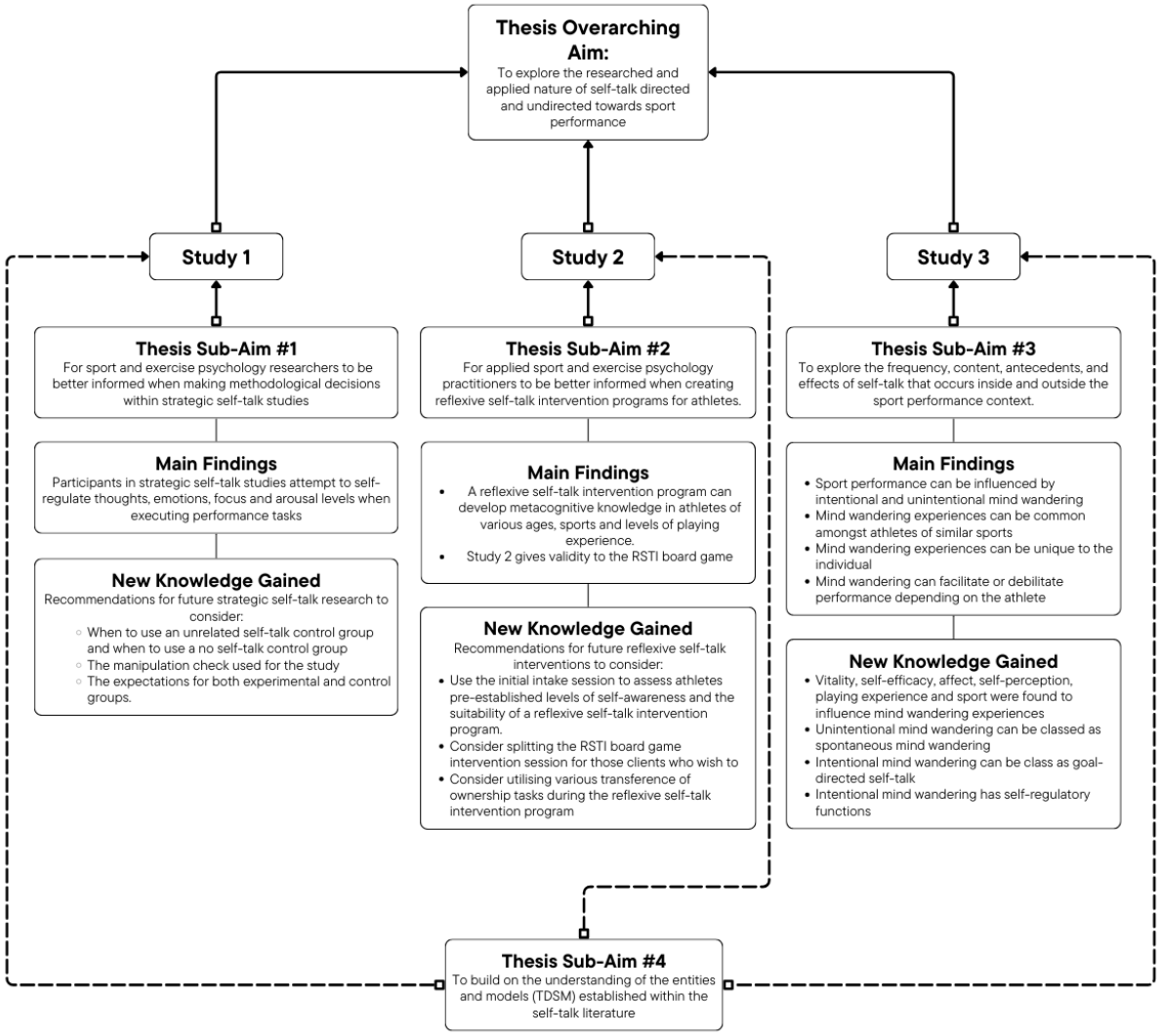


Figure 8.1: *the overarching aim, four sub-aims, the main findings and new knowledge gained in each study chapter. The arrows depict how each study and sub-aim contributed to the overarching aim*

The foundational pieces of the thesis were three aspects of psychological research that were important in creating the thesis. The importance of these foundational pieces was also apparent, as these were used to inform the understanding of the thesis results. Each thesis study's findings are interpreted through a critical realist research paradigm, contextualised through the transdisciplinary self-talk model and progressed different aspects of the self-talk literature.

8.2.1 Study 1: Investigating the Experimental and Control Groups of Strategic Self-talk Studies

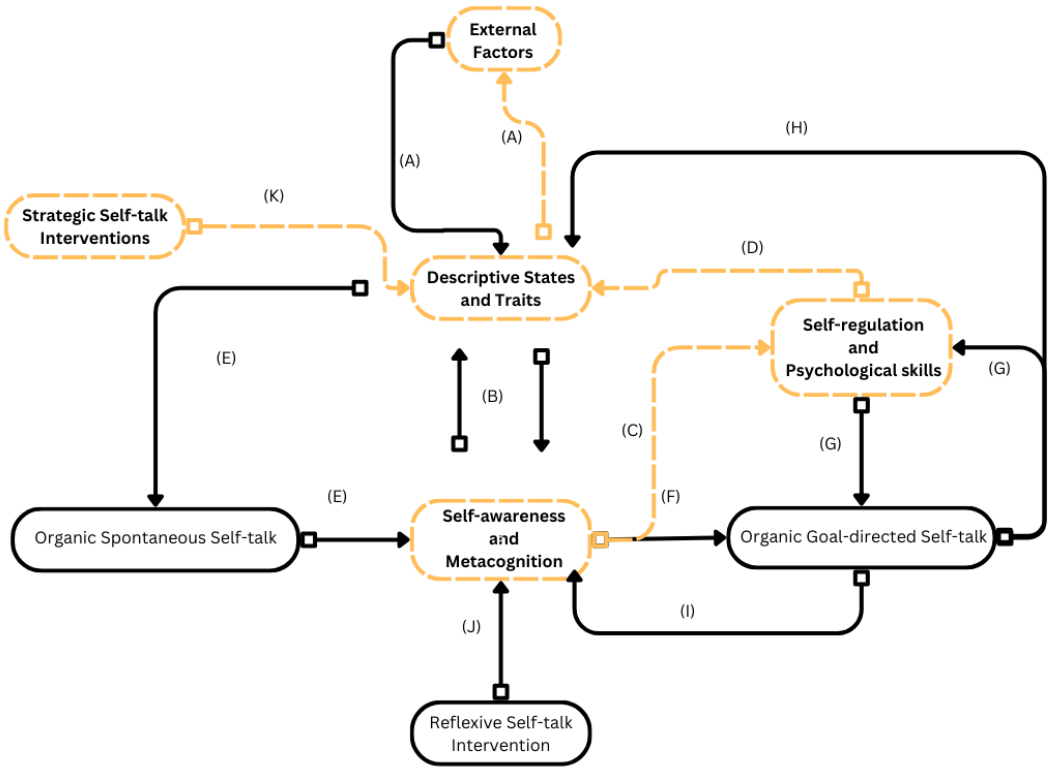


Figure 8.2. *Where the results of Study 1 are located within the adapted TDSM (coloured in yellow)*

Strategic self-talk studies were of focus in the first thesis study. When exploring previous research on strategic self-talk, there was a plethora of research investigating the impact various strategic self-talk cue words have on performance tasks (Galanis et al., 2023; Hatzigeorgiadis et al., 2011). However, an opportunity for further investigation was revealed as more information behind the experimental and control groups of strategic self-talk studies could be gained. The importance behind investigating the research design of strategic self-talk studies is that the control group is typically compared to the experimental group to indicate the success of the strategic self-talk study (Bobrownicki et al., 2022). Previous research has showcased inconsistent findings within some strategic self-talk studies and when using different control groups (Boroujeni & Shahbazi, 2011; Chang et al., 2014; Galanis et al., 2023). Therefore, an

opportunity presented itself within the self-talk literature to progress the understanding of strategic studies, by exploring in more detail the strategies that participants may employ in strategic self-talk studies, providing more detail as to why inconsistent findings have previously occurred.

Study 1 revealed that participants within the experimental (instructional and motivation strategic self-talk) and control groups (unrelated and no self-talk) attempted to self-regulate when executing the two performance tasks. The regulation of thoughts, focus, emotions and arousal levels were self-regulatory strategies attempted by participants. Attempts to self-regulate are not inherently negative. However, strategic self-talk studies do need to consider the self-regulatory strategies participants attempt. If not, the validity and reliability of study results could be negatively impacted, especially if the attempts to self-regulate by the experimental and control groups impact performance task scores. Therefore, the results of the present study have added to the knowledge of strategic self-talk studies.

Exploring Study 1 Results through a Critical Realist Perception

The results within Study 1 were interpreted through a critical realist research paradigm. As introduced in Chapter 4, critical realism possesses the worldview that recognises that the world has observable events and unobservable occurrences that cause observable events (Bhaskar, 2014). Also, critical realism believes that knowledge is a social product produced using antecedent social products and reflecting the individuals' experiences (Ryba et al., 2022; North, 2017). In the context of Study 1, knowledge was deemed to be the self-regulatory strategies participants employed to execute the desired outcome. These strategies were revealed in the present study due to participants' individual experiences in the two performance tasks, and the reflections made after completing the performance tasks. The results of Study 1, interpreted through a critical realist perspective, indicated how the unobservable occurrences of self-regulatory strategies could impact the observable event of task performance in both

experimental and control groups. The results of study 1, interpreted through a critical realist research paradigm, are further explored and contextualised through the TDSM.

Exploring Study 1 Results through the Transdisciplinary Self-talk Model

It was first proposed that Study 1 can be contextualised in the TDSM through the 'strategic self-talk interventions' cluster (see Chapter 2 for further information). Typically, information gained within strategic self-talk studies informs applied interventions for athletes (Hatzigeorgiadis et al., 2011; Hatzigeorgiadis et al., 2014). However, exploring the study results revealed that these results can be contextualised through other clusters within the TDSM. Participants within each self-talk group attempted to self-regulate. Therefore, the study's results can be contextualised through the self-regulation and psychological skills cluster of the TDSM.

The self-regulation process starts with the forethought phase (Zimmerman, 2000), and within the TDSM, the forethought phase is accounted for within the self-awareness and metacognition cluster. A self-regulatory strategy is selected to manage the experience of descriptive states and traits and subsequently facilitate the desired performance outcome. The TDSM depicts this process (seen in figure 8.2) through the letters C - D - A (Latinjak et al., 2023). For example, participants used deep breathing as an emotion regulation strategy to positively influence the descriptive states they were experiencing and, subsequently, the performance that was produced (Lane et al., 2012; Orbach & Blumenstein, 2022; Uphill et al., 2009). In addition, participants attempted to regulate levels of focus to influence the negative experience of specific descriptive states (e.g., frustration) to aid in executing the performance task.

Explaining the results of Study 1 through the TDSM further reveals the study's claims on how the self-regulatory strategies that participants attempted could impact their ability to complete the performance tasks. Therefore, the recommendations provided in the study chapter could benefit future strategic self-talk studies in accounting for the self-regulatory strategies attempted by participants in the experiential and control group. These recommendations were

to (1) consider when to use an unrelated self-talk control group and when to use a no self-talk control group, (2) consider the manipulation check used for the study, and (3) consider the expectations for both experimental and control groups. Revealing the self-regulatory strategies attempted by participants in the experimental and control groups and the recommendations provided for future strategic self-talk studies displays how the understanding of strategic self-talk studies has progressed due to the present study. Applying the knowledge gained within Study 1 would help create more valid and reliable strategic self-talk studies, and subsequently help future strategic self-talk interventions as it is research that informs applied practice.

Method Reflection

Within the creation of Study 1, there were various options as to which methods to employ. Firstly, the data collection method of a performance task was considered. Utilising a performance task was believed to be necessary in investigating the self-regulatory effects of strategic self-talk. An experience was necessary to enable participants to use strategic self-talk and self-regulatory strategies. Therefore, no other alternatives were considered.

The sole use of quantitative methods (e.g., performance task and questionnaire) for the study was also an option considered, and this would have achieved the aim of building on the understanding of models established within the self-talk literature, which was the fourth thesis aim. However, solely utilising quantitative methods would have failed to uncover the self-regulatory strategies participants were attempting which were specific to their performance task execution and self-talk group, and so it was necessary to use a method that could reveal this information. A semi-structured interview fit the criteria of a method that could uncover and further explore the self-regulatory strategies of participants. A semi-structured interview provided the means for each participant to discuss in detail their lived experiences of the performance tasks and the self-regulatory strategies attempted (Galletta, 2013), henceforth it was used within the present study.

The information gained through the semi-structured interview proved vital, as the quantitative data analysis method (MANOVA) was not performed due to the required participant amount not being reached (further explanation found in Chapter 5). Although the repercussions of not meeting the participant requirement meant that all the study aims were not achieved, new insights into participants' experiences in the experimental and control groups were revealed. Study 1, therefore was still able to achieve thesis sub aim 1: for sport and exercise psychology researchers to be better informed when making methodological decisions within strategic self-talk studies. Study 1 could serve as a pilot study in which future research could explore the application of the recommendations provided in the study, with a sample size that fits the requirements for quantitative data analysis methods.

Lastly, the qualitative data analysis methods of a content analysis and a thematic analysis were considered for Study 1. A thematic analysis aims to identify and analyse repeated patterns in the data set (Clarke & Braun, 2017). A thematic analysis relies heavily on the subjective judgement of the researcher. Although research could benefit from this approach (Braun et al., 2016), it was believed that the interpretation of the data, combined with the descriptive counts of codes that content analysis presents, would better serve the study and the mixed methods methodology employed. In addition, previous research is congruent with using the chosen methods within a sport and exercise psychology context (Hambrick et al., 2010; Rumbold et al., 2018).

8.2.3 Study 2: A Reflexive Self-talk Intervention Program

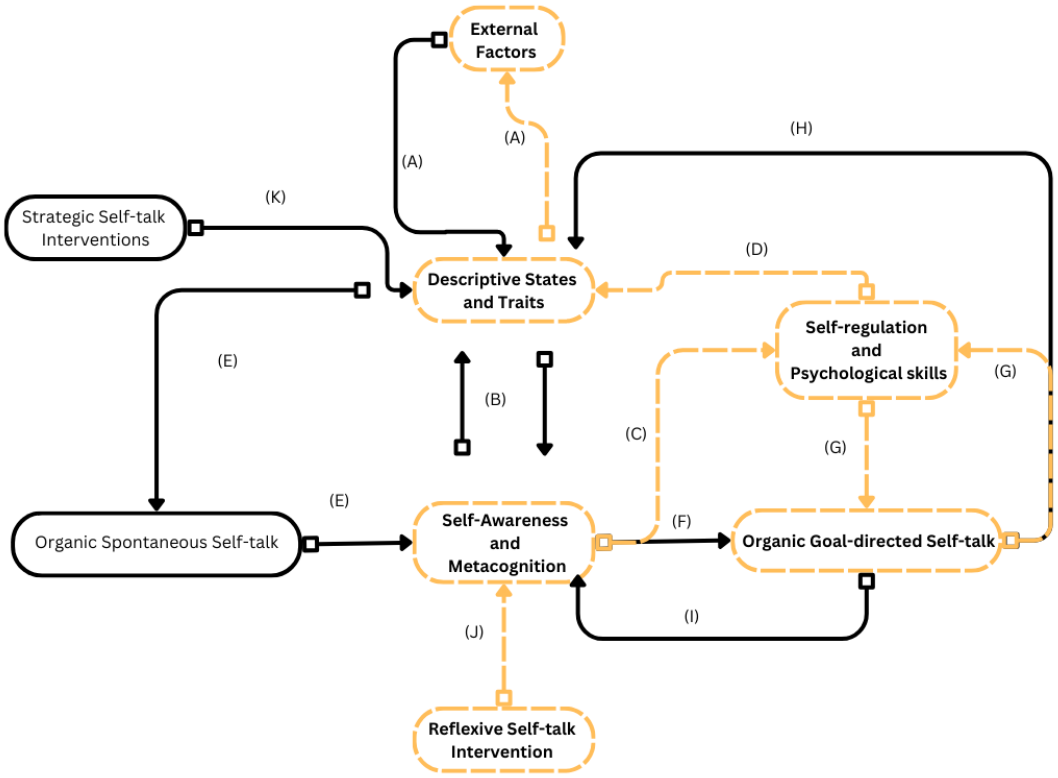


Figure 8.3. *Where the results of Study 2 are located within the adapted TDSM (coloured in yellow)*

Investigating a reflexive self-talk intervention was of focus within Study 2. Reflexive self-talk intervention programs are created based on the guidelines of applied sport and exercise psychology intervention studies and the self-talk literature (Keegan, 2016; Latinjak et al., 2020). A Reflexive self-talk intervention program aims for the athlete to develop their metacognitive knowledge and organic goal-directed self-talk by discussing the content of their goal-directed self-talk, improving their choice of psychological skills, and raising their levels of self-awareness of psychological challenges experienced during performance (Latinjak et al., 2019).

Study 2 progressed the knowledge of reflexive self-talk interventions by exploring the intervention aims through a mixed methods methodology, the intervention's effects on athletes of various ages, sports and levels of playing experience and the application of a new intervention tool (RSTI board game). The results of the intervention program, the analysis of the

RSTI board game and the reflections made by the participants and the researcher provided new knowledge within the researched area. This new knowledge was that the intervention can be applicable for athletes of various ages, sports and levels of playing experience, the progression and success of the intervention program can be measured through the #SportPsychMapping Interview and mental toughness scores and the RSTI board game is a tool which could be used to achieve the intervention aims. This new knowledge was packaged together in the form of recommendations as to new ways of how reflexive self-talk interventions could be conducted. These recommendations included applied practitioners to consider (1) the initial intake session, (2) athletes' familiarisation with the RSTI board game, (3) splitting the intervention sessions and (4) transference of ownership.

Exploring Study 2 Results through a Critical Realist Perception

The results within Study 2 were interpreted through a critical realist research paradigm. Evidence of study two's results being explored through a critical realist research paradigm was apparent, for instance, through the results produced through the three ontological layers of critical realism. These layers are (1) the empirical, which are the observable aspect of events, (2) the actual, which are observable and unobservable aspects of events generated by mechanisms and social structures and (3) the real, which are causal structures that generate the unobservable aspect of events (Fletcher, 2017; McEvoy & Richards, 2006). The manifestation of the empirical through the results of Study 2 can be seen in the participants' concepts on their #SportPsychMap and sport mental toughness questionnaire scores. These methods depicted the experiences of each participant throughout the intervention program. The manifestation of the actual through the study results can be seen in the transference of ownership conducted and reflected on by both the researcher and the participant. Aspects of transference of ownership were observable (transference of ownership tasks) and unobservable (development of athlete autonomy and self-awareness), and the reflection of transference of ownership provided new knowledge on applying a reflexive self-talk intervention program. Lastly, the manifestation of the real through the study results can be

seen in the study results exploring the development of metacognitive knowledge. Metacognitive knowledge was an unobservable event and a causal structure that generated the progression in transference of ownership, and the observable aspects of participants improved #SportPsychMapp concepts and improved sport mental toughness questionnaire scores.

