The Use of Social Networking Sites in Adolescents and Young Adults: Exploring the Possible Implications in Youth Mental Health.

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Abstract

Background: Much research has investigated the possible positive or negative impact of online socialising, with often contradictory findings. Theories suggest that individuals with poor social functioning and existing psychopathology may be both at increased risk of negative internet use, while potentially also able to derive greater benefits through compensatory opportunities. However, there is a dearth of research investigating this topic in clinical populations.

Aims: This portfolio sought to synthesise the existing findings and address the significant gap in the literature regarding clinical youth populations.

Methods: A systematic review synthesised the findings of 15 quantitative studies, regarding the relationship between social anxiety and the use of social networking sites in young people. A cross-sectional study provided a novel investigation of online socialising in young people accessing mental health services, compared with two age-matched control samples.

Results: The systematic review demonstrated a consistent association between social anxiety and problematic use of social networking sites. It identified various ways in which online interactions may be perceived as more comfortable for socially anxious individuals; however, there was limited evidence for compensatory benefits. The empirical results again demonstrated limited evidence for compensatory benefits. The clinical sample reported similar value from their online and offline interactions; however, levels of both online and offline social connectedness were significantly lower than controls. Levels of problematic internet use were similar across the samples, although certain subscales were higher in the clinical sample.

Conclusions: This portfolio highlights the complexity of understanding the possible impact of online socialising. It is argued that any attempt to simply label online socialising as ‘good’ or ‘bad’ should be abandoned, and there should be a focus on understanding the underlying processes and mechanisms that may predict positive versus detrimental use. These results reflect early explorative findings, therefore, replication and extension using clinical populations will be important.

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Chapter One – Introduction

This introduction provides a brief outline of the topics of online socialising and problematic internet use, in addition to the relevance to youth populations, with key terms and definitions provided. It aims to provide context and a rationale for the work drawn together in the portfolio.

1.1 Online Socialising

Current statistics suggest that there were almost 3.2 billion worldwide users of social networking sites in January 2018, representing a global increase of 13% since January 2017 (Chaffey, 2018). Clearly, online socialising is a vastly important and increasingly popular worldwide trend. However, precise definitions continue to vary, and the terms social media and social networking sites are often used interchangeably. The term social media tends to be used as a ‘catch-all,’ but it should be clarified that this portfolio relates specifically to the use of social networking sites (e.g. Facebook, Instagram, Twitter) and instant messaging platforms (e.g. Whatsapp, Facebook Messenger, Snapchat). While social networking sites (SNS) and instant messaging applications would be considered social media platforms, social media also includes broader applications like YouTube and Pinterest, which will not be considered in this portfolio (Carr & Hayes, 2015).

The Ellison and Boyd (2013) definition of SNS is used for the purpose of this research. This defines SNS as a web-based communication platform which: (a) allows individuals to present a social network and to view the social networks of others; (b) where users create uniquely identifiable profiles; (c) with content supplied by the user and by other users; (d) and where users can consume, produce and interact with the content provided by their connections on the site.

1.2 Problematic Internet Use (PIU)

Various terms have been used to conceptualise pathological, addictive or problematic use of the internet, and each with varying definitions. Problematic internet use (PIU) will be discussed within this portfolio according to the definition outlined by Shapira et al. (2003), which describes maladaptive preoccupation with internet use, resulting in significant distress or impairment. Symptoms can include obsessive thoughts about the internet and anticipating future use, inability to cease use, and the belief that the internet is the only place that one can feel good about themselves (Davis, 2001).

Davis (2001) developed a cognitive-behavioural model of problematic internet use, which has since been built on by Caplan (2003; 2007). Davis (2001) proposed that existing psychopathology (e.g. depression, social anxiety) serves as a necessary vulnerability for PIU, and social isolation or a lack of social support act as further key contributory factors. However, Davis (2001) proposed that the most central factor is the presence of maladaptive cognitions. He describes the maladaptive cognitions as either related to self (e.g. “I am only good on the internet;” “I am a failure when I’m offline”) or about the world (e.g. “nobody loves me offline;” “the internet is the only place that I’m respected”). Davis (2001) also suggested that further difficulties may arise when individuals begin isolating themselves from friends and family in favour of spending time online, thus maintaining and intensifying the degree of social isolation.

In line with this, Caplan (2003) updated Davis’ model to emphasise the role of a preference for online interactions. Like Davis (2001), he suggested the critical vulnerability of those with psychosocial problems and those who perceive themselves to have low social competence (e.g. depression, social anxiety; Caplan, 2007). He described how these individuals may be especially vulnerable to developing a preference for online interactions, and how this preference may lead to excessive and compulsive internet use, thus intensifying their psychosocial problems (Caplan, 2003). Reduced non-verbal cues, greater anonymity and increased control over self-presentation may all contribute to feelings of perceived safety, greater confidence and competence in online interactions (Weidman et al., 2016; Valkenburg & Peter, 2014). Caplan (2003) suggests that it is this preference for online interactions which sets the stage for PIU and worsens the psychosocial problems.