Exploring Study 2 Results through the Transdisciplinary Self-talk Model

The reflexive self-talk intervention program, the intervention tool used and the achievement of the intervention aims evident within Study 2 align with the processes explained within the TDSM. The model depicts the various internal and external processes which can occur through a reflexive self-talk intervention. Reflexive self-talk interventions (J) build metacognitive knowledge, which helps manage descriptive states and traits and subsequently produces the desired behaviour (seen in Figure 8.3). This process could occur directly (J - B) or through metacognitive knowledge leading to the production of a psychological skill (J - C) or through metacognitive knowledge leading to the use of organic goal-directed self-talk, which guides the selection of a psychological skill (J - C - G). The steps J - C - G were evident within intervention sessions and the RSTI board game which guided these sessions. Participants identified a psychological challenge, discussed the situational and contextual factors surrounding the challenge (J), selected a psychological skill to affect this challenge positively (C) and discussed potential goal-directed self-talk words and phrases which could aid in performing the psychological skill (G). Following the transdisciplinary self-talk model, the performance of a psychological skill aids in managing the descriptive states and traits of the psychological challenge (D) and positively impacts the subsequent behaviour and performance produced (A).

Exploring the study through the TDSM, it is evident how the new knowledge gained within the present study fits into the broader self-talk literature. Understanding the reflexive self-talk intervention program through the TDSM better informs practitioners of the developments that could occur when administering a reflexive self-talk intervention program, and further strengthens the recommendations from the study results. Therefore, it is believed that Study 2

achieved Thesis Sub Aim 2, for applied sport and exercise psychology practitioners to be better informed when creating reflexive self-talk intervention programs for athletes.

Method Reflection

Methods used in the data collection of Study 2 were questionnaires, #SportPsychMapping interview, RSTI board game and a reflective journal. A questionnaire and the #SportPsychMapping interview were methods used to collect information on the impact of the reflexive self-talk intervention program at various time points. These methods were necessary as the metacognitive developments of athletes (questionnaire) and the internal experiences of athletes as the program progressed (#SportPsychMapping interview) needed to be measured to identify the success or failure of the intervention program. Both were deemed necessary to achieve the study's aims and the thesis sub aim the study was exploring, so no alternatives were considered.

The use of a reflective journal was selected due to the applied nature of the study. Study 2 fits into the thesis through its attempt to better inform applied sport and exercise psychology practitioners in the future use of reflexive self-talk interventions. A reflective journal, therefore, would help decipher the areas the researcher and other practitioners would like to adopt or reject in their future use of the intervention program (Alt & Raichel, 2020), thus no alternative methods were considered.

Methods used for data analysis of study 2 included an expert independent of the study evaluating the RSTI sessions, an interpretive phenomenological analysis (IPA) and descriptive statistics. Alternative options for the use of an expert evaluating the RSTI sessions and an IPA were not considered. An expert evaluating the changes in RSTI sessions as the intervention program progressed provided an additional layer of validity to the study results, exemplifying the use of triangulation and complementarity within the study (Doyle et al., 2009). An IPA was

selected as this method allowed for a deep understanding of participants experiences to be analysed (Pringle et al., 2011).

The use of the quantitative analysis method of descriptive statistics was selected due to its fit with the study data and the aims of the intervention of showcasing the development of metacognitive knowledge. Another quantitative analysis method considered was using a multiple paired samples t-test. However, this option was rejected due to the increased overall risk (or rate) of committing type-1 error (Mara & Cribbie, 2012).

8.2.3 Study 3: The Mind Wandering and Performance Relationship

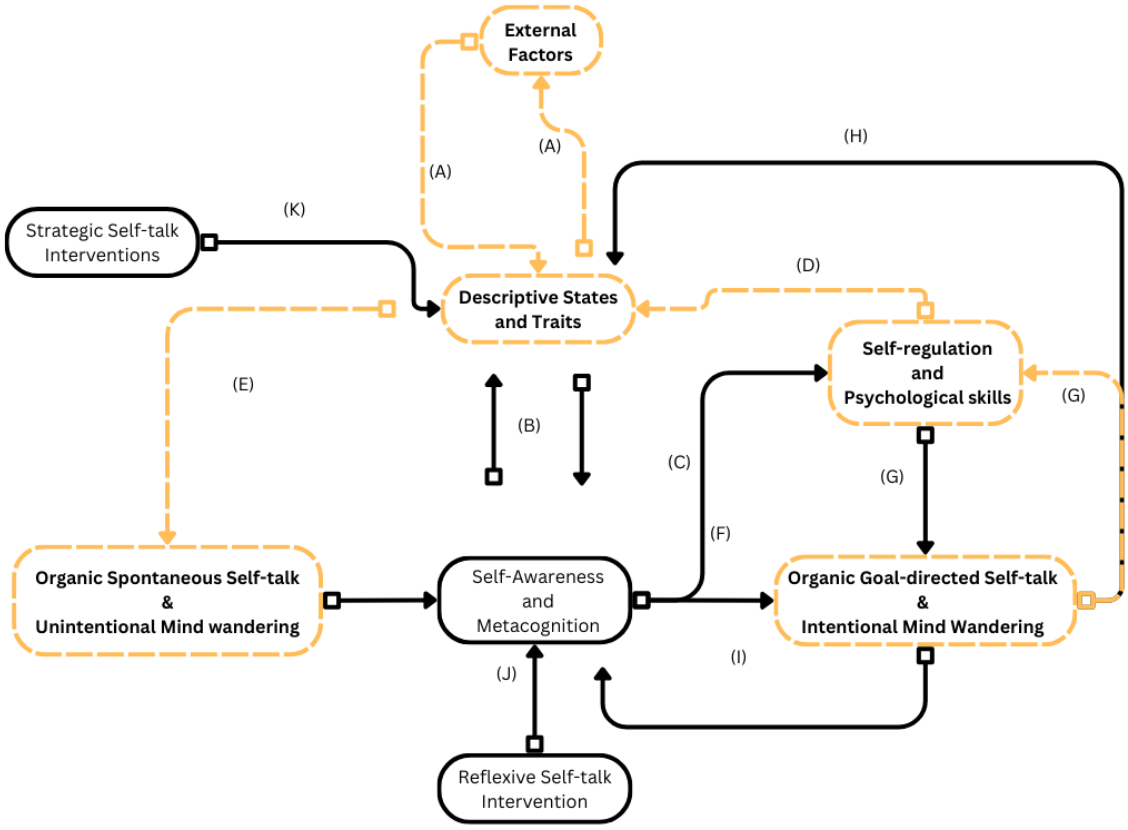


Figure 8.4. *Where the results of Study 3 are located within the adapted TDSM (coloured in yellow)*

The final study within the present thesis aimed to progress the understanding of mind wandering within a sport performance context. Mind wandering is thoughts that are unguided by the present task or activity and is an experience that can occur unintentionally as well as intentionally (Irving, 2016; Seli et al., 2015). Mind wandering can take various forms, and it is the mind wandering that is produced verbally that is linked to self-talk. Opportunities to progress the mind wandering literature were evident through exploring the various time points and situations where mind wandering occurs during sport performance, exploring the mind wandering tendencies of elite and amateur athletes, exploring the mind wandering experiences which occur outside the sport performance context and exploring how dispositional factors impact mind wandering experiences of athletes.

Study 3 has made an original contribution to research by revealing further information on the various time points and situations where mind wandering occurs during sport performance, revealing the mind wandering tendencies of elite and amateur athletes and that mind wandering experiences which occur outside the sport performance context can influence the subsequent performance that is produced. Also that vitality, self-efficacy, affect, self-perception, playing experience and sport are dispositional factors and demographic variables which are important in better understanding the intentional and unintentional mind wandering tendencies of athletes. The significance of these findings is that by better understanding the mind wandering tendencies, experiences and dispositional factors linked with the mind wandering experiences of athletes, the time points where mind wandering can positively and negatively influence sport performance can be better understood. This new knowledge could be helpful for applied sport and exercise psychology practitioners when administering self-talk interventions or researchers conducting a self-talk study.

Exploring Study 3 Results through a Critical Realist Perception

The results within Study 3 were interpreted through a critical realist research paradigm. From a critical realist perspective, knowledge of the world is always mediated by the discourse

available (McEvoy & Richards, 2006). Therefore, the relationship between the researcher and what is being researched is one in which the environment of the researched phenomenon and the previous experiences of individuals being researched are vital in generating new knowledge.

The athlete's environment (e.g., sporting demands) and their perception informed the results produced and the mind wandering experiences that were revealed. For instance, mind wandering experiences were found to be unique to individuals based on their sport. For example, refocusing after a mind wandering experience depleting energy levels was found to be a mind wandering experience occurring in basketball players. In addition, refocusing after a mind wandering experience leading to subsequent alertness was found to be a mind wandering experience occurring in badminton players.

The results of Study 3 being interpreted through a critical realist research paradigm can also be seen by critical realism's epistemology of constructivism (North, 2017). Due to the differences in individuals' experiences, critical realism is compatible with the idea that there are different valid perspectives on reality (Wiltshire, 2018). These different perspectives were evident through participants revealing situations where mind wandering experiences occurred when experiencing, for example, high levels of self-efficacy, whilst other participants revealed situations where mind wandering experiences occurred with low levels of self-efficacy. Both experiences are valid within the reality of each individual, and through interpreting the study's results through a critical realist research paradigm, what was revealed was the mind wandering experiences which differ based on the individual and various dispositional and demographic variables.

Exploring Study 3 Results through the Transdisciplinary Self-talk Model

Contextualising the results of Study 3 through the TDSM further reveals the insights gained from the present study and their link with the self-talk literature (seen in Figure 8.4). The TDSM

reveals that the self-talk unguided by the ongoing situation (mind wandering) is located in the organic self-talk entity (Birrer et al., 2020). Similarities and differences between the self-talk and mind wandering literature are evident. Unintentional mind wandering draws similarities to organic spontaneous self-talk through both being initiated through descriptive states and traits (depicted through the letter E), and through both being able to occur unguided by the current situation. Differences between these two are evident, however, as the content of spontaneous self-talk can be guided by the current situation and the content of unintentional mind wandering cannot. In addition, the present study has more clearly displayed that organic spontaneous self-talk is not a form of mind wandering in verbal form, when mind wandering occurs inside the sport performance context due to these fundamental differences.

On the other hand, Study 3 has revealed situations where unintentional mind wandering can be classified as organic spontaneous self-talk. For instance, the unintentional mind wandering experiences which occur outside the sporting context but its content is about a sport performance, can be classified as organic spontaneous self-talk. The results which informed this suggestion was the content category, mind wandering outside the sport performance context. Specifically within the unintentional mind wandering sub-category, for example when unintentional mind wandering occurred with a positive or negative performance self-perception.

The TDSM also reveals a link between intentional mind wandering and organic goal-directed self-talk, as both can be controlled and deliberate (Seli et al., 2015a; Seli et al., 2015b). Differences can also be seen, as intentional mind wandering is fundamentally unguided by the present situation, whereas organic goal-directed self-talk is typically guided by the present situation. Study 3 has hinted that intentional mind wandering can aid performance similarly to how organic goal-directed self-talk aids performance. Performance improvements can occur through intentional mind wandering's self-regulatory functions (Seli et al., 2015), depicted on the TDSM through the letters G - D. Differences are evident, however, as the self-regulatory functions which are apparent within organic goal-directed self-talk, focus on task-relevant

information as a coping strategy, and the self-regulatory functions of intentional mind wandering focus on task-irrelevant information as a coping strategy.

The present study has progressed from previous research, as a situation when mind wandering could be classed as organic goal-directed self-talk was apparent. For instance, intentional mind wandering occurring outside the performance context, and its content is based on a performance. This result was present in the intentional mind wandering sub-categories of the mind wandering outside the sport performance context content category. In addition, athletes highlighted mind wandering's impact on dispositional factors (confidence, mood, relaxation), a cognitive process (goal-directed thoughts) and subsequent performance.

Further exploring the study results through the TDSM reveals that other aspects of athletes' sporting experience are impacted by their mind wandering experiences. External factors, descriptive states and traits and psychological skills display these factors that would impact the mind wandering and sport performance relationship.

Various external factors have previously been mentioned as influencing the mind wandering experiences of athletes. Within a general and sport and exercise psychology context, it has been showcased that various external factors can impact the occurrence of mind wandering. For instance, the physical environment, as mind wandering is more likely to occur within a familiar environment (Yanko & Spalek, 2013), task characteristics, as mind wandering can occur during long-distance running (Miś & Kowalczyk, 2020) and social systems, as mind wandering can occur when coaches are giving instructions (Latinjak, 2018b). Previous research indicates that external factors are an antecedent of mind wandering. The results from the present study align with previous research by showcasing how unintentional and intentional mind wandering experiences could occur through external factors. Examples include the physical environment (e.g., training and competition), social systems (e.g., coach giving instructions) and task characteristics (e.g., free throw shot).

Descriptive states and traits are placed in a unique position as it can be suggested that the experience of certain descriptors are antecedents of mind wandering (e.g., fatigue), and certain descriptors are consequences of mind wandering (e.g., focus). Previous research has mainly focused on investigating antecedents of mind wandering (Miś & Kowalczyk, 2020; Latinjak, 2018b). The present study also investigated antecedents of mind wandering but progressed from previous research by exploring descriptors that would account for the consequences of unintentional and intentional mind wandering. For example, the subsequent energy levels which are experienced following a mind wandering experience. This is depicted on the TDSM through the letter A

Exploring the study through the TDSM, it is evident how the new knowledge gained within the present study fits into the broader self-talk literature. Therefore, it is believed that Study 3 achieved Thesis Sub Aim 3, to explore the frequency, content, antecedents, and effects of self-talk inside and outside the sport context.

Method Reflection

Data collection methods used for Study 3 were questionnaires and a semi-structured interview. The sole use of a quantitative method (questionnaires) was considered for Study 3. This consideration was supported by previous research guided by critical realism, which has been conducted solely using one method (Byers, 2013). Also, the sole use of this method would achieve aspects of the thesis aim, as exploring the frequency of self-talk (mind wandering) that occurs inside and outside the sport context could be explored. However, the sole use of quantitative methods would have failed to fully achieve the study's aim of exploring the frequency, content, antecedents, and effects of self-talk that occurs inside and outside the sport context. Achieving the entire thesis aim would not have occurred as no questionnaire focuses on the frequency, content, antecedents and effects of mind wandering in a sporting context to the researcher’s knowledge. Therefore, to gain in-depth information on mind

wandering experiences, a detailed discussion (semi-structured interview) with the athlete was required.

The justification for the methods used for the three studies has occurred previously in Chapter 4. The use of all methods for each study underwent multiple processes to get to the conclusion of its selection. The process included reading previous research, comparing the strengths and weaknesses of other methods considered, discussions with the researcher's PhD supervisors, the researcher's professional judgment, understanding each study's aim and exploring the congruence between the method and the research paradigm of the thesis. Justification for their selection provided in the present chapter indicates that other options were considered. However, the decisions made for each study aided in the new knowledge that was gained in each study. Although no method is without disadvantages, attempts to mitigate these have occurred using a mixed method research methodology.

8.3 Linking the Three Thesis Studies: Self-talk and Self-regulation

The present thesis has explored three aspects of the self-talk literature, aiding in new knowledge of the research phenomenon. New knowledge has been gained within the self-talk that is directed and undirected towards sport performance, the self-talk which is researched and the self-talk that is developed through an intervention. Although the distinction of each study has been highlighted within various chapters, exploring the results of each study shows a link between the three.

The results of the three studies all draw from the self-regulation processes occurring within athletes. The results of Study 1, for example, highlighted the self-regulatory strategies which participants in both the experimental and control groups attempted during the performance tasks. The results from Study 2 highlighted the need for self-regulation to manage performance challenges explored within the reflexive self-talk intervention sessions. Lastly, the results from Study 3 highlighted situations when a mind wandering experience possessed self-regulatory

functions, and these experiences were dependent on when mind wandering occurred and the content of the experience.

The need to consider the relationship between self-talk and self-regulation was stated in Chapter 1 (thesis introduction) of the thesis. A primary way self-talk impacts athletes' performance is through self-talk supporting self-regulation (Latinjak et al., 2019). Previous research made this claim and the results within the thesis studies align with this claim. In addition, self-talk supporting the regulation of thoughts, emotions and behaviours in line with the demands of a present or future situation was also a claim made by previous research (McCormick et al., 2019). The results of the three thesis studies also support this claim. Study 1 revealed that self-regulation can occur with self-talk, despite the self-talk used, through the codes generated by participants in the experimental and control groups. Study 2 showcased that self-talk can reinforce the ongoing self-regulatory process through participants progressing through the RSTI board game. Study 3 revealed that self-talk can initiate self-regulatory processes through intentional mind wandering outside a sport performance context, when its content is on sport performance.

Exploring the results of three studies displays the diversity in the thesis' research findings, how a critical realist research paradigm interpreted the results and how these are contextualised through the TDSM. What is also displayed is the decision-making process of the creation of each study and its link with the broader sport and exercise psychology literature (self-regulation). The combination of these decisions informed the creation and interpretation of the thesis.

8.4 Future Research

The three thesis studies are all distinct in their own right, however, they share communality in that they have all provided an original contribution to the researched and applied nature of self-talk directed and undirected towards sport performance. Following these new insights,

there is much room for future research to explore and build from the present thesis. A section focusing on future research for each study has been provided in each thesis chapter. However, these sections provided recommendations based on the limitations of the present study. The present section explores how future research could occur based on the new knowledge gained within each study.

Study 1. Study 1 provided an original contribution to knowledge through the new knowledge gained of the self-regulatory strategies attempted by participants in a strategic self-talk study. Attempts to self-regulate are not inherently negative. However, strategic self-talk studies do need to consider the self-regulatory strategies participants attempt. If not, the validity and reliability of study results could be negatively impacted, especially if the attempts to self-regulate by the groups are impacting performance task scores.

Future research based on the new knowledge gained from Study 1 could conduct a strategic self-talk intervention study. The experimental group could undergo a similar procedure to previous strategic self-talk intervention studies (Hatzigeorgiadis et al., 2011; Galanis et al., 2022) and the control group could be examined in more detail, utilising the manipulation check recommendation from the knowledge gained from the present study (information on the recommendation can be found in section 5.7.8 researcher recommendation - manipulation check). The study format of future research could be explored in sports in which previous strategic self-talk studies have occurred such as basketball (Galanis et al., 2022) and tennis (Hatzigeorgiadis et al., 2009), as this could add to the reliability in the results of previous research and increase the confidence in the recommendations of the use of strategic self-talk within applied interventions.

Study 2. Study 2 provided an original contribution to knowledge through the knowledge gained of how a reflexive self-talk intervention could be administered and measured. A reflexive self-talk intervention program was measured utilising a mixed methods research

methodology, revealing that the aims of the intervention can be achieved when administered to participants of various ages, sports and levels of playing experience.

Future research based on the new knowledge gained from the study could be to create an adapted version of the RSTI board game to explore a positive sporting situation. Exploring a positive sporting situation yielded positive results within the researcher's reflections and is an area which future research could explore. Previous research on positive psychology could be utilised and integrated into the creation and implementation of the tool.

Study 3. Study 3 has made an original contribution to research by revealing that vitality, self-efficacy, affect, self-perception, playing experience and sport are dispositional factors and demographic variables which are important in better understanding the intentional and unintentional mind wandering tendencies of athletes. The study also revealed several performance effects of intentional and unintentional mind wandering, as well as the performance impact of mind wandering, when mind wandering about performance occurs outside the sporting context.

Future research based on the new knowledge gained from Study 3 could explore each dispositional factor shown to impact mind wandering experiences. An intervention study could be conducted to see whether the use of specific psychological techniques aid in the development of dispositional factors and a reduction in the negative performance impacts of mind wandering. For example, the use of the psychological technique mindfulness impacting the dispositional factor of negative affect, reducing the negative mind wandering experiences that occur during performance situations.

8.5 Thesis Conclusion

The inner voice of the athlete was the cognitive process of focus within the present thesis. This inner voice is often heard in various situations, at times positively influencing performance and

at times negatively influencing performance. That inner voice is referred to as self-talk, and through exploring the self-talk literature, the stance this thesis took was identified. The stance within the self-talk literature was the use of Latinjak et al. (2019) conceptualisation of self-talk and the terminology used within this line of research. Further exploring Latinjak et al. (2019) conceptualisation revealed that many aspects are understood about the organic and strategic entity of self-talk. The knowledge gained within this conceptualisation greatly benefitted researchers and applied practitioners within the field of sport and exercise psychology. It was also revealed that there are opportunities to progress the understanding of self-talk and that is where the relevance of the present thesis is found.

Three thesis studies were created based on the self-talk literature, attempting to gain a deeper understanding of the strategic entity of self-talk (Study 1), the organic entity of self-talk (Study 2) and the self-talk that is unguided by the present situation (Study 3). The creation of the three studies was informed by the transdisciplinary self-talk model (Latinjak et al., 2023). The TDSM provides an up to date account of the self-talk literature in sport and also synthesises the self-talk literature across multiple disciplines inside and outside of psychology. The eight clusters encompassing the TDSM provided a theoretical underpinning to the thesis, indicating the sporting experiences of the athlete and how self-talk links with these processes, guiding the execution and interpretation of the thesis.

A philosophical understanding of the researcher backed the theoretical underpinning of the thesis. Critical realism was the research paradigm adopted for the present thesis and was the worldview that informed the creation of the thesis. Critical realism informed the selection of the methodology of the thesis, which was mixed methods research. From these decisions made, conducting and interpreting the thesis studies commenced.

Exploring the self-regulatory strategies employed within a strategic self-talk study, exploring a reflexive self-talk intervention program and exploring the mind wandering experiences of athletes all generated new knowledge and progressed the understanding of self-talk in sport.

Despite each study's limitations, it is believed that the overarching aim of the thesis was achieved. The overarching aim was to explore the researched and applied nature of self-talk directed and undirected towards sport performance. It is the hope of the researcher that the thesis provides various benefits for its targeted audience. This target audience was researchers and applied practitioners who work within the field of sport and exercise psychology, who are or will conduct research and applied interventions which focus on self-talk. The knowledge gained within the thesis can be useful when self-talk is researched, as well as in the application of self-talk within applied interventions, aiding athletes in enhancing their inner voice.

Reference List

Abdoli, B., Hardy, J., Riyahi, J. F., & Farsi, A. (2018). A closer look at how self-talk influences skilled basketball performance. *The Sport Psychologist*, *32*(1), 9-15. https://doi.org/10.1123/tsp.2016-0162

Abraham, C., & Michie, S. (2008). A taxonomy of behavior change techniques used in interventions. *Health Psychology*, *27*(3), 379-410. https://doi.org/10.1037/0278-6133.27.3.379

Aggerholm, K. (2014). *Talent development, existential philosophy and sport: On becoming an elite athlete*. Routledge. https://doi.org/10.4324/9781315775050

Ahmad, M., & Abdullah, S. (2014). Effect of using different training styles on development of badminton serving accuracy. *Science, Movement and Health*, *14*(2), 476-480.

Allen, M. S., Greenlees, I., & Jones, M. (2013). Personality in sport: A comprehensive review. *International Review of Sport and Exercise Psychology*, *6*(1), 184-208. https://doi.org/10.1080/1750984X.2013.769614

Alt, D., & Raichel, N. (2020). Reflective journaling and metacognitive awareness: Insights from a longitudinal study in higher education. *Reflective Practice*, *21*(2), 145-158. https://doi.org/10.1080/14623943.2020.1716708

Anderson, A. G., Knowles, Z., & Gilbourne, D. (2004). Reflective practice for sport psychologists: Concepts, models, practical implications, and thoughts on dissemination. *The Sport Psychologist*, 18(2), 188-203. https://doi.org/10.1123/tsp.18.2.188

Aoyagi, M. W., Poczwardowski, A., Statler, T., Shapiro, J. L., & Cohen, A. B. (2017). The Performance Interview Guide: Recommendations for initial consultations in sport and

performance psychology. *Professional Psychology: Research and Practice*, *48*(5), 352-360.https://doi.org/10.1037/pro0000121

Arent, S. M., & Landers, D. M. (2003). Arousal, anxiety, and performance: A reexamination of the inverted-U hypothesis. *Research Quarterly for Exercise and Sport*, *74*(4), 436-444. https://doi.org/10.1080/02701367.2003.10609113

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology*, 25(5), 729–735. https://doi.org/10.1037/0012-1649.25.5.729.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In T. Urdan, & F. Pajares (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Information Age Publishing. https://motivation.uky.edu/wp-content/blogs.dir/5/files/2022/08/BanduraGuide2006.pdf

Barrett, L. F., & Bliss-Moreau, E. (2009). Affect as a psychological primitive. *Advances in Experimental Social Psychology*, *41*, 167-218. https://doi.org/10.1016/S0065-2601(08)00404-8

Barry, P., & O'Callaghan, C. (2008). Reflexive journal writing: A tool for music therapy student clinical practice development. *Nordic Journal of Music Therapy*, 17(1), 55-66. https://doi.org/10.1080/08098130809478196

Barwood, M. J., Corbett, J., Wagstaff, C. R., McVeigh, D., & Thelwell, R. C. (2015). Improvement of 10-km time-trial cycling with motivational self-talk compared with neutral self-talk. *International Journal of Sports Physiology and Performance*, *10*(2), 166-171. https://doi.org/10.1123/ijspp.2014-0059

Baird, B., Smallwood, J., & Schooler, J. W. (2011). Back to the future: Autobiographical planning and the functionality of mind-wandering. *Consciousness and Cognition*, *20*(4), 1604-1611. https://doi.org/10.1016/j.concog.2011.08.007

Baumeister, R. F., & Vohs, K. D. (2007). Self-Regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, *1*(1), 115-128. https://doi.org/10.1111/j.1751-9004.2007.00001.x

Beck, A. T. (1993). Cognitive therapy: past, present, and future. *Journal of Consulting and Clinical Psychology*, 61(2), 194-198. https://doi.org/10.1037/0022-006X.61.2.194

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy*, 35(1), 49-58. https://doi.org/10.1016/S0005-7967(96)00069-1

Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology: General,* 130(4), 701–725. https://doi.org/10.1037/0096-3445.130.4.701

Bellomo, E., Cooke, A., Gallicchio, G., Ring, C., & Hardy, J. (2020). Mind and body: Psychophysiological profiles of instructional and motivational self-talk. *Psychophysiology*, *57*(9), e13586. https://doi.org/10.1111/psyp.13586

Bernier, M., Thienot, E., Codron, R., & Fournier, J. F. (2009). Mindfulness and acceptance approaches in sport performance. *Journal of Clinical Sport Psychology*, *3*(4), 320-333. https://doi.org/10.1123/jcsp.3.4.320

Bhaskar, R. (2014, April 28). *Critical Realism - Roy Bhaskar* [Video]. Youtube. https://www.youtube.com/watch?v=TO4FaaVy0Is.

Bhaskar, R. (2016). *Enlightened common sense: The philosophy of critical realism*. Routledge. https://doi.org/10.4324/9781315542942

Birrer, D., Jackman, P. C., & Latinjak, A. T. (2020). Contesting the role of self-talk in sport psychology in views of mindfulness, flow, and mind wandering. In A. Latinjak, & A, Hatzigeorgiadis (Eds.), A *Self-talk in Sport* (pp. 201-217). Routledge. http://eprints.lincoln.ac.uk/id/eprint/39855/1/Chapter%2015%20-%20Flow%20in%20Self%20Talk%20in%20Sport.pdf

Bobrownicki, R., Carson, H. J., MacPherson, A. C., & Collins, D. (2022). Unloading the dice: Selection and design of comparison and control groups in controlled trials to enhance translational impact within motor learning and control research. *International Journal of Sport and Exercise Psychology*, *20*(5), 1330-1344. https://doi.org/10.1080/1612197X.2021.1956567

Bodenhausen, G. V., & Morales, J. R. (2013). Social cognition and perception. In H. Tennen, J. Suls, & I. B. Weiner (Eds.), *Handbook of psychology: Personality and social psychology* (pp. 225–246). John Wiley & Sons. https://doi.org/10.1002/9781118133880.hop205011

Bogna, F., Raineri, A., & Dell, G. (2020). Critical realism and constructivism: merging research paradigms for a deeper qualitative study. *Qualitative Research in Organizations and Management: An International Journal*, *15*(4), 461-484. https://doi.org/10.1108/QROM-06-2019-1778

Boot, W. R., Simons, D. J., Stothart, C., & Stutts, C. (2013). The pervasive problem with placebos in psychology: Why active control groups are not sufficient to rule out placebo effects. *Perspectives on Psychological Science*, *8*(4), 445-454. https://doi.org/10.1177/1745691613491271

Borg, S. (2021, May 29). Champions League prize money breakdown: How much do the winners get in 2021? Soccer News. https://www.sportingnews.com/us/soccer/news/champions-league-prize-money-2021/5i1j0n2hh9r01ffvgqfsp541l

Boroujeni, S. T., & Shahbazi, M. (2011). The effect of instructional and motivational self-talk on performance of basketball's motor skill. *Procedia-Social and Behavioral Sciences*, *15*, 3113-3117. https://doi.org/10.1016/j.sbspro.2011.04.255

Bradley, J. (1993). Methodological issues and practices in qualitative research. *The Library Quarterly*, *63*(4), 431-449. https://doi.org/10.1086/602620

Braun, V., Clarke, V. & Weate, P. (2016). Using thematic analysis in sport and exercise research. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 191-205). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315762012-26/using-thematic-analysis-sport-exercise-research-virginia-braun-victoria-clarke-paul-weate

Brick, N. E., Campbell, M. J., Metcalfe, R., Mair, J. L., & MacIntyre, T. E. (2016). Altering pace control and pace regulation: attentional focus effects during running. *Medicine & Science in Sports & Exercise*, *48*(5), 879-886. 10.1249/MSS.0000000000000843

Brick, N. E., Campbell, M. J., Sheehan, R. B., Fitzpatrick, B. L., & MacIntyre, T. E. (2020). Metacognitive processes and attentional focus in recreational endurance runners. *International Journal of Sport and Exercise Psychology*, *18*(3), 362-379. https://doi.org/10.1080/1612197X.2018.1519841

Brick, N., Campbell, M., & Swann, C. (2019). Metacognitive processes in the self-regulation of endurance performance. In Mejein, C (Ed.), *Endurance Performance in Sport* (pp. 81-95). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315167312-6/metacognitive-processes-self-regulation-endurance-performance-noel-brick-mark-campbell-christian-swann

Brick, N., MacIntyre, T., & Campbell, M. (2015). Metacognitive processes in the self-regulation of performance in elite endurance runners. *Psychology of Sport and Exercise*, *19*, 1-9. https://doi.org/10.1016/j.psychsport.2015.02.003Get rights and content

Brick, N. E., MacIntyre, T. E., & Campbell, M. J. (2016). Thinking and action: A cognitive perspective on self-regulation during endurance performance. *Frontiers in Physiology*, *7*, 159. https://doi.org/10.3389/fphys.2016.00159

Brown, D. J., & Fletcher, D. (2017). Effects of psychological and psychosocial interventions on sport performance: A meta-analysis. *Sports Medicine*, *47*, 77-99. https://doi.org/10.1007/s40279-016-0552-7

Button, C., Seifert, L., Chow, J. Y., Davids, K., & Araujo, D. (2020). *Dynamics of skill acquisition: An ecological dynamics approach*. Human Kinetics Publishers. https://cir.nii.ac.jp/crid/1130285378136539520

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, *1*(1), 8-22. https://doi.org/10.1177/2345678906290531

Bryman, A., Becker, S., & Sempik, J. (2008). Quality criteria for quantitative, qualitative and mixed methods research: A view from social policy. *International Journal of Social Research Methodology*. 11(4), 261-276. https://doi.org/10.1080/13645570701401644

Byers, T. (2013). “Using critical realism: A new perspective on control of volunteers in sport clubs.” *European Sport Management Quarterly,* 13(1), 5–31. https://doi.org/10.1080/16184742.2012.744765

Calmels, C., d'Arripe-Longueville, F., Fournier, J. F., & Soulard, A. (2003). Competitive strategies among elite female gymnasts: An exploration of the relative influence of psychological skills training and natural learning experiences. *International Journal of Sport and Exercise Psychology*, *1*(4), 327-352. https://doi.org/10.1080/1612197X.2003.9671724

Carden, J., Jones, R. J., & Passmore, J. (2023). An exploration of the role of coach training in developing self-awareness: a mixed methods study. *Current Psychology*, *42*(8), 6164-6178. https://doi.org/10.1007/s12144-021-01929-8

Carriere, J. S., Seli, P., & Smilek, D. (2013). Wandering in both mind and body: individual differences in mind wandering and inattention predict fidgeting. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale*, *67*(1), 19–31. https://doi.org/10.1037/a0031438.

Carron, A. V., Bray, S. R., & Eys, M. A. (2002). Team cohesion and team success in sport. *Journal of Sports Sciences*, *20*(2), 119-126. https://doi.org/10.1080/026404102317200828

Cash, P. J. (2018). Developing theory-driven design research. *Design Studies*, *56*, 84-119. https://doi.org/10.1016/j.destud.2018.03.002

Castillo, E. A., & Bird, M. D. (2022). The strengths-based performance profile (SBPP): A method for strengths-spotting and application in single-session consultations with athletes. *Journal of Sport Psychology in Action*, *13*(3), 180-194. https://doi.org/10.1080/21520704.2021.1988782

Chang, Y. K., Ho, L. A., Lu, F. J. H., Ou, C. C., Song, T. F., & Gill, D. L. (2014). Self-talk and softball performance: The role of self-talk nature, motor task characteristics, and self-efficacy in novice softball players. *Psychology of Sport and Exercise*, *15*(1), 139-145. https://doi.org/10.1016/j.psychsport.2013.10.004

Charbonneau, D., Barling, J., & Kelloway, E. K. (2001). Transformational leadership and sports performance: The mediating role of intrinsic motivation. *Journal of Applied Social Psychology*, *31*(7), 1521-1534. https://doi.org/10.1111/j.1559-1816.2001.tb02686.x

Cheng, W. N. K., & Hardy, L. (2016). Three-dimensional model of performance anxiety: Tests of the adaptive potential of the regulatory dimension of anxiety. *Psychology of Sport and Exercise*, *22*, 255-263. https://doi.org/10.1016/j.psychsport.2015.07.006

Chow, G. M., & Luzzeri, M. (2019). Post-event reflection: a tool to facilitate self-awareness, self-monitoring, and self-regulation in athletes. *Journal of Sport Psychology in Action*, *10*(2), 106-118. https://doi.org/10.1080/21520704.2018.1555565

Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, *12*(3), 297-298. https://doi.org/10.1080/17439760.2016.1262613

Clark, J. D., Mallett, C. J., Moyle, G. M., & Coulter, T. J. (2022). Competitive Situations Requiring Mental Toughness in Women's Australian Rules Football. *Journal of Sports Sciences*, *40*(21), 2412-2423. https://doi.org/10.1080/02640414.2022.2162239

Cleary, T. J., & Zimmerman, B. J. (2001). Self-regulation differences during athletic practice by experts, non-experts, and novices. *Journal of Applied Sport Psychology*, *13*(2), 185-206. https://doi.org/104132001753149883

Clough, P., Earle, K., & Sewell, D. (2002). Mental toughness: The concept and its measurement. *Solutions in Sport Psychology*, *1*, 32-45.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillside, NJ: Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203771587

Collier, A. (1990). Critical realism: An introduction to Roy Bhaskar's philosophy. *International Studies in Philosophy*, 20(2), 120-122. 10.1111/j.1466-769x.2008.00358.x

Connaway, L. S., & Radford, M. L. (2021). *Research methods in library and information science*. Bloomsbury Publishing USA. https://cir.nii.ac.jp/crid/1130292306719131922

Cooper, K. B., Wilson, M. R., & Jones, M. I. (2021). Fast talkers? Investigating the influence of self-talk on mental toughness and finish times in 800-meter runners. *Journal of Applied Sport Psychology*, *33*(5), 491-509. https://doi.org/10.1080/10413200.2020.1735574

Cosma, G., Chiracu, A., Stepan, R., Cosma, A., Nanu, C., & Păunescu, C. (2020). Impact of coping strategies on sport performance. *Journal of Physical Education and Sport*, *20*(3), 1380-1385. 10.7752/jpes.2020.03190

Coulter, T. J., Mallett, C. J., & Gucciardi, D. F. (2010). Understanding mental toughness in Australian soccer: Perceptions of players, parents, and coaches. *Journal of Sports Sciences*, *28*(7), 699-716. https://doi.org/10.1080/02640411003734085

Christoff, K. (2012). Undirected thought: neural determinants and correlates. Brain Research, 1428, 51-59.

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of Mixed Methods in Social and Behavioral Research*, *209*(240), 209-240. http://rszarf.ips.uw.edu.pl/ewalps/teksty/creswell.pdf

Davids, K., Araújo, D., Vilar, L., Renshaw, I., & Pinder, R. (2013). An ecological dynamics approach to skill acquisition: Implications for development of talent in sport. *Talent Development and Excellence*, *5*(1), 21-34. http://www.iratde.org/journal/issues/112-issue-201...