1.3 Adolescents and Young Adults

The adolescent and young adult population represent an age-group of great importance when considering the use of SNS. For 16 to 24-year-olds in the UK, the use of SNS rose to 96% in 2017, higher than that for any other age group (Office for National Statistics, 2017). With this, there has been a profound impact on young peoples′ patterns of social interaction and engagement (Selfhout, Branje, Delsing, Bogt & Meeus, 2009). In fact, with popular forms of SNS launching from around 2004, the current generation of adolescents are the first to have ‘grown up′ with this form of socialising, making it a distinctly salient phenomenon (Best, Manktelow & Taylor, 2014). While Facebook represents the SNS site with the most daily active users (We Are Social, 2018), younger populations are increasingly likely to choose other social networking platforms, such as Snapchat and Instagram (Smith & Anderson, 2018).

However, adolescents and young adults are a population of key interest for numerous reasons, beyond just their rate of engagement with online socialising. Adolescence is a time of developmental sensitivity, when peer relationships are thought to be of marked salience, influencing development in key areas, such as identity, social skills and psychosocial wellbeing (McGorry, Purcell, Hickie & Form, 2007; Davis, 2012; Allen, Ryan, McInerney & Waters, 2014). The quality of adolescent friendships is said to be a powerful predictor of wellbeing (Valkenburg & Peter, 2009) and healthy cognitive, emotional and social development (Valkenburg & Peter, 2007); while social decline in adolescence may be a key indicator of poor long-term outcomes and social disability across mental health disorders (Fowler et al., 2010). Consequently, approaches to adolescent health began to emphasise the importance of peer relationships and social development as potential protective factors (Viner et al., 2012). The area of socialising is a key aspect of understanding the development and wellbeing of adolescents and young adults, and the internet is thought to be a highly important aspect of their everyday socialising (Selfhout et al., 2009).

Adolescence is described as a fluid concept, with definitions varying according to social and cultural factors (Patel, Flisher, Hetrick & McGorry, 2007). For the purpose of this research, adolescents and young adults will largely be referred to as young people and will refer to the broad age range of 12 to 25 years (McGorry, 2007).

1.4 Aims of the Portfolio

Despite the growing popularity of online socialising in young people, there remain many unanswered questions regarding the potential positive and negative implications of SNS use. While much research has been generated in this area, there have been many inconsistent findings and it seems important for up-to-date systematic reviews that can synthesise the current literature. Furthermore, there is a great dearth of research looking specifically at the young people who may be most vulnerable, namely those accessing mental health services, who may be most at risk of social decline, problematic internet use and poor long-term outcomes. As such, this portfolio reports a systematic review, which synthesises the current literature in relation to social anxiety and the use of SNS in young people. In addition, an empirical research study is reported, which explores the nature of online socialising in a clinical youth sample, alongside comparisons with two age-matched control samples. Subsequent chapters are dedicated to the description of further methodology and statistical analyses. Theoretical and clinical implications will finally be discussed, in addition to highlighting future directions for research.

Chapter Two – Systematic Review

A Systematic Review Exploring the Relationship Between Social Anxiety and Social Networking Sites in Adolescents and Young Adults.

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Highlights

- Social anxiety is associated with problematic use of social networking sites
- Online interactions may feel ‘safer’ but may have limited positive associations
- Results are limited by cross-sectional designs and self-report methodology
- Wider sampling strategies are needed, and should include social anxiety populations
- Focus should be directed towards experimental designs and technology-based methods

Abstract

Introduction: With the growing popularity of social networking sites (SNS) in young people, there has been much interest in the potential positive and negative implications for users′ wellbeing. Social anxiety has been one such area of understandable interest, however, the literature appears to be lacking a review of the existing findings.

Method: This systematic review aims to summarise and evaluate the findings from 15 peer-reviewed studies, regarding the relationship between social anxiety and the use of SNS in young people.

Results: Evidence supporting a relationship between social anxiety and problematic use of SNS is consistent within the included studies, whereas time spent online appears largely unrelated to social anxiety. The findings demonstrate various ways in which online interactions may be perceived as more comfortable for socially anxious individuals, but there was limited evidence for positive associations with social functioning and wellbeing.

Conclusions: The review highlights the multidimensional nature of the relationship between social anxiety and SNS use and future research should continue attempting to identify factors which may help to explain the complexity of this relationship. The current evidence is largely based on cross-sectional and self-report designs with undergraduate samples. Therefore, future research should attempt to improve the quality of the evidence base, using wider sampling strategies, increased reliance on objective measures, and studies of experimental design.