Davies, G. A. (2019, May 29). Anthony Joshua enlists help of Navy Seals and sports psychologist ahead of Andy Ruiz fight. *The Telegraph*. https://www.telegraph.co.uk/boxing/2019/05/29/anthony-joshua-enlists-help-navy-seals-sportspsychologist-ahead/

de Cruz, N., & Smith, B. (2022). 6 Advancing the practice of sport psychology. In N. De Cruz (Eds.), *Cultural sport psychology and elite sport in singapore: An exploration of identity and practice* (pp. 77-92). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781003277637-6/advancing-practice-sport-psychology-nicholas-de-cruz-brett-smith

De Neys, W., & Glumicic, T. (2008). Conflict monitoring in dual process theories of thinking. *Cognition*, *106*(3), 1248-1299. https://doi.org/10.1016/j.cognition.2007.06.002

Desideri, L., Ottaviani, C., Cecchetto, C., & Bonifacci, P. (2019). Mind wandering, together with test anxiety and self-efficacy, predicts student's academic self-concept but not reading comprehension skills. *British Journal of Educational Psychology*, *89*(2), 307-323. https://doi.org/10.1111/bjep.12240

Doyle, L., Brady, A. M., & Byrne, G. (2009). An overview of mixed methods research. *Journal of Research in Nursing*, *14*(2), 175-185. https://doi.org/10.1177/1744987108093962

Dupee, M., Forneris, T., & Werthner, P. (2016). Perceived outcomes of a biofeedback and neurofeedback training intervention for optimal performance: Learning to enhance self-awareness and self-regulation with olympic athletes. *The Sport Psychologist*, *30*(4), 339-349. https://doi.org/10.1123/tsp.2016-0028

Eckardt, V. C., Dorsch, T. E., & Lobinger, B. H. (2022). Parents' competitive stressors in professional German youth soccer academies: A mixed-method study. *Psychology of Sport and Exercise*, 58(102089), 1-10. https://doi.org/10.1016/j.psychsport.2021.102089

Edwards, C., Tod, D., & McGuigan, M. (2008). Self-talk influences vertical jump performance and kinematics in male rugby union players. *Journal of Sports Sciences*, *26*(13), 1459-1465. https://doi.org/10.1080/02640410802287071

Elferink-Gemser, M. T., & Hettinga, F. J. (2017). Pacing and self-regulation: important skills for talent development in endurance sports. *International Journal of Sports Physiology and Performance*, *12*(6), 831-835. https://doi.org/10.1123/ijspp.2017-0080

Ellis A. (1957). Rational psychotherapy and individual psychology. *J. Individual Psychology.* 13 38–44. https://psycnet.apa.org/record/1958-05549-001

Elkins, K. (2020, February 02). How much money the winners of the 2020 Super Bowl will earn. CNBC. https://www.cnbc.com/2020/02/02/how-much-money-the-super-bowl-winners-earn.html

Englert, C. (2017). Ego depletion in sports: Highlighting the importance of self-control strength for high-level sport performance. *Current Opinion in Psychology*, *16*, 1-5. https://doi.org/10.1016/j.copsyc.2017.02.028

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1-4. 10.11648/j.ajtas.20160501.11

Ogden, M. (2021, July 11). Italy beat England in shootout to win 2020 European Championship. ESPN. https://www.espn.co.uk/football/report/_/gameId/560294

Farina, M., & Cei, A. (2019). Concentration and self-talk in football. In E. Konter, & J. Beckmann (Eds.), Loughead *football psychology* (pp. 241-254). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315268248-19/concentration-self-talk-football-mirko-farina-alberto-cei

Farley, J., Risko, E. F., & Kingstone, A. (2013). Everyday attention and lecture retention: the effects of time, fidgeting, and mind wandering. *Frontiers in Psychology*, *4*, 619-628. https://doi.org/10.3389%2Ffpsyg.2013.00619

Ferriss, T. (Host). (2020 December 30). Dr. Jim Loehr on Mental Toughness, Energy Management, the Power of Journaling, and Olympic Gold Medals. [Audio podcast episode 490]. In The Tim Ferriss Show. https://tim.blog/2020/12/30/jim-loehr-2-transcript/#:~:text=And%20whether%20it%20be%20in,life%20is%20that%20private%20voice.

Fetters, M. D., & Molina-Azorin, J. F. (2017). The Journal of Mixed Methods Research starts a new decade: The mixed methods research integration trilogy and its dimensions. *Journal of Mixed Methods Research*, *11*(3), 291-307. https://doi.org/10.1177/1558689817714066

Fink, J. S. (2015). Female athletes, women's sport, and the sport media commercial complex: Have we really “come a long way, baby”?. *Sport Management Review*, *18*(3), 331-342. https://doi.org/10.1016/j.smr.2014.05.001

Fleming, S. M., Massoni, S., Gajdos, T., & Vergnaud, J. C. (2016). Metacognition about the past and future: quantifying common and distinct influences on prospective and retrospective judgments of self-performance. *Neuroscience of Consciousness*, *2016*(1), 1-12. https://doi.org/10.1093/nc/niw018

Fletcher, A. (2017) Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, 20(2), 181-194. https://doi.org/10.1080/13645579.2016.1144401

Forman, E. M., & Butryn, M. L. (2015). A new look at the science of weight control: how acceptance and commitment strategies can address the challenge of self-regulation. *Appetite*, *84*, 171-180. https://doi.org/10.1016/j.appet.2014.10.004

Forster, S. (2013). Distraction and mind-wandering under load. *Frontiers in Psychology*, *4*, 283-289. https://doi.org/10.3389%2Ffpsyg.2013.00283

Forster, S., & Lavie, N. (2009). Harnessing the wandering mind: The role of perceptual load. *Cognition*, *111*(3), 345-355. https://doi.org/10.1016/j.cognition.2009.02.006

Fortin-Guichard, D., Boudreault, V., Gagnon, S., & Trottier, C. (2018). Experience, effectiveness, and perceptions toward sport psychology consultants: A critical review of peer-reviewed articles. *Journal of Applied Sport Psychology*, *30*(1), 3-22. https://doi.org/10.1080/10413200.2017.1318416

Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., & Grimshaw, J. M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology and Health*, *25*(10), 1229-1245. https://doi.org/10.1080/08870440903194015

Friedman, K. (2003). Theory construction in design research: Criteria: Approaches, and methods. *Design Studies*, 24(6), 507-522. https://doi.org/10.1016/S0142-694X(03)00039-5

Fritsch, J., Feil, K., Jekauc, D., Latinjak, A. T., & Hatzigeorgiadis, A. (2022). The relationship between self-talk and affective processes in sports: A scoping review. *International Review of Sport and Exercise Psychology*, 1-34. https://doi.org/10.1080/1750984X.2021.2021543

Fritsch, J., Jekauc, D., Elsborg, P., Latinjak, A. T., Reichert, M., & Hatzigeorgiadis, A. (2022). Self-talk and emotions in tennis players during competitive matches. *Journal of Applied Sport Psychology*, *34*(3), 518-538. https://doi.org/10.1080/10413200.2020.1821406

Fritsch, J., & Jekauc, D. (2020). Self-talk and emotion regulation. In A. Latinjak, & A. Hatzigeorgiadis (Eds.), *Self-talk in Sport* (pp. 64-76). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429460623-5/self-talk-emotion-regulation-julian-fritsch-darko-jekauc

Fritsch, J., Redlich, D., Latinjak, A., & Hatzigeorgiadis, A. (2022). The behavioural component of emotions: exploring outward emotional reactions in table tennis. *International Journal of Sport and Exercise Psychology*, *20*(2), 397-415. https://doi.org/10.1080/1612197X.2021.1877324

Furley, P., Schweizer, G., & Bertrams, A. (2015). The two modes of an athlete: dual-process theories in the field of sport. *International Review of Sport and Exercise Psychology*, *8*(1), 106-124. https://doi.org/10.1080/1750984X.2015.1022203

Galanis, E., Hatzigeorgiadis, A., Charachousi, F., Latinjak, A. T., Comoutos, N., & Theodorakis, Y. (2022). Strategic Self-Talk Assists Basketball Free Throw Performance Under Conditions of Physical Exertion. *Frontiers in Sports and Active Living*, *4*, 1-6. https://doi.org/10.3389/fspor.2022.892046

Galanis, E., Hatzigeorgiadis, A., Comoutos, N., Charachousi, F., & Sanchez, X. (2018). From the lab to the field: Effects of self-talk on task performance under distracting conditions. *The Sport Psychologist*, *32*(1), 26-32. https://doi.org/10.1123/tsp.2017-0017

Galanis, E., Hatzigeorgiadis, A., Zourbanos, N., & Theodorakis, Y. (2016). Why self-talk is effective? Perspectives on self-talk mechanisms in sport. In M, Raab, P. Wylleman, A. Hatzigeorgiadis *Sport and exercise psychology research* (pp. 181-200). Academic Press. https://doi.org/10.1016/B978-0-12-803634-1.00008-X

Galanis, E., Papagiannis, E., Nurkse, L., Theodorakis, Y., & Hatzigeorgiadis, A. (2023). The effects of strategic self-talk on divided attention following physical exhaustion. *International Journal of Sport and Exercise Psychology*, *21*(5), 883-893. https://doi.org/10.1080/1612197X.2022.2090989

Galletta, A. (2013). *Mastering the semi-structured interview and beyond: From research design to analysis and publication*. NYU press. https://doi.org/10.18574/nyu/9780814732939.001.0001

García, J. A., Carcedo, R. J., & Castaño, J. L. (2019). The influence of feedback on competence, motivation, vitality, and performance in a throwing task. *Research Quarterly for Exercise and Sport*, *90*(2), 172-179. https://doi.org/10.1080/02701367.2019.1571677

Gee, C. J. (2010). How does sport psychology actually improve athletic performance? A framework to facilitate athletes' and coaches' understanding. *Behavior Modification*, *34*(5), 386-402. https://doi.org/10.1177/0145445510383525

Giacobbi, P. R., Poczwardowski, A., & Hager, P. F. (2005). A pragmatic research philosophy for applied sport psychology. *The Sport Psychologist,* 19(1), 18-31. https://doi.org/10.1123/tsp.19.1.18

Gibson, K. (2016). Mixed methods research in sport and exercise: Integrating qualitative research. In B. Smith, & A. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 404-418). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315762012-42/mixed-methods-research-sport-exercise-integrating-qualitative-research-kass-gibson

Goisbault, M., Lienhart, N., Martinent, G., & Doron, J. (2022). An integrated mindfulness and acceptance-based program for young elite female basketball players: Exploratory study of how it works and for whom it works best. Psychology of Sport and Exercise, 60, 102157. https://doi.org/10.1016/j.psychsport.2022.102157

Goldberg, M. B., Mazzei, M., Maher, Z., Fish, J. H., Milner, R., Yu, D., & Goldberg, A. J. (2018). Optimizing performance through stress training—an educational strategy for surgical residents. The American Journal of Surgery, 216(3), 618-623. https://doi.org/10.1016/j.amjsurg.2017.11.040

Gordon, S. (2023). Positive Psychology. In D. Tod, K. Hodge, & V. Krane (Eds.), Routledge handbook of applied sport psychology (pp. 174–183). Routledge. https://doi.org/10.4324/9781003173588-21

Gordon, S., & Gucciardi, D. F. (2011). A strengths-based approach to coaching mental toughness. *Journal of Sport Psychology in Action*, *2*(3), 143-155. https://doi.org/10.1080/21520704.2011.598222

Goldberg, M. B., Mazzei, M., Maher, Z., Fish, J. H., Milner, R., Yu, D., & Goldberg, A. J. (2018). Optimizing performance through stress training—an educational strategy for surgical residents.

The American Journal of Surgery, *216*(3), 618-623. https://doi.org/10.1016/j.amjsurg.2017.11.040

Goudas, M., Dermitzaki, I., & Kolovelonis, A. (2017). Self-regulated learning and students' metacognitive feelings in physical education. *International Journal of Sport and Exercise Psychology*, *15*(2), 131-145. https://doi.org/10.1080/1612197X.2015.1079791

Gould, D., & Maynard, I. (2009). Psychological preparation for the Olympic Games. *Journal of Sports Sciences*, *27*(13), 1393-1408. https://doi.org/10.1080/02640410903081845

Gould, D., Voelker, D. K., & Griffes, K. (2013). Best coaching practices for developing team captains. *The Sport Psychologist,* 27(1), 13-26. https://doi.org/10.1123/tsp.27.1.13

Gregersen, J., Hatzigeorgiadis, A., Galanis, E., Comoutos, N., and Papaioannou, A. (2017). Countering the consequences of ego depletion: the effect of self-talk on selective attention. *Journal of Sport Exercise Psychology.* 39, 161–171. 10.1123/jsep.2016-0265

Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2008). Towards an understanding of mental toughness in Australian football. *Journal of Applied Sport Psychology*, *20*(3), 261-281. https://doi.org/10.1080/10413200801998556

Hagger, M. S., Wood, C., Stiff, C., & Chatzisarantis, N. L. (2010). Ego depletion and the strength model of self-control: a meta-analysis. *Psychological Bulletin*, *136*(4), 495–525. https://doi.org/10.1037/a0019486

Hambrick, M. E., Simmons, J. M., Greenhalgh, G. P., & Greenwell, T. C. (2010). Understanding professional athletes' use of Twitter: A content analysis of athlete tweets. *International Journal of Sport Communication*, *3*(4), 454-471. https://doi.org/10.1123/ijsc.3.4.454

Hanin, Y. L. (2007). Emotions in sport: Current issues and perspectives. In G. Tenenbaum, & R. C. Ecklund (Eds.), *Hanbook of sport psychology* (pp. 31-58). Wiley. https://doi.org/10.1002/9781118270011.ch2

Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of sport and exercise*, *7*(1), 81-97. https://doi.org/10.1016/j.psychsport.2005.04.002

Hardy, J., Comoutos, N., & Hatzigeorgiadis, A. (2018). Reflections on the maturing research literature of self-talk in sport: Contextualizing the special issue. *The Sport Psychologist*, *32*(1), 1-8. https://doi.org/10.1123/tsp.2017-0141

Hardy, J., Gammage, K., & Hall, C. (2001). A descriptive study of athlete self-talk. *The Sport Psychologist*, *15*(3), 306-318. https://doi.org/10.1123/tsp.15.3.306

Hardy, J., Hall, C. R., Gibbs, C., & Greenslade, C. (2005). Self-talk and gross motor skill performance: An experimental approach. *Athletic Insight*, *7*(2), 1-13. https://psycnet.apa.org/record/2005-16181-001

Hardy, J., & Oliver, E. J. (2014). Self-talk, positive thinking, and thought stopping. Sage. http://www.sagepub.com/books/Book237359?subject=K00&rows=50&fs=1

Hardy, J., Oliver, E., & Tod, D. (2008). A framework for the study and application of self-talk within sport. In S. Mellalieu, & S. Hanton (Eds.), *Advances in applied sport psychology* (pp. 47-84). Routledge. https://www.taylorfrancis.com/books/edit/10.4324/9780203887073/advances-applied-sport-psychology-stephen-mellalieu-sheldon-hanton?refId=6db23fd2-ba48-4a3b-80b4-c5371fcc2100&context=ubx

Hardy, J., Roberts, R., & Hardy, L. (2009). Awareness and motivation to change negative self-talk. *The Sport Psychologist*, *23*(4), 435-450. https://doi.org/10.1123/tsp.23.4.435

Harré, R. (1975). *A Realist Theory of Science*. Routledge. https://www.jstor.org/stable/2253054

Harwood, T. G., & Garry, T. (2003). An overview of content analysis. *The Marketing Review*, *3*(4), 479-498. https://doi.org/10.1362/146934703771910080

Harwood, C. G., Keegan, R. J., Smith, J. M., & Raine, A. S. (2015). A systematic review of the intrapersonal correlates of motivational climate perceptions in sport and physical activity. *Psychology of Sport and Exercise*, *18*, 9-25. https://doi.org/10.1016/j.psychsport.2014.11.005

Hase, A., Hood, J., Moore, L. J., & Freeman, P. (2019). The influence of self-talk on challenge and threat states and performance. *Psychology of Sport and Exercise*, *45*, 1-7. https://doi.org/10.1016/j.psychsport.2019.101550

Hassmén, P., Keegan, R., & Piggott, D. (2016). Research paradigms, methodologies and methods. In *Rethinking Sport and Exercise Psychology Research* (pp. 105-129). Palgrave Macmillan.

Hatzigeorgiadis, A. (2006). Instructional and motivational self-talk: An investigation on perceived self-talk functions. *Hellenic Journal of Psychology*, *3*(2), 164-175.

Hatzigeorgiadis, A., & Biddle, S. J. (2000). Assessing cognitive interference in sport: Development of the thought occurrence questionnaire for sport. *Anxiety, Stress and Coping*, *13*(1), 65-86. https://doi.org/10.1080/10615800008248334

Hatzigeorgiadis, A., & Biddle, S. J. (2008). Negative Self-Talk During Sport Performance: Relationships with Pre-Competition Anxiety and Goal-Performance Discrepancies. Journal of Sport Behavior, 31(3). 237-253. https://psycnet.apa.org/record/2008-11407-003

Hatzigeorgiadis, A., & Galanis, E. (2017). Self-talk effectiveness and attention. *Current Opinion in Psychology*, *16*, 138-142. https://doi.org/10.1016/j.copsyc.2017.05.014

Hatzigeorgiadis, A., Galanis, E., Zourbanos, N., & Theodorakis, Y. (2014). Self-talk and competitive sport performance. *Journal of Applied Sport Psychology*, *26*(1), 82-95. https://doi.org/10.1080/10413200.2013.790095

Hatzigeorgiadis, A., Theodorakis, Y., & Zourbanos, N. (2004). Self-talk in the swimming pool: The effects of self-talk on thought content and performance on water-polo tasks. *Journal of Applied Sport Psychology*, *16*(2), 138-150. https://doi.org/10.1080/10413200490437886

Hatzigeorgiadis, A., Zourbanos, N., Galanis, E., & Theodorakis, Y. (2011). Self-talk and sports performance: A meta-analysis. *Perspectives on Psychological Science*, *6*(4), 348-356. https://doi.org/10.1177/1745691611413136

Hatzigeorgiadis, A., Zourbanos, N., Latinjak, A. T., & Theodorakis, Y (2014). Self-talk. In A. Papaioannou, & D. Hackfort (Eds.), *Routledge companion to sport and exercise psychology* (pp. 372-386). Routledge

Hatzigeorgiadis, A., Zourbanos, N., Mpoumpaki, S., & Theodorakis, Y. (2009). Mechanisms underlying the self-talk–performance relationship: The effects of motivational self-talk on self-confidence and anxiety. *Psychology of Sport and Exercise*, *10*(1), 186-192. https://doi.org/10.1016/j.psychsport.2008.07.009

Hauser, D. J., Ellsworth, P. C., & Gonzalez, R. (2018). Are manipulation checks necessary? *Frontiers in Psychology*, *9*(998), 1-10. https://doi.org/10.3389/fpsyg.2018.00998

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*. 114523. https://doi.org/10.1016/j.socscimed.2021.114523

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code saturation versus meaning saturation: How many interviews are enough? *Qualitative Health Research*, *27*(4), 591-608. https://doi.org/10.1177/1049732316665344

Henriksen, K. (2015). Developing a high-performance culture: A sport psychology intervention from an ecological perspective in elite orienteering. *Journal of Sport Psychology in Action*, *6*(3), 141-153. https://doi.org/10.1080/21520704.2015.1084961

Henriksen, K., Larsen, C. H., Storm, L. K., & Ryom, K. (2014). Sport psychology interventions with young athletes: The perspective of the sport psychology practitioner. *Journal of Clinical Sport Psychology*, *8*(3), 245-260. https://doi.org/10.1080/21520704.2015.1084961

Hepler, T. J., & Chase, M. A. (2008). Relationship between decision-making self-efficacy, task self-efficacy, and the performance of a sport skill. *Journal of Sports Sciences*, *26*(6), 603-610. https://doi.org/10.1080/02640410701654280

Heyvaert, M., Hannes, K., Maes, B., & Onghena, P. (2013). Critical appraisal of mixed methods studies. *Journal of Mixed Methods Research,* 7, 302-327. https://doi.org/10.1177/1558689813479449

Hidayat, Y., & Budiman, D. (2014). The influence of self-talk on learning achievement and self confidence. *Asian Social Science*, *10*(5), 186-194. http://dx.doi.org/10.5539/ass.v10n5p186

Hidayat, Y., Yudiana, Y., Hambali, B., Sultoni, K., Ustun, U. D., & Singnoy, C. (2023). The effect of the combined self-talk and mental imagery program on the badminton motor skills and self-confidence of youth beginner student-athletes. *BMC Psychology*, *11*(1), 35-51. https://doi.org/10.1186/s40359-023-01073-x

Hut, M., Minkler, T. O., Glass, C. R., Weppner, C. H., Thomas, H. M., & Flannery, C. B. (2023). A randomized controlled study of mindful sport performance enhancement and psychological skills training with collegiate track and field athletes. *Journal of Applied Sport Psychology*, *35*(2), 284-306. https://doi.org/10.1080/10413200.2021.1989521

Irving, Z. C. (2016). Mind-wandering is unguided attention: Accounting for the "purposeful" wanderer. *Philosophical Studies*, *173*(2), 547-571. https://www.jstor.org/stable/24703898

Irving, Z. C., & Thompson, E. (2018). The philosophy of mind-wandering. In K. Fox, & K. Christoff (Eds.), *The oxford handbook of spontaneous thought* (pp. 87-96). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190464745.013.19

Jackson, P., & Delehanty, H. (1995). Sacred hoops: Spiritual lessons of a hardwood warrior. Hyperion. https://cir.nii.ac.jp/crid/1130282271091002880

Jackson, P., & Rosen, C. (2002). *More than a game*. Simon and Schuster. https://cir.nii.ac.jp/crid/1130282270263497984

Jekauc, D., Fritsch, J., & Latinjak, A. T. (2021). Toward a theory of emotions in competitive sports. *Frontiers in Psychology*, *12*, 790423. https://doi.org/10.3389/fpsyg.2021.790423

Jones, L., Karageorghis, C. I., & Ekkekakis, P. (2014). Can high-intensity exercise be more pleasant? Attentional dissociation using music and video. *Journal of Sport and Exercise Psychology*, *36*(5), 528-541. https://doi.org/10.1123/jsep.2013-0251

Jordalen, G., Lemyre, P. N., & Durand-Bush, N. (2020). Interplay of motivation and self-regulation throughout the development of elite athletes. *Qualitative Research in Sport, Exercise and Health*, *12*(3), 377-391.

Joshua, A. (2020). *The only way is through - By Anthony Joshua*. Theplayerstribune.com. https://projects.theplayerstribune.com/anthony-joshua-boxing-the-only-way-is-through/p/1

Jackman, P. C., Crust, L., & Swann, C. (2017). Systematically comparing methods used to study flow in sport: A longitudinal multiple-case study. *Psychology of Sport and Exercise*, *32*, 113-123. https://doi.org/10.1016/j.psychsport.2017.06.009

Kahneman, D. (2003). A perspective on judgment and choice: mapping bounded rationality. *American Psychologist*, *58*(9), 697-752. https://doi.org/10.1037/0003-066X.58.9.697

Kahneman, D. (2011). *Thinking, Fast and Slow*. London: Macmillan.

Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954-2965. https://doi.org/10.1111/jan.13031

Karamitrou, A., Galanis, E., Theodorakis, Y., & Comoutos, N. (2020). Organic self-talk antecedents: An interpretative review and implications for practice. In A. Latinjak, & A. Hatzigeorgiadis (Eds.), *Self-talk in sport* (pp. 77-90). Routledge

Kay, T. (2006). Daughters of Islam: Family influences on Muslim young women's participation in sport. *International review for the Sociology of Sport*, *41*(3-4), 357-373. https://doi.org/10.1177/1012690207077705

Keegan, R. (2016). *Being a sport psychologist*. Bloomsbury Publishing.

Kendellen, K., & Camiré, M. (2019). Applying in life the skills learned in sport: A grounded theory. *Psychology of Sport and Exercise*, *40*, 23-32. https://doi.org/10.1016/j.psychsport.2018.09.002

Khaldi, K. (2017). Quantitative, qualitative or mixed research: Which research paradigm to use? *Journal of Educational and Social Research*, *7*(2), 15-15. 10.5901/jesr.2017.v7n2p15

Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science*, *330*(6006), 932-932. https://doi.org/10.1126/science.1192439

Knowles, Z., Miles, A., Huntley, E., Picknell, G., Mellalieu, S. D., Hanton, S., Ryall, E. S., Borrie, A., Trelfa, J., Telfer, H., Williams, K., Adams, T., Pope-Rhodius, A., Wagstaff, C., Miller, M. W., Quartiroli, A., Whitehead, A., Wilding, A., Watson, P. M., . . . Cropley, B. (2023). The reflective sport and exercise science practitioner. In B. Cropley, Z. Knowles, A. Miles, & E. Huntley (Eds.), *Reflective practice in the sport and exercise sciences*, (pp. 27–37). *Routledge.* https://doi.org/10.4324/9781003198758-4

Kolers, P. A., & Roediger III, H. L. (1984). Procedures of mind. Journal of verbal learning and verbal behavior, *Journal of Verbal Learning and Verbal Behavior*, 23(4), 425-449. https://doi.org/10.1016/S0022-5371(84)90282-2

Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2011). The effects of instructional and motivational self-talk on students' motor task performance in physical education. *Psychology of Sport and Exercise*, *12*(2), 153-158. https://doi.org/10.1016/j.psychsport.2010.09.002

Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2012). The effects of self-talk and goal setting on self-regulation of learning a new motor skill in physical education. *International Journal of Sport and Exercise Psychology*, *10*(3), 221-235. https://doi.org/10.1080/1612197X.2012.671592

Kristjánsdóttir, H., Erlingsdóttir, A. V., Sveinsson, G., & Saavedra, J. M. (2018). Psychological skills, mental toughness and anxiety in elite handball players. *Personality and Individual Differences*, *134*, 125-130. https://doi.org/10.1016/j.paid.2018.06.011

Kross, E., Bruehlman-Senecal, E., Park, J., Burson, A., Dougherty, A., Shablack, H., Bremner, R., Moser, J., & Ayduk, O. (2014). Self-talk as a regulatory mechanism: how you do it matters. *Journal of Personality and Social Psychology*, *106*(2), 304-324. https://doi.org/10.1037/a0035173

Kudlackova, K., Eccles, D. W., & Dieffenbach, K. (2013). Use of relaxation skills in differentially skilled athletes. *Psychology of Sport and Exercise*, *14*(4), 468-475. https://doi.org/10.1016/j.psychsport.2013.01.007

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In K. Vohs, & R. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 111-169). Academic Press. https://doi.org/10.1016/B978-012109890-2/50034-2

Laborde, S., Mosley, E., & Ueberholz, L. (2018). Enhancing cardiac vagal activity: factors of interest for sport psychology. *Progress in Brain Research*, *240*, 71-92. https://doi.org/10.1016/bs.pbr.2018.09.002

Lane, A. M., Beedie, C. J., Jones, M. V., Uphill, M., & Devonport, T. J. (2012). The BASES expert statement on emotion regulation in sport. *Journal of Sports Sciences*, *30*(11), 1189-1195. https://doi.org/10.1080/02640414.2012.693621

Latinjak, A. T. (2018a). Goal-directed, spontaneous, and stimulus-independent thoughts and mind wandering in a competitive context. *The Sport Psychologist*, *32*(1), 51-59. https://doi.org/10.1123/tsp.2016-0044

Latinjak, A. T. (2018b). Athletes' self-reports on mind wandering while practicing sports: An exploratory two-study project. *Journal of Clinical Sport Psychology*, *12*(3), 432-447. https://doi.org/10.1123/jcsp.2017-0023

Latinjak, A. T., Figal-Gomez, L., Solomon-Turay, P., & Magrinyà-Vinyes, R. (2020). The reflexive self-talk intervention: detailed procedures. In A. Latinjak & A. Hatzigeorgiadis (Eds.), *Self-talk in Sport* (pp. 91-108). Routledge.

Latinjak, A. T., Font-Lladó, R., Zourbanos, N., & Hatzigeorgiadis, A. (2016). Goal-directed self-talk interventions: A single-case study with an elite athlete. *The Sport Psychologist*, *30*(2), 189-194. https://doi.org/10.1123/tsp.2015-0120

Latinjak, A. T., & Hatzigeorgiadis, A. (Eds.). (2020). *Self-talk in Sport*. Routledge.

Latinjak, A. T., & Hatzigeorgiadis, A. (2021). The knowledge map of sport and exercise psychology: An integrative perspective. *Frontiers in Psychology*, *12*(661824), 1-12. https://doi.org/10.3389/fpsyg.2021.661824

Latinjak, A. T., Hatzigeorgiadis, A., Comoutos, N., & Hardy, J. (2019). Speaking clearly... 10 years on: The case for an integrative perspective of self-talk in sport. *Sport, Exercise, and Performance Psychology*, *8*(4), 353-388. https://doi.org/10.1037/spy0000160

Latinjak, A. T., Hatzigeorgiadis, A., & Zourbanos, N. (2017). Goal-directed and spontaneous self-talk in anger-and anxiety-eliciting sport-situations. *Journal of Applied Sport Psychology*, *29*(2), 150-166. https://doi.org/10.1080/10413200.2016.1213330

Latinjak, A. T., Hernando-Gimeno, C., Lorido-Méndez, L., & Hardy, J. (2019). Endorsement and constructive criticism of an innovative online reflexive self-talk intervention. *Frontiers in Psychology*, 10, 1819-1828. https://doi.org/10.3389/fpsyg.2019.01819

Latinjak, A. T., Masó, M., Calmeiro, L., & Hatzigeorgiadis, A. (2020). Athletes' use of goal-directed self-talk: Situational determinants and functions. *International Journal of Sport and Exercise Psychology*, *18*(6), 733-748. https://doi.org/10.1080/1612197X.2019.1611899

Latinjak, A. T., Morelló-Tomás, E., & Figal-Gómez, L. (2021). # SportPsychMapping: An Exploratory Interview Framework for Sport and Exercise Psychology. *The Sport Psychologist*, *35*(3), 240-249. https://doi.org/10.1123/tsp.2020-0120

Latinjak, A. T., Morin, A., Brinthaupt, T. M., Hardy, J., Hatzigeorgiadis, A., Kendall, P. C., Neck, c., Oliver, E., Puchalska-Wasyl, M., Tovares, A. & Winsler, A. (2023). Self-Talk: An Interdisciplinary Review and Transdisciplinary Model. *Review of General Psychology*, 0(0), 1-32. 10.1177/10892680231170263

Latinjak, A. T., Torregrossa, M., Comoutos, N., Hernando-Gimeno, C., & Ramis, Y. (2019). Goal-directed self-talk used to self-regulate in male basketball competitions. *Journal of sports sciences*, *37*(12), 1429-1433. https://doi.org/10.1080/02640414.2018.1561967

Latinjak, A. T., Zourbanos, N., López-Ros, V., & Hatzigeorgiadis, A. (2014). Goal-directed and undirected self-talk: Exploring a new perspective for the study of athletes' self-talk. *Psychology of Sport and Exercise*, *15*(5), 548-558. https://doi.org/10.1016/j.psychsport.2014.05.007

Liang, Y., Kamiel-Skeete, A., Pettitt, A., & Hiley, M. J. (2023). Where in a time constrained throwing task is the speed-accuracy trade-off? *Journal of Sports Sciences*, 41(5), 1-6. https://doi.org/10.1080/02640414.2023.2220181

Lima-Silva, A. E., Silva-Cavalcante, M. D., Pires, F. D. O., Bertuzzi, R., Oliveira, R. S. F., & Bishop, D. (2012). Listening to music in the first, but not the last 1.5 km of a 5-km running trial alters pacing strategy and improves performance. *International Journal of Sports Medicine*, 33(10), 813-818. 10.1055/s-0032-1311581

Lincoln, Y., & Guba, E. (1985). *Naturalistic Inquiry*. SAGE Publications.

Lincoln, Y. S., & Guba, E. G. (1989). Ethics: The failure of positivist science. *The Review of Higher Education*, *12*(3), 221-240. 10.1353/rhe.1989.0017

Lochbaum, M., & Gottardy, J. (2015). A meta-analytic review of the approach-avoidance achievement goals and performance relationships in the sport psychology literature. *Journal of Sport and Health Science*, *4*(2), 164-173. https://doi.org/10.1016/j.jshs.2013.12.004

Locke, E., & Latham, G. (1985). The application of goal setting to sports. *Journal of Sport and Exercise Psychology* 7(3), 205-222. https://doi.org/10.1123/jsp.7.3.205

Longstaff, F., & Gervis, M. (2016). The use of counseling principles and skills to develop practitioner-athlete relationships by practitioners who provide sport psychology support. *The Sport Psychologist*, *30*(3), 276-289. https://doi.org/10.1123/tsp.2015-0029

Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire (BRSQ). Instrument development and initial validity evidence. *Journal of Sport and Exercise Psychology*, 30 (3), 323–355. https://doi.org/10.1123/jsep.30.3.323

Low, W. R., Sandercock, G. R. H., Freeman, P., Winter, M. E., Butt, J., & Maynard, I. (2021). Pressure training for performance domains: A meta-analysis. *Sport, Exercise, and Performance Psychology*, *10*(1), 149-171. https://doi.org/10.1037/spy0000202

Lubker, J. R., Visek, A. J., Geer, J. R., & Watson II, J. C. (2008). Characteristics of an effective sport psychology consultant: Perspectives from athletes and consultants. *Journal of Sport Behavior*, *31*(2), 147-165. https://psycnet.apa.org/record/2008-05970-004

Lubker, J. R., Visek, A. J., Watson, J. C., & Singpurwalla, D. (2012). Athletes' preferred characteristics and qualifications of sport psychology practitioners: A consumer market analysis. *Journal of Applied Sport Psychology*, *24*(4), 465-480. https://doi.org/10.1080/10413200.2012.694968

MacIntyre, T. E., Igou, E. R., Campbell, M. J., Moran, A. P., & Matthews, J. (2014). Metacognition and action: a new pathway to understanding social and cognitive aspects of expertise in sport. *Frontiers in Psychology*, *5*, 1155-1167. https://doi.org/10.3389/fpsyg.2014.01155

Mack, R., Breckon, J., Butt, J., & Maynard, I. (2017). Exploring the understanding and application of motivational interviewing in applied sport psychology. *The Sport Psychologist*, *31*(4), 396-409. https://doi.org/10.1123/tsp.2016-0125

Mack, R. J., Breckon, J. D., O'Halloran, P. D., & Butt, J. (2019). Enhancing athlete engagement in sport psychology interventions using motivational interviewing: A case study. *The Sport Psychologist*, *33*(2), 159-168. https://doi.org/10.1123/tsp.2018-0053

Mara, C. A., & Cribbie, R. A. (2012). Paired-samples tests of equivalence. *Communications in Statistics-Simulation and Computation*, *41*(10), 1928-1943. https://doi.org/10.1080/03610918.2011.626545

Major, A., Martinussen, R., & Wiener, J. (2013). Self-efficacy for self-regulated learning in adolescents with and without attention deficit hyperactivity disorder (ADHD). *Learning and Individual Differences*, 27, 149-156. https://doi.org/10.1016/j.lindif.2013.06.009

Marques Pereria, F. R., Ribeiro Mesquita, I. M., and Braga Graca, A. (2010). Relating content and nature of information when teaching volleyball in youth volleyball training sessions. *Kinesiology*, 42(2), 121–131.

Marsh, H. W., & Perry, C. (2005). Self-concept contributes to winning gold medals: Causal ordering of self-concept and elite swimming performance. *Journal of Sport and Exercise Psychology*, *27*(1), 71-91. https://doi.org/10.1123/jsep.27.1.71

Martin, S. B., Akers, A., Jackson, A. W., Wrisberg, C. A., Nelson, L., Leslie, P. J., & Leidig, L. (2001). Male and female athletes' and nonathletes' expectations about sport psychology consulting. *Journal of Applied Sport Psychology*, *13*(1), 18-39. https://doi.org/10.1080/10413200109339002

Martin, S. B., Lavallee, D., Kellmann, M., & Page, S. J. (2004). Attitudes toward sport psychology consulting of adult athletes from the United States, United Kingdom, and Germany. *International Journal of Sport and Exercise Psychology*, *2*(2), 146-160. https://doi.org/10.1080/1612197X.2004.9671738

Martindale, A., & Collins, D. (2013). The development of professional judgment and decision making expertise in applied sport psychology. *The Sport Psychologist*, *27*(4), 390-399. https://doi.org/10.1123/tsp.27.4.390

McArdle, S., & Moore, P. (2012). Applying evidence-based principles from CBT to sport psychology. *The Sport Psychologist*, *26*(2), 299-310. https://doi.org/10.1123/tsp.26.2.299

Mcleod, S. (2023). Theoretical Perspectives of Psychology (Psychological approaches). *Simply Psychology*. https://www.simplypsychology.org/perspective.html

McCalla, T., & Fitzpatrick, S. (2016). Integrating sport psychology within a high-performance team: Potential stakeholders, micropolitics, and culture. *Journal of Sport Psychology in Action*, *7*(1), 33-42. https://doi.org/10.1080/21520704.2015.1123208

McCarthy, P. J. (2011). Positive emotion in sport performance: current status and future directions. *International Review of Sport and Exercise Psychology*, *4*(1), 50-69. https://doi.org/10.1080/1750984X.2011.560955

McCormick, A., Meijen, C., Anstiss, P. A., & Jones, H. S. (2019). Self-regulation in endurance sports: theory, research, and practice. *International Review of Sport and Exercise Psychology*, *12*(1), 235-264. https://doi.org/10.1080/1750984X.2018.1469161

McCormick, A., Meijen, C., & Marcora, S. (2018). Effects of a motivational self-talk intervention for endurance athletes completing an ultramarathon. *The Sport Psychologist*, *32*(1), 42-50. https://doi.org/10.1123/tsp.2017-0018

McEvoy, P., & Richards, D. (2006). A critical realist rationale for using a combination of quantitative and qualitative methods. *Journal of Research in Nursing*, *11*(1), 66-78. https://doi.org/10.1177/1744987106060192

McEwan, D., & Beauchamp, M. R. (2014). Teamwork in sport: A theoretical and integrative review. *International Review of Sport and Exercise Psychology*, *7*(1), 229-250. https://doi.org/10.1080/1750984X.2014.932423

McLeod, S. (2018). Questionnaire: Definition, examples, design and types. *Simply Psychology*, *78*, 350-365.

McMillan, R. L., Kaufman, S. B., & Singer, J. L. (2013). Ode to positive constructive daydreaming. *Frontiers in psychology*, *4*, 626-635. https://doi.org/10.3389/fpsyg.2013.00626

McVay, J. C., & Kane, M. J. (2012). Why does working memory capacity predict variation in reading comprehension? On the influence of mind wandering and executive attention. *Journal of experimental psychology: General*, *141*(2), 302- 321. https://psycnet.apa.org/doi/10.1037/a0025250

Mellalieu, S. D., Hanton, S., & Fletcher, D. (2009). A competitive anxiety review: Recent directions in sport psychology research. In S. Hanton & S. Mellalieu (Eds.), *Literature Reviews in Sport Psychology* (pp. 1-45). Nova Science Publishers.

Meyer, B. B., & Fletcher, T. B. (2007). Emotional intelligence: A theoretical overview and implications for research and professional practice in sport psychology. *Journal of Applied Sport Psychology*, *19*(1), 1-15. https://doi.org/10.1080/10413200601102904

Miles, A., & Neil, R. (2013). The use of self-talk during elite cricket batting performance. *Psychology of sport and exercise*, *14*(6), 874-881. https://doi.org/10.1016/j.psychsport.2013.07.005

Miś, M., & Kowalczyk, M. (2021). Mind-wandering during long-distance running and mood change. The role of working memory capacity and temporal orientation of thoughts. *International Journal of Sport and Exercise Psychology*, *19*(5), 815-833. https://doi.org/10.1080/1612197X.2020.1766538

Moran, A. (2009). Cognitive psychology in sport: Progress and prospects. *Psychology of Sport and Exercise*, 10(4), 420-426. https://doi.org/10.1016/j.psychsport.2009.02.010

Moran, A. P., Matthews, J. J., & Kirby, K. (2011). Whatever happened to the third paradigm? Exploring mixed methods research designs in sport and exercise psychology. *Qualitative Research in Sport, Exercise and Health*, *3*(3), 362-369. https://doi.org/10.1080/2159676X.2011.607843

Moore, Z. E., & Bonagura, K. (2017). Current opinion in clinical sport psychology: from athletic performance to psychological well-being. *Current Opinion in Psychology*, *16*, 176-179. https://doi.org/10.1016/j.copsyc.2017.05.016

Murairwa, S. (2015). Voluntary sampling design. *International Journal of Advanced Research in Management and Social Sciences*, *4*(2), 185-200.

Murray, S., Liang, N., Brosowsky, N., & Seli, P. (2021). What are the benefits of mind wandering to creativity? *Psychology of Aesthetics, Creativity, and the Arts*, *15(4)*, 1-15. https://doi.org/10.1080/1612197X.2020.1766538

Naderirad, N., Abdoli, B., Farsi, A., & Hassanlouei, H. (2023). The effect of instructional and motivational self-talk on accuracy and electromyography of active and passive muscles in elbow joint position sense test. *International Journal of Sport and Exercise Psychology*, *21*(4), 600-615. https://doi.org/10.1080/1612197X.2022.2078854

National Basketball Association. (2022, February 16). *NBA 75: Top 15 coaches in league history revealed*. NBA.com. https://www.nba.com/news/nba-75-top-15-coaches-league-history

Nicholls, A. R., Holt, N. L., & Polman, R. C. (2005). A phenomenological analysis of coping effectiveness in golf. *The Sport Psychologist*, *19*(2), 111-130. https://doi.org/10.1123/tsp.19.2.111

Nicholls, A. R., Polman, R. C., Levy, A. R., & Backhouse, S. H. (2009). Mental toughness in sport: Achievement level, gender, age, experience, and sport type differences. *Personality and Individual Differences*, *47*(1), 73-75. https://doi.org/10.1016/j.paid.2009.02.006

Nikander, J. A. O., Ronkainen, N. J., Korhonen, N., Saarinen, M., & Ryba, T. V. (2022). From athletic talent development to dual career development? A case study in a Finnish high performance sports environment. *International Journal of Sport and Exercise Psychology*, *20*(1), 245-262. https://doi.org/10.1080/1612197X.2020.1854822

North, J. (2013). A critical realist approach to theorising coaching practice. In P. Potrac, W. Gilbert, & J. Denison (Eds.), *Routledge Handbook of Sport Coaching* (pp. 133-143). Routledge.

North, J. (2017). *Sport coaching research and practice: Ontology, interdisciplinarity and critical realism*. Routledge. https://doi.org/10.4324/9781315753232

O'Cathain, A., Murphy, E., & Nicholl, J. (2007). Why, and how, mixed methods research is undertaken in health services research in England: a mixed methods study. *BMC Health Services Research*, *7*(1), 1-11. https://doi.org/10.1186/1472-6963-7-85

Ong, N. C., & Chua, J. H. (2021). Effects of psychological interventions on competitive anxiety in sport: A meta-analysis. *Psychology of Sport and Exercise*, *52*, 1-16. https://doi.org/10.1016/j.psychsport.2020.101836

Orbach, I., & Blumenstein, B. (2022). Preparatory routines for emotional regulation in performance enhancement. *Frontiers in Psychology*, *13*, 948512. https://doi.org/10.3389/fpsyg.2022.948512

Otgaar, H., Alberts, H., & Cuppens, L. (2012). How cognitive resources alter our perception of the past: Ego depletion enhances the susceptibility to suggestion. *Applied Cognitive Psychology*, *26*(1), 159-163. https://doi.org/10.1002/acp.1810

Owton, H., Bond, K., & Tod, D. (2014). "It's my dream to work with Olympic athletes": Neophyte sport psychologists' expectations and initial experiences regarding service delivery. *Journal of Applied Sport Psychology*, *26*(3), 241-255. https://doi.org/10.1080/10413200.2013.847509

Pachai, A., Acai, A., LoGiudice, A. B., & Kim, J. A. (2016). The mind that wanders: Challenges and potential benefits of mind wandering in education. *Scholarship of Teaching and Learning in Psychology*, *2*(2), 134-146. https://psycnet.apa.org/doi/10.1037/stl0000060

Patton, M. Q. (1987). *How to use qualitative methods in evaluation* (4th Eds.). Sage.

Patton, M. Q. (2002). *Qualitative research & evaluation methods (*Eds*.)*. Sage.

Pelka, M., Kölling, S., Ferrauti, A., Meyer, T., Pfeiffer, M., & Kellmann, M. (2017). Acute effects of psychological relaxation techniques between two physical tasks. *Journal of Sports Sciences*, *35*(3), 216-223. https://doi.org/10.1080/02640414.2016.1161208

Perkos, S., Theodorakis, Y., & Chroni, S. (2002). Enhancing performance and skill acquisition in novice basketball players with instructional self-talk. *The Sport Psychologist*, *16*(4), 368-383. https://doi.org/10.1123/tsp.16.4.368

Peris-Ortiz, M., & Lindahl, J. M. M. (2015). *Sustainable learning in higher education*. Springer: Berlin/Heidelberg, Germany.

Petrosyan, A. (2023, May 22). *Number of internet and social media users worldwide as of April 2023*. Statista.com. https://www.statista.com/statistics/617136/digital-population-worldwide/#:~:text=As%20of%20April%202023%2C%20there,population%2C%20were%20social%20media%20users.

Pfister, G. (2010). Women in sport–gender relations and future perspectives. *Sport in Society*, *13*(2), 234-248. https://doi.org/10.1080/17430430903522954

Phillpots, L., Grix, J., & Quarmby, T. (2010). Centralized grassroots sport policy and new Governance: A case study of county sports partnerships in the UK - Unpacking the paradox. *International Review for the Sociology of Sport.* 46(3), 265–281. https://doi.org/10.1177/1012690210378461

Piaget, J. (1957). *Construction of reality in the child*. Routledge & Kegan Paul.

Pineda-Espejel, H. A., López-Walle, J., & Tomás, I. (2017). Situational and dispositional factors that predict motivation: A multilevel study. *The Spanish Journal of Psychology*, *20*, E20. 10.1017/sjp.2017.17

Poczwardowski, A., Diehl, B., O'Neil, A., Cote, T., & Haberl, P. (2014). Successful transitions to the olympic training center, colorado springs: A mixed-method exploration with six resident-athletes. *Journal of Applied Sport Psychology*, *26*(1), 33-51. https://doi.org/10.1080/10413200.2013.773950

Pridgeon, L., & Grogan, S. (2012). Understanding exercise adherence and dropout: An interpretative phenomenological analysis of men and women's accounts of gym attendance

and non-attendance. *Qualitative Research in Sport, Exercise and Health*, *4*(3), 382-399. https://doi.org/10.1080/2159676X.2012.712984

Pringle, J., Drummond, J., McLafferty, E., & Hendry, C. (2011). Interpretative phenomenological analysis: A discussion and critique. *Nurse Researcher*, *18*(3). 20-24. 10.7748/nr2011.04.18.3.20.c8459

Quartiroli, A., Fogaça, J. L., & Wagstaff, C. R. (2023). Professional training and development: The bedrock of ethical, competent, and sustainable sport psychology. *Journal of Applied Sport Psychology*, *35*(3), 349-371. https://doi.org/10.1080/10413200.2022.2043485

Randall, J. G., Oswald, F. L., & Beier, M. E. (2014). Mind-wandering, cognition, and performance: A theory-driven meta-analysis of attention regulation. *Psychological Bulletin*, *140*(6), 1411-1431. https://psycnet.apa.org/doi/10.1037/a0037428

Readdy, T., Raabe, J., & Harding, J. S. (2014). Student-athletes' perceptions of an extrinsic reward program: A mixed-methods exploration of self-determination theory in the context of college football. *Journal of Applied Sport Psychology*, *26*(2), 157-171. https://doi.org/10.1080/10413200.2013.816801

Reeves, J. L., Tenenbaum, G., & Lidor, R. (2007). Choking in front of the goal: The effects of self-consciousness training. *International Journal of Sport and Exercise Psychology,* 5(3), 240-254.

Reid, H. (2012). *Introduction to the Philosophy of Sport*. Rowman & Littlefield Publishers.

Ricardo, R. (2023). The Effect of Physical Training and Shuttlecock Shot Practice on Smash Power in Badminton. *Siber International Journal of Sport Education (SIJSE)*, *1*(1), 18-25.

Rocco, T. S., & Plakhotnik, M. S. (2009). Literature reviews, conceptual frameworks, and theoretical frameworks: Terms, functions, and distinctions. *Human Resource Development Review*, *8*(1), 120-130. https://doi.org/10.1177/1534484309332617

Ronkainen, N. J., Tikkanen, O., Littlewood, M., & Nesti, M. S. (2015). An existential perspective on meaning, spirituality and authenticity in athletic careers. *Qualitative Research in Sport, Exercise and Health*, *7*(2), 253-270. https://doi.org/10.1080/2159676X.2014.926970

Ruiz, M. C., Raglin, J. S., & Hanin, Y. L. (2017). The individual zones of optimal functioning (IZOF) model (1978–2014): Historical overview of its development and use. *International Journal of Sport and Exercise Psychology*, *15*(1), 41-63. https://doi.org/10.1080/1612197X.2015.1041545

Ruiz-Esteban, C., Olmedilla, A., Méndez, I., & Tobal, J. J. (2020). Female soccer players' psychological profile: Differences between professional and amateur players. *International Journal of Environmental Research and Public Health*, *17*(12), 4357- 4366. https://psycnet.apa.org/doi/10.1037/a0037428

Rumbold, J. L., Fletcher, D., & Daniels, K. (2012). A systematic review of stress management interventions with sport performers. *Sport, Exercise, and Performance Psychology*, *1*(3), 173 - 217. https://doi.org/10.1037/a0026628

Rumbold, J. L., Fletcher, D., & Daniels, K. (2018). Using a mixed method audit to inform organizational stress management interventions in sport. *Psychology of Sport and Exercise*, *35*, 27-38. https://doi.org/10.1016/j.psychsport.2017.10.010

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529-565. https://doi.org/10.1111/j.1467-6494.1997.tb00326.x

Ryba, T. V., Wiltshire, G., North, J., & Ronkainen, N. J. (2022). Developing mixed methods research in sport and exercise psychology: Potential contributions of a critical realist perspective. *International Journal of Sport and Exercise Psychology*, *20*(1), 147-167. https://doi.org/10.1080/1612197X.2020.1827002

Santos-Rosa, F. J., Montero-Carretero, C., Gómez-Landero, L. A., Torregrossa, M., & Cervelló, E. (2022). Positive and negative spontaneous self-talk and performance in gymnastics: The role of contextual, personal and situational factors. *PloS One*, *17*(3), 1-17.

Sarig, Y., Alvarez-Alvarado, S., & Eccles, D. W. (2023). Organic self-talk content categories and their relations to sport-specific contextual and personal factors. *Psychology of Sport and Exercise*, *68*, 102449. https://doi.org/10.1016/j.psychsport.2023.102449

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, *52*, 1893-1907. 10.1007/s11135-017-0574-8.

Savelsbergh, G. J., Van der Kamp, J., Williams, A. M., & Ward, P. (2005). Anticipation and visual search behaviour in expert soccer goalkeepers. *Ergonomics*, *48*(11-14), 1686-1697. https://doi.org/10.1080/00140130500101346

Sawrikar, P., & Muir, K. (2010). The myth of a 'fair go': Barriers to sport and recreational participation among Indian and other ethnic minority women in Australia. *Sport Management Review*, *13*(4), 355-367. https://doi.org/10.1016/j.smr.2010.01.005

Scharfen, H. E., & Memmert, D. (2019). Measurement of cognitive functions in experts and elite athletes: A meta-analytic review. *Applied Cognitive Psychology*, *33*(5), 843-860. https://doi.org/10.1002/acp.3526

Schinke, R. J., McGannon, K. R., Parham, W. D., & Lane, A. M. (2012). Toward cultural praxis and cultural sensitivity: Strategies for self-reflexive sport psychology practice. Quest, 64(1), 34-46. https://doi.org/10.1080/00336297.2012.653264

Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational psychology review*, *7*, 351-371. https://www.jstor.org/stable/23359367

Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly*, 23(1), 7-25. https://doi.org/10.1080/10573560600837578

Schweickle, M., Groves, S., Vella, S. A., & Swann, C. (2017). The effects of open vs. specific goals on flow and clutch states in a cognitive task. *Psychology of Sport and Exercise*, *33*, 45-54. https://doi.org/10.1016/j.psychsport.2017.08.002

Seli, P., Beaty, R. E., Marty-Dugas, J., & Smilek, D. (2019). Depression, anxiety, and stress and the distinction between intentional and unintentional mind wandering. *Psychology of Consciousness: Theory, Research, and Practice*, *6*(2), 163-170. https://psycnet.apa.org/doi/10.1037/cns0000182

Seli, P., Carriere, J. S., & Smilek, D. (2015a). Not all mind wandering is created equal: Dissociating deliberate from spontaneous mind wandering. *Psychological Research*, *79*(5), 750-758. https://doi.org/10.1007/s00426-014-0617-x

Seli, P., Cheyne, J. A., Xu, M., Purdon, C., & Smilek, D. (2015b). Motivation, intentionality, and mind wandering: Implications for assessments of task-unrelated thought. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *41*(5), 1417-1425. https://psycnet.apa.org/doi/10.1037/xlm0000116

Seli, P., Jonker, T. R., Cheyne, J. A., Cortes, K., & Smilek, D. (2015c). Can research participants comment authoritatively on the validity of their self-reports of mind wandering and task engagement? *Journal of Experimental Psychology: Human Perception and Performance*, 41(3), 703-709. https://psycnet.apa.org/doi/10.1037/xhp0000029

Seli, P., Ralph, B. C., Konishi, M., Smilek, D., & Schacter, D. L. (2017). What did you have in mind? Examining the content of intentional and unintentional types of mind wandering. *Consciousness and Cognition*, *51*, 149-156. https://doi.org/10.1016/j.concog.2017.03.007

Seli, P., Risko, E. F., Smilek, D., & Schacter, D. L. (2016). Mind-wandering with and without intention. *Trends in Cognitive Sciences*, *20*(8), 605-617. https://doi.org/10.1016/j.tics.2016.05.010

Shank, G. (2006). Six alternatives to mixed methods in qualitative research. *Qualitative research in psychology*, 3(4), 346–356. https://psycnet.apa.org/record/2006-22634-007

Sharp, L. A., & Hodge, K. (2014). Sport psychology consulting effectiveness: The athlete's perspective. *International Journal of Sport and Exercise Psychology*, *12*(2), 91-105. https://doi.org/10.1080/1612197X.2013.804285

Sheard, M., Golby, J., & Van Wersch, A. (2009). Progress toward construct validation of the Sports Mental Toughness Questionnaire (SMTQ). *European Journal of Psychological Assessment*, *25*(3), 186-193. https://doi.org/10.1027/1015-5759.25.3.186

Sheridan, D., Coffee, P., & Lavallee, D. (2014). A systematic review of social support in youth sport. *International Review of Sport and Exercise Psychology*, *7*(1), 198-228. https://doi.org/10.1080/1750984X.2014.931999

Simmons, J., & MacLean, J. (2016). Physical education teachers' perceptions of factors that inhibit and facilitate the enactment of curriculum change in a high-stakes exam climate. *Sport, Education and Society,* 23(2), 1–17. https://doi.org/10.1080/13573322.2016.1155444

Simons, J. P. (2023). Client intakes in applied sport psychology. In *Routledge eBooks* (pp. 91–100). https://doi.org/10.4324/9781003173588-12

Simonsmeier, B. A., & Buecker, S. (2017). Interrelations of imagery use, imagery ability, and performance in young athletes. *Journal of Applied Sport Psychology*, *29*(1), 32-43. https://doi.org/10.1080/10413200.2016.1187686

Simpson, B. (2019, May 31). *Anthony Joshua Hires Phycologist Team to Help With Mental State!* 3Kings Boxing WorldWide. https://3kingsboxing.com/joshua-hires-psychologist-training-pressure/

Skinner, N., & Brewer, N. (2004). Adaptive approaches to competition: Challenge appraisals and positive emotion. *Journal of Sport and Exercise Psychology*, *26*(2), 283-305. https://doi.org/10.1123/jsep.26.2.283

Smallwood, J. (2013). Distinguishing how from why the mind wanders: A process-occurrence framework for self-generated mental activity. *Psychological Bulletin*, 139, 519 –535. 10.1037/a0030010

Smallwood, J., Fitzgerald, A., Miles, L. K., & Phillips, L. H. (2009). Shifting moods, wandering minds: negative moods lead the mind to wander. *Emotion*, *9*(2), 271-276. https://psycnet.apa.org/doi/10.1037/a0014855

Smallwood, J., & Schooler, J. W. (2006). The restless mind. *Psychological Bulletin*, 132, 946 – 958. 10.1037/0033-2909.132.6.946

Smallwood, J., & Schooler, J. W. (2015). The science of mind wandering: Empirically navigating the stream of consciousness. *Annual Review of Psychology*, 66, 487–518. https://psycnet.apa.org/doi/10.1146/annurev-psych-010814-015331

Smallwood, J., Schooler, J. W., Turk, D. J., Cunningham, S. J., Burns, P., & Macrae, C. N. (2011). Self-reflection and the temporal focus of the wandering mind. *Consciousness and Cognition*, *20*(4), 1120-1126. https://doi.org/10.1016/j.concog.2010.12.017

Smith, A. D., & Kelly, A. (2016). *Cognitive processes*. Wiley and Sons.

Smoll, F. L., Cumming, S. P., & Smith, R. E. (2011). Enhancing coach-parent relationships in youth sports: Increasing harmony and minimizing hassle. *International Journal of Sports Science & Coaching*, *6*(1), 13-26. https://doi.org/10.1260/1747-9541.6.1.13

Sniehotta, F. F. (2009). Towards a theory of intentional behaviour change: Plans, planning, and self-regulation. *British Journal of Health Psychology*, *14*(2), 261-273. https://doi.org/10.1348/135910708X389042

Sors, F., Tomé Lourido, D., Parisi, V., Santoro, I., Galmonte, A., Agostini, T., & Murgia, M. (2019). Pressing crowd noise impairs the ability of anxious basketball referees to discriminate fouls. *Frontiers in Psychology*, *10*, 2380. https://doi.org/10.3389/fpsyg.2019.02380

Spada, M. M., Nikčević, A. V., Moneta, G. B., & Wells, A. (2008). Metacognition, perceived stress, and negative emotion. *Personality and Individual Differences*, *44*(5), 1172-1181. https://doi.org/10.1016/j.paid.2007.11.010

Sparkes, A. C. (1998). Validity in qualitative inquiry and the problem of criteria: Implications for sport psychology. *The Sport Psychologist*, *12*(4), 363-386. https://doi.org/10.1123/tsp.12.4.363

Sparkes, A. C. (2015). Developing mixed methods research in sport and exercise psychology: Critical reflections on five points of controversy. *Psychology of Sport and Exercise*, *16(3)*, 49-59. https://doi.org/10.1016/j.psychsport.2014.08.014

Stamou, E., Theodorakis, Y., Kokaridas, D., Perkos, S., & Kessanopoulou, M. (2007). The effect of self-talk on the penalty execution in goalball. *British Journal of Visual Impairment*, *25*(3), 233-247. https://doi.org/10.1177/0264619607079800

Storm, L. K., Book Jr, R. T., Hoyer, S. S., Henriksen, K., Küttel, A., & Larsen, C. H. (2022). Every boy's dream: A mixed method study of young professional Danish football player's transnational migration. *Psychology of Sport and Exercise*, *59*, 1-11. https://doi.org/10.1016/j.psychsport.2021.102125

Sutton, A. (2016). Measuring the effects of self-awareness: Construction of the self-awareness outcomes questionnaire. *Europe's Journal of Psychology*, *12*(4), 645-658. 10.5964/ejop.v12i4.1178

Swann, C., Crust, L., Jackman, P., Vella, S. A., Allen, M. S., & Keegan, R. (2017). Performing under pressure: Exploring the psychological state underlying clutch performance in sport. *Journal of Sports Sciences*, *35*(23), 2272-2280. https://doi.org/10.1016/j.psychsport.2021.102125

Swann, C., Keegan, R., Crust, L., & Piggott, D. (2016). Psychological states underlying excellent performance in professional golfers: "Letting it happen" vs. "making it happen". *Psychology of Sport and Exercise*, *23*, 101-113. https://doi.org/10.1016/j.psychsport.2015.10.008

Swann, C., Moran, A., & Piggott, D. (2015). Defining elite athletes: Issues in the study of expert performance in sport psychology. *Psychology of Sport and Exercise*, *16*, 3-14. https://doi.org/10.1016/j.psychsport.2014.07.004

Swettenham, L., & Whitehead, A. E. (2021). Developing the triad of knowledge in coaching: Think aloud as a reflective tool within a category 1 football academy. *International Sport Coaching Journal*, *9*(1), 122-132. https://doi.org/10.1123/iscj.2020-0122.

Szabo, A. (2014). Sport and exercise psychology research and Olympic success: An analytical and correlational investigation. *European Journal of Sport Science*, *14*(3), 273-278. https://doi.org/10.1080/17461391.2013.827241

Tamminen, K. A., & Holt, N. L. (2012). Adolescent athletes' learning about coping and the roles of parents and coaches. *Psychology of Sport and Exercise*, *13*(1), 69-79. https://doi.org/10.1016/j.psychsport.2011.07.006

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53-55. https://doi.org/10.5116%2Fijme.4dfb.8dfd

Taylor, J., & Schneider, B. A. (1992). The Sport-Clinical Intake Protocol: A comprehensive interviewing instrument for applied sport psychology. *Professional Psychology: Research and Practice*, *23*(4), 318-325. https://doi.org/10.1037/0735-7028.23.4.318

Tenenbaum, G., Lidor, R., Lavyan, N., Morrow, K., Tonnel, S., Gershgoren, A., Meis, J., & Johnson, M. (2004). The effect of music type on running perseverance and coping with effort sensations. *Psychology of sport and exercise*, *5*(2), 89-109. https://doi.org/10.1016/S1469-0292(02)00041-9

Thelwell, R. C., Greenlees, I. A., & Weston, N. J. (2010). Examining the use of psychological skills throughout soccer performance. *Journal of Sport Behavior*, *33*(1). 109-129. https://psycnet.apa.org/record/2010-03493-006

Theodorakis, Y., Chroni, S., Laparidis, K., Bebetsos, V., & Douma, I. (2001). Self-talk in a basketball-shooting task. *Perceptual and Motor Skills*, *92*(1), 309-315. https://doi.org/10.2466/pms.2001.92.1.309

Theodorakis, Y., Hatzigeorgiadis, A., & Chroni, S. (2008). Self-talk: It works, but how? Development and preliminary validation of the functions of self-talk questionnaire. *Measurement in Physical Education and Exercise Science*, *12*(1), 10-30. https://doi.org/10.1080/10913670701715158

Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *The Sport Psychologist*, *14*(3), 253-271. https://doi.org/10.1123/tsp.14.3.253

Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). *Journal of Cross-Cultural Psychology*, *38*(2), 227-242. https://psycnet.apa.org/doi/10.1177/0022022106297301

Thomson, R., & Holland, J. (2003). Hindsight, foresight and insight: The challenges of longitudinal qualitative research. *International Journal of Social Research Methodology*, *6*(3), 233-244. https://doi.org/10.1080/1364557032000091833

Thomson, D. R., Seli, P., Besner, D., & Smilek, D. (2014). On the link between mind wandering and task performance over time. *Consciousness and Cognition*, *27*, 14-26. https://doi.org/10.1016/j.concog.2014.04.001

Tigani, F. (2010, July 18). *2010 FIFA World Cup Final: Ajax, Barcelona Academies Clash in Final.* Bleacher Report. https://bleacherreport.com/articles/418698-ajax-v-barcelona-the-clash-of-two-great-football-academies-in-the-final

Tod, D., Hardy, J., & Oliver, E. (2011). Effects of self-talk: A systematic review. *Journal of Sport and Exercise Psychology*, *33*(5), 666-687. https://doi.org/10.1123/jsep.33.5.666

Tod, D., Hutter, R. V., & Eubank, M. (2017). Professional development for sport psychology practice. *Current Opinion in Psychology*, *16*, 134-137. https://doi.org/10.1016/j.copsyc.2017.05.007

Tod, D., McEwan, H. E., Cronin, C., & Lafferty, M. (2023). Client-led applied sport psychology practitioners' narratives about helping athletes. *The Sport Psychologist*, *37*(4), 1-10. https://doi.org/10.1123/tsp.2023-0070

Tomporowski, P. D., McCullick, B., Pendleton, D. M., & Pesce, C. (2015). Exercise and children's cognition: The role of exercise characteristics and a place for metacognition. *Journal of Sport and Health Science*, *4*(1), 47-55. https://doi.org/10.1016/j.jshs.2014.09.003

Travers, C. J., Morisano, D., & Locke, E. A. (2015). Self-reflection, growth goals, and academic outcomes: A qualitative study. *British Journal of Educational Psychology*, *85*(2), 224-241. https://doi.org/10.1111/bjep.12059

Turner, M. J. (2016). Rational emotive behavior therapy (REBT), irrational and rational beliefs, and the mental health of athletes. *Frontiers in Psychology*, *7*, 77-92. https://doi.org/10.3389/fpsyg.2016.01423

Turner, M. J., Aspin, G., Didymus, F. F., Mack, R., Olusoga, P., Wood, A. G., & Bennett, R. (2020). One case, four approaches: The application of psychotherapeutic approaches in sport psychology. *The Sport Psychologist*, *34*(1), 71-83. https://doi.org/10.1123/tsp.2019-0079

Uphill, M. A., McCarthy, P. J., & Jones, M. V. (2009). Getting a grip on emotion regulation in sport. In S. Mellalieu, & S. Hanton (Eds.), *Advances in applied sport psychology: A Review* (pp. 162-194). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203887073-11/getting-grip-emotion-regulation-sport-conceptual-foundations-practical-application-mark-uphill-paul-mccarthy

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., Gagne´, M. & Marsolais, J. (2003). Les passions de l'ame: on obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756-767. https://doi.org/10.1037/0022-3514.85.4.756

Vallerand, R. J., Mageau, G. A., Elliot, A. J., Dumais, A., Demers, M. A., & Rousseau, F. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise*, *9*(3), 373-392. https://doi.org/10.1016/j.psychsport.2007.05.003

Van Raalte, J. L., Brewer, B. W., Rivera, P. M., & Petitpas, A. J. (1994). The relationship between observable self-talk and competitive junior tennis players' match performances. *Journal of Sport and Exercise Psychology*, *16*(4), 400-415. https://doi.org/10.1123/jsep.16.4.400

Van Raalte, J. L., Vincent, A., & Brewer, B. W. (2016). Self-talk: Review and sport-specific model. *Psychology of Sport and Exercise*, *22*, 139-148. https://doi.org/10.1016/j.psychsport.2015.08.004

Van Raalte, J. L., Vincent, A., & Brewer, B. W. (2017). Self-talk interventions for athletes: A theoretically grounded approach. *Journal of Sport Psychology in Action*, *8*(3), 141-151. https://doi.org/10.1080/21520704.2016.1233921

Van Raalte, J. L., Vincent, A., Dickens, Y. L., & Brewer, B. W. (2019). Toward a common language, categorization, and better assessment in self-talk research: Commentary on 'Speaking clearly...

10 years on'. *Sport, Exercise, and Performance Psychology*, *8*(4). 368-378. https://doi.org/10.1037/spy0000172

Van Zyl, L. E., Roll, L. C., Stander, M. W., & Richter, S. (2020). Positive psychological coaching definitions and models: A systematic literature review. *Frontiers in Psychology,* 11, 520603.

Vaughan, R. S., & Laborde, S. (2021). Attention, working-memory control, working-memory capacity, and sport performance: The moderating role of athletic expertise. *European Journal of Sport Science*, *21*(2), 240-249. https://doi.org/10.1080/17461391.2020.1739143

Vears, D. F., & Gillam, L. (2022). Inductive content analysis: A guide for beginning qualitative researchers. *Focus on Health Professional Education: A Multi-disciplinary Journal*, *23*(1), 111-127. https://doi.org/10.11157/fohpe.v23i1.544

Vine, S. J., Moore, L. J., & Wilson, M. R. (2014). Quiet eye training: The acquisition, refinement and resilient performance of targeting skills. *European Journal of Sport Science*, *14*(1), 235-S242. https://doi.org/10.1080/17461391.2012.683815

Vygotsky, L. S. (1978). Mind and society: The development of higher mental processes. Cambridge: Harvard University Press.

Walker, H. E., & Trick, L. M. (2018). Mind-wandering while driving: The impact of fatigue, task length, and sustained attention abilities. *Transportation Research Part F: Traffic Psychology and Behaviour*, *59(1)*, 81-97. https://doi.org/10.1016/j.trf.2018.08.009

Wang, Y. (2007). On the cognitive processes of human perception with emotions, motivations, and attitudes. *International Journal of Cognitive Informatics and Natural Intelligence* (IJCINI), 1(4), 1-13. https://doi.org/10.4018/jcini.2007100101

Watson, D. R., Hill, A. P., & Madigan, D. J. (2022). Psychological skills training and perfectionism: A single-subject multiple baseline study. *Journal of Applied Sport Psychology*, 35(5), 1-20. https://doi.org/10.1080/10413200.2022.2137597

Weinberg, R., Miller, A., & Horn, T. (2012). The influence of a self-talk intervention on collegiate cross-country runners. *International Journal of Sport and Exercise Psychology*, *10*(2), 123-134. https://doi.org/10.1080/1612197X.2012.645135

Weinfurt, K. P. (2000). Repeated measures analysis: ANOVA, MANOVA, and HLM. In L. G. Grimm, & P. R. Yarnold (Eds.), *Reading and understanding MORE multivariate statistics* (pp. 317–361). American Psychological Association. https://psycnet.apa.org/record/2000-00427-010

Williams, A. M., Ward, P., Smeeton, N. J., & Allen, D. (2004). Developing anticipation skills in tennis using on-court instruction: Perception versus perception and action. *Journal of Applied Sport Psychology*, *16*(4), 350-360. https://doi.org/10.1080/10413200490518002

Wilson, A. (2021, February 08). Six Nations 2021 prize money: Do players get paid in the Six Nations? Express. https://www.express.co.uk/sport/rugby-union/1392981/Six-Nations-2021-prize-money-players-paid-in-Six-Nations-evg

Wiltshire, G. (2018). A case for critical realism in the pursuit of interdisciplinarity and impact. *Qualitative Research in Sport, Exercise and Health*, *10*(5), 525-542. https://doi.org/10.1080/2159676X.2018.1467482

Winter, S., & Collins, D. J. (2016). Applied sport psychology: A profession? *The Sport Psychologist*, *30*(1), 89-96. https://doi.org/10.1123/tsp.2014-0132

Wood, A. G., Barker, J. B., & Turner, M. J. (2017). Developing performance using rational emotive behavior therapy (REBT): A case study with an elite archer. *The Sport Psychologist*, *31*(1), 78-87. https://doi.org/10.1123/tsp.2015-0083

Woodman, T. I. M., & Hardy, L. E. W. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: A meta-analysis. *Journal of Sports Sciences*, *21*(6), 443-457. https://doi.org/10.1080/0264041031000101809

Woolway, T., & Harwood, C. G. (2020). Consultant characteristics in sport psychology service provision: A critical review and future research directions. *International Journal of Sport and Exercise Psychology*, *18*(1), 46-63. https://doi.org/10.1080/1612197X.2018.1462230

Wulf, G., & Lewthwaite, R. (2010). Effortless motor learning? An external focus of attention enhances movement effectiveness and efficiency. In B. Bruya, *Effortless attention: A new perspective in attention and action* (pp. 75-101). The MIT Press. https://doi.org/10.7551/mitpress/9780262013840.003.0004

Yanko, M. R., & Spalek, T. M. (2014). Driving with the wandering mind: The effect that mind-wandering has on driving performance. *Human Factors*, *56*(2), 260-269. https://doi.org/10.1177/0018720813495280

Zetou, E., Vernadakis, N., Bebetsos, E., & Makraki, E. (2012). The effect of self-talk in learning the volleyball service skill and self-efficacy improvement. *Journal of Human Sport and Exercise*, *7*(4), 794-805. http://dx.doi.org/10.4100/jhse.2012.74.07

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In *Handbook of self-regulation* (pp. 13-39). Academic press. https://doi.org/10.1016/B978-012109890-2/50031-7

Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In D. Hacker, J. Dunlosky & A. Graesser (Eds.) *Handbook of metacognition in education* (pp. 311-328). Routledge. https://psycnet.apa.org/record/2010-06038-016

Zourbanos, N., Hatzigeorgiadis, A., Bardas, D., & Theodorakis, Y. (2013a). The effects of self-talk on dominant and nondominant arm performance on a handball task in primary physical education students. *The Sport Psychologist*, *27*(2), 171-176. https://doi.org/10.1123/tsp.27.2.171

Zourbanos, N., Hatzigeorgiadis, A., Bardas, D., & Theodorakis, Y. (2013b). The effects of a self-talk intervention on elementary students' motor task performance. *Early Child Development and Care*, *183*(7), 924-930. https://doi.org/10.1080/03004430.2012.693487

Zourbanos, N., Hatzigeorgiadis, A., Chroni, S., Theodorakis, Y., & Papaioannou, A. (2009). Automatic Self-Talk Questionnaire for Sports (ASTQS): Development and preliminary validation of a measure identifying the structure of athletes' self-talk. *The Sport Psychologist*, *23*(2), 233-251. https://doi.org/10.1123/tsp.23.2.233

Appendices

Chapter 5

Appendix 1 - Study Protocol

Participant is placed into 1 of 4 groups (instructional, motivational, unrelated, no self-talk)

⬇

Participant picks self-talk cue word from assigned group

	Instructional Self-Talk	**Motivational Self-Talk**
Definition	Statements focusing on making the individual pay attention to technical and specific tasks helping performance and task execution	Statements focusing on psyching up the individual, boosting effort and confidence
Words/Phrases	● Hit ● Flick ● Lift ● Twist Hip ● Snap wrist ● Smooth movement ● Strong base	● Relax ● Come on ● See target ● Push yourself ● Strong shot ● All my strength ● I trust my abilities ● Give it your all ● I can do it

	Unrelated Self-Talk
Definition	Statements which are unrelated to the current task
Words/Phrases	• Sunny weather • Cloudy skies • alphabet letter • Numbers • Pet name • Parent name

Participant undergoes warm-up

Participant undergoes practise shots

Practise Shot	Participant performs 10 shots on the accuracy task and 10 shots on the power task

Task		Number of Attempts	Point system
Accuracy	3 types of numbered cones spread out on the court. A number is randomly generated in which the participant has to hit the shuttle as close to the intended cone. Distance between where the shuttle cock landed to the cone will be measured.	12	● 5 points if shuttle falls between intended target and 50cm ● 4 points if shuttle falls between intended target and 100cm ● 3 points if shuttle falls between intended target and 150cm ● 2 points if shuttle falls between intended target and 200cm ● 1 point if the shuttle falls over the net
Power	Participant has to hit the shuttlecock as far as they can. Each attempt will be measured.	12	● 10 points if the shuttle falls between past the back line and 250cm ● 9 points if the shuttle falls between past the back line and 200cm ● 8 points if the shuttle falls between past the back line and 150cm

- 7 points if the shuttle falls between past the back line and 100cm
- 6 points if the shuttle falls between past the back line and 50cm
- 5 points if the shuttle falls between the back line and 50cm
- 4 points if the shuttle falls between the back line and 100cm
- 3 points if the shuttle falls between the back line and 150cm
- 2 points if the shuttle falls between the back line and 200cm
- 1 point if the shuttle falls over the net

Data collection begins

Participant says aloud their self-talk cue word before or during each attempt

Participant answers debrief questions

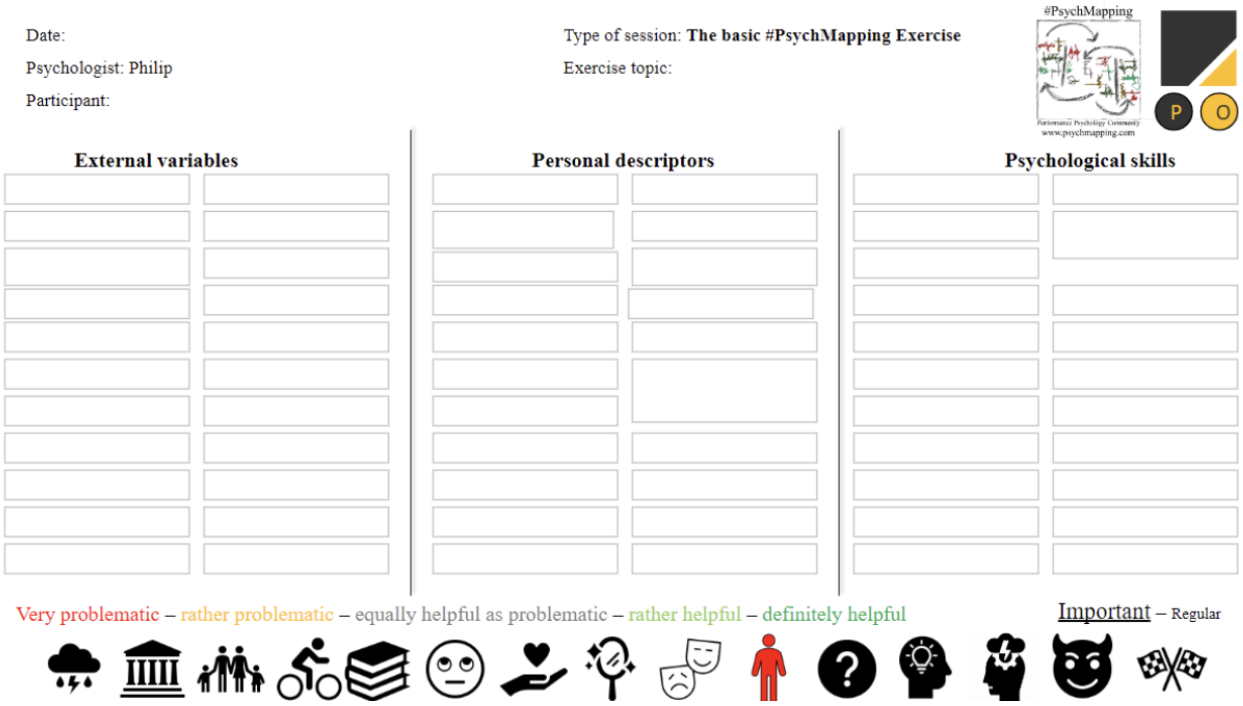
Self-Talk Group Debrief Questions	**Control Group Debrief Questions**
1. On a scale from 1 (not that difficult) to 10 (very difficult), how difficult do you feel both tasks were? Accuracy Task: Power Task:	1. On a scale from 1 (not that difficult) to 10 (very difficult), how difficult do you feel both tasks were? Accuracy Task: Power Task:
2. How do you think the self-talk cue word impacted your performance? Accuracy Task: Power Task:	2. Starting from the beginning to the end of each task, what were the thoughts and feelings occurring in your mind? Accuracy Task: Power Task:
3. Which task do you think the self-talk cue word impacted your performance most and why?	3. What did you do to try and promote more positive thoughts and feelings experienced during both tasks (how this is asked depending on previous answers) Accuracy Task: Power Task:
4. If you could do the task all over again, what would you do to better perform both tasks?	4. What did you do to try and forget negative thoughts and feelings experienced

Accuracy Task: Power Task:	during both tasks (how this is asked depending on previous answers) Accuracy Task: Power Task:
	5. If you could do the task all over again, what would you do to better perform both tasks? Accuracy Task: Power Task:

End of Procedure

Chapter 6

Appendix 2 - #SportPsychMapping Interview Tool



Interview Questions

External Factors

1. What are three things about your sporting environment that you believe to be most relevant to your case?
2. What are three things about the organisation that make up your sport that you believe to be the most relevant in your case?
3. Who are three people related to your sporting context that you believe to be the most relevant in your case?
4. What are three things about the demands of your sport (either training and/or competition) that you believe to be the most relevant in your case?

5. Are there any other aspects of your sporting environment that you believe to be relevant in your case?

Additional Questions for mid, post and follow-up interviews

1. How have previously mentioned external factors changed since the last interview?
2. Are there any entries on the map that you wish to add/take away?
3. Are there any entries on the map that you wish to change the colour rating of?
4. How has the reflexive self-talk intervention impacted the previously mentioned external factors?
5. Are there any entries which have been impacted more than others due to the reflexive self-talk intervention?
6. Has the self-talk developed during the intervention sessions impacted external factors which have not been previously mentioned? If so how?

Personal Descriptors

Definition: *A network of Intra and interpersonal situational and contextual emotions which are building blocks for the experience of life*

1. What are three things about yourself that you believe to be the most relevant in your case?
2. If you compare a 'good' performance and a 'bad' performance, what are the differences?
3. What are three aspects that differentiate you from others in your sport?
4. Are there any other aspects about yourself that you believe to be relevant in your case?

Additional Questions for mid, post and follow-up interviews

1. How have previously mentioned psychological processes changed since the last interview?
2. Are there any entries on the map that you wish to add/take away?
3. Are there any entries on the map that you wish to change the colour rating of?

4. How has the self-talk developed during intervention sessions impacted the previously mentioned psychological factors?
5. Are there any entries which have been impacted more than others due to the reflexive self-talk intervention?
6. Has the self-talk developed during the intervention sessions impacted psychological processes which have not been previously mentioned? If so how?

Psychological Skills

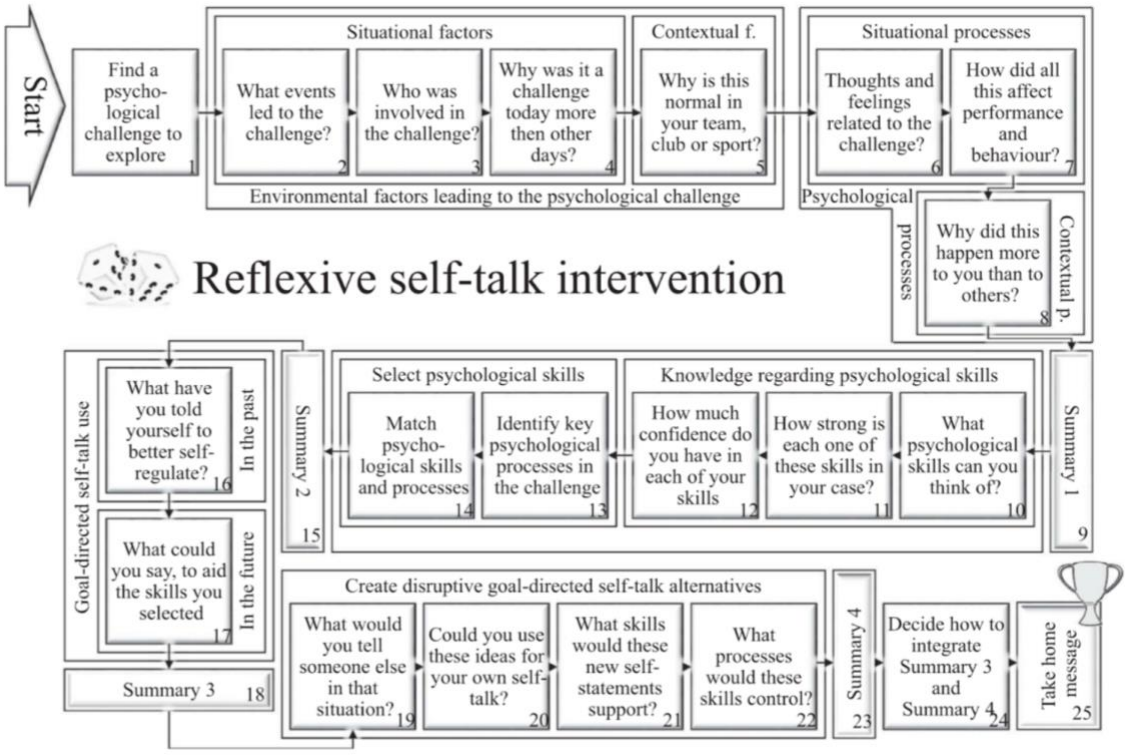
Definition: *Mental abilities that are intentionally used to help emotions and performance*

1. What are three mental skills that you believe are your psychological strengths?
2. What are three mental skills that you feel you need to improve?
3. What are three strategies that you use in challenging situations that you know are wrong and that you later regret?
4. Is there anything else you want to point out before we finish that you believe to be relevant to your case?

Additional Questions for mid, post and follow-up interviews

1. How have previously mentioned psychological skills changed since the last interview?
2. Are there any entries on the map that you wish to add/take away?
3. Are there any entries on the map that you wish to change the colour rating of?
4. How has the self-talk developed during intervention sessions impacted the previously mentioned psychological skills?
5. Are there any entries which have been impacted more than others due to the reflexive self-talk intervention?
6. Has the self-talk developed during the intervention sessions impacted psychological skills which have not been previously mentioned? If so how?

Appendix 3 - The Reflexive Self-talk Intervention Tool



Summary 1

Situation:

Key points/triggers:

Key emotions:

Performance impacts:

Summary 2

Key Emotion (descriptive states) experienced:

Psychological Skill selection:

Summary 3

Psychological Skill selection:

Self-talk words and phrases:

Summary 4 (if applicable)

Psychological Skill selection:

Self-talk words and phrases:

Takeaway Message

Situation	Psychological Skill selection
Key points/triggers	Self-talk words and phrases
Key emotions	
Performance impacts	

Appendix 4 - Sports Mental Toughness Questionnaire (SMTQ) (Sheard et al., 2009)

1. I can regain my composure if I have momentarily lost it

☐ ☐ ☐ ☐

Not at all True Very True

2. I worry about performing poorly

☐ ☐ ☐ ☐

Not at all True Very True

3. I am committed to completing the tasks I have to do

☐ ☐ ☐ ☐

Not at all True Very True

4. I am overcome by self-doubt

☐ ☐ ☐ ☐

Not at all True Very True

5. I have an unshakeable confidence in my ability

☐ ☐ ☐ ☐

Not at all True Very True

6. I have what it takes to perform well while under pressure

☐ ☐ ☐ ☐

Not at all True Very True

7. I get angry and frustrated when things do not go my way

☐ ☐ ☐ ☐

Not at all True Very True

8. I give up in difficult situations

☐ ☐ ☐ ☐

Not at all True Very True

9. I get anxious by events I did not expect or cannot control

☐ ☐ ☐ ☐

Not at all True Very True

10. I get distracted easily and lose my concentration Control

☐ ☐ ☐ ☐

Not at all True Very True

11. I have qualities that set me apart from other competitors 6 I have what it takes to perform well while under pressure

☐ ☐ ☐ ☐

Not at all True Very True

12. I take responsibility for setting myself challenging targets

☐ ☐ ☐ ☐

Not at all True Very True

13. I interpret potential threats as positive opportunities 5 I have an unshakeable confidence in my ability

☐ ☐ ☐ ☐

Not at all True Very True

14. Under pressure, I am able to make decisions with confidence and commitment

☐ ☐ ☐ ☐

Not at all True Very True

Chapter 7

Appendix 5 - Mind Wandering Semi-Structured Interview script

Name:

Age:

Gender:

Sport:

Introduction

Definitions: Any thought that is unrelated to the ongoing task or activity, thus unrelated to the situation

Example: Thoughts around food, weather

Would you say your mind wanders in Training? Competition?

Why do you think you mind wander?

What are some physical consequences (positively or negatively) you experience after you mind wander?

Unintentional Mind Wandering Questions

Definition: Athletes mind inadvertently drifting away from the existing experience present to an experience in the past or future

Example: performing in a match and your mind wanders to how you're going to get home after the match

Is there a common time point during training/competition when you unintentionally mind wander?

Take me through a situation where your mind has wandered unintentionally in training? Competition?

How did this individually impact your performance?

How did this impact the performance of your team? (If applicable)

When your mind wandering experience ends, what's the first thing you try to focus on?

Once you are refocused after unintentionally mind wandering, has this impacted how you now view the current situation?

Would you say your mind wanders unintentionally outside of training and/or competition?

Take me through a situation where your mind has wandered unintentionally outside of training and/or competition?

Has this impacted you the next time you train or compete? If so how?

Intentional Mind Wandering Questions

Definition: Athletes deliberately altering their mind to wander and become distracted from the existing present experience

Example: performing in a competition and deliberately altering your mind to a situation you experience in the past

Is there a common time point during training/competition when you intentionally mind wander?

Take me through a situation where your mind has wandered intentionally in training? Competition?

How did this individually impact your performance?

How did this impact the performance of your team? (If applicable)

When your mind wandering experience ends, what's the first thing you try to focus on?

Once you are refocused after intentionally mind wandering, has this impacted how you now view the current situation?

Would you say your mind wanders intentionally outside of training and/or competition?

Take me through a situation where your mind has wandered intentionally outside of training and/or competition?

Has this impacted you the next time you train or compete? If so how?

Dispositional Factors

Vitality

Definition: The state of being strong, energetic and active. Impacts performance by increases motivation, going the extra mile, doing everything it takes to win

Does mind wandering affect the energy levels you experience in training/competition? If so how?

Is this effect intentional or unintentional mind wandering?

Does having high or low energy levels affect the number of times your mind wanders?

Is this intentional or unintentional mind wandering ?

Self-Efficacy

Definition: Self-efficacy is an individual's belief in their ability to successfully perform skills for the desired outcome.

Does mind wandering affect the levels of self-efficacy you experience in training/competition? If so how?

Is this effect intentional or unintentional mind wandering?

Do you think you mind wander more when you have high/low confidence?

Is this intentional or unintentional?

Positive and Negative affect

Definition: the experience of feelings, emotions and mood in reaction or anticipation to your performance

What emotions do you typically experience before training/competition?

What emotions do you typically experience during training/competition?

How do you think the emotions you experience before and during performance affect the mind wandering you experience?

Is this intentional or unintentional mind wandering?

Do you think you mind wander more when you experience more negative or positive emotions?

Is this intentional or unintentional?

When you experience negative emotions during performance, do you attempt to focus on those feelings or try to distract yourself from those feelings?

Performance self-concept

Definition: individuals perceptive of their performance and how they evaluate their performance

How do you think your perception of your performance (positive or negative) affects the mind wandering you experience?

Is this intentional or unintentional?

When doing another task after your performance (e.g., walking home, eating etc..) does your mind wander to events of your performance?

Is this intentional or unintentional mind wandering?

How do you think this impacts your subsequent performance?

Conclusion Questions

Are there any other mind wandering experiences you would like to bring up?

What areas do you feel we could look into to better understand this topic?

Appendix 6 - Mind wandering Questionnaire (Carriere et al., 2013)

The questionnaire is divided into deliberate mind wandering and spontaneous mind wandering. Thinking about yourself and how you normally feel, to what extent do you generally feel:

Questions

Deliberate

1. I allow my thoughts to wander on purpose

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

2. I enjoy mind wandering

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

3. I find mind wandering is a good way to cope with boredom

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

4. I allow myself to get absorbed in pleasant fantasy

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

Spontaneous

1. I find my thoughts wandering spontaneously

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

2. When I mind wander my thoughts tend to be pulled from topic to topic

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

3. It feels like I don't have control over when my mind wanders

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

4. I mind wander even when I'm supposed to be doing something else

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Not at all true Very True

Appendix 7 - Category to define elite and amateur (Swann et al., 2015)

Variable/score	1	2	3	4	
A. Athlete's highest standard of performance	Regional level; university level; semi-professional; 4th tier leagues or tours	Involved in talent development; 3rd tier professional leagues or tours	National level; selected to represent nation; 2nd tier professional leagues or tours	International level; top tier professional leagues or tours	Within-sport comparison
B. Success at the athlete's highest level	Success at regional, university, semi-professional, or 3rd/4th tier	National titles or success at 2nd/3rd tier	Infrequent success at international level or top tier	Sustained success in major international globally recognised competition	Within-sport comparison
C. Experience at the athlete's highest level	<2 yrs	2-5 yrs	5-8 yrs	8+	
D. Competitiveness of sport in athlete's country	Sport ranks outside top 10 in country; small sporting nation	Sport ranks 5-10 in country; small medium sporting nation	Sport ranks top 5 in country; medium large sporting nation	National sport; large sporting nation	Between-sports comparison
E. Global competitiveness of sport	Not Olympic sport; World championships limited to few countries; limited national TV audience	Occasional Olympic sport; World championships limited to a few countries limited international TV audience	Recent Olympic sport regular international competition; semiglobal TV audience	Regular Olympic sport with frequent major international competition; global TV audience	Between-sports comparison