Keywords: Social anxiety, social networking sites, social media, adolescents, systematic review.

2.1 Introduction

Young people are reported to be the population with the highest engagement in social networking sites (Office for National Statistics, 2017). This ever-increasing engagement has introduced the challenge of understanding the possible interplay with adolescents' wellbeing and mental health, and social anxiety has been one such area of understandable interest. Social anxiety is defined as a persistent fear of social or performance situations, in which the person feels exposed to possible scrutiny by others, and which causes marked distress, avoidance and/or functional impairment (American Psychiatric Association, 2013). The current version of the Diagnostic and Statistical Manual (DSM) refers to Social Anxiety Disorder (SAD), which replaced the diagnosis of Social Phobia from the third edition of the DSM (American Psychiatric Association, 1980). While the term social phobia is still occasionally used in the literature, this is argued to simply reflect different terminology, rather than a meaningful distinction in the concept of social anxiety. A brief review of the existing literature pertinent to social anxiety and the use of social networking sites in young people will be discussed.

2.1.1 Current literature

Regarding internet use in general, the possible positive and negative implications for psychological wellbeing have long been debated. This largely began with the 'Internet Paradox,' where Kraut et al. (1998) found that, despite being a social technology, the internet actually reduced social involvement and wellbeing, and increased loneliness and depression. However, subsequent to this there were many inconsistent findings, with other studies reporting benefits in social involvement and psychological wellbeing (Kraut et al., 2002; Shaw & Gant, 2002). Findings relating more specifically to social networking sites (SNS) have been equally inconsistent, and at times, contradictory, termed by Hu, Kim, Siwek and Wilder (2017) as the ‘Facebook Paradox.’

The use of SNS has largely shown positive correlations with social connectedness and a sense of belonging (Allen, Ryan, McInerney & Waters, 2014; Davis, 2012; Grieve, Indian, Witteveen, Tolan & Marrington, 2013; Seabrook, Kern & Rickard, 2016). It has also been linked with reduced depression (Morgan & Cotton, 2003), and has shown positive outcomes in providing a sense of both relatedness and autonomy (Wong, Yuen and On Li, 2014). However, paradoxically, Facebook has also been found to have a positive association with both relatedness-need satisfaction and relatedness-need dissatisfaction (Sheldon, Abad & Hinsch, 2011). Furthermore, negative links have been found with self-esteem (Kalpidou, Costin & Morris, 2011), and positive associations with relationship dissatisfaction (Elphinston and Noller, 2011), negative social comparison or rumination (Feinstein et al., 2016). What has become apparent, however, is the complexity of the relationship between the use of SNS and outcomes related to wellbeing. Attempts have been made to unpick this complex interaction and the various risk and protective factors that may be involved, rather than simply trying to define the use of SNS as ‘positive’ or ‘negative’ (Frost & Rickwood, 2017).

2.1.1.1 Problematic SNS use and social anxiety

One area that has generated much interest is the concept of internet addiction, or Problematic Internet Use (PIU), viewed as a maladaptive preoccupation with internet use, resulting in significant distress or impairment (Shapira et al., 2003). Caplan (2010) suggested that PIU is often associated with specifically online socialising, and more recently, this concept of problematic use has been applied to the use of SNS, referring to problematic use of social media, or more specifically, Problematic Facebook Use or Facebook Addiction.

In his cognitive behavioural model of PIU, Davis (2001) suggested that underlying psychopathology is a necessary vulnerability, predisposing individuals to maladaptive internet-related cognitions and behaviours. A lack of social support or social isolation were proposed to both further contribute to PIU development, in addition to being exacerbated by it (Davis, 2001). As such, social anxiety appears of marked relevance, with potentially both the underlying psychopathology and social isolation for developing PIU. Several studies have found a positive association between social anxiety and PIU (Caplan, 2007; Lee & Stapinski, 2012), or problematic SNS use more specifically (Lee-Won, Herzog & Park, 2015). Results from a meta-analysis supported this relationship, with a small but significant effect size (Prizant-Passal, Shechner & Aderka, 2016).

2.1.1.2 Preference for online communication and social anxiety

Within PIU, a key cognitive component was proposed, termed a preference for online social interaction (Caplan, 2010). This preference is thought to occur when online socialising is perceived as less threatening, and where individuals may feel more socially efficacious, confident and comfortable than in face-to-face interactions (Caplan, 2010). SNS users have greater control over their self-presentation, in an environment where there are reduced anxiety-provoking stimuli (e.g. visual cues, the need to make eye-contact or respond immediately), therefore this social domain may be understandably perceived as less threatening. This concept is especially salient for individuals with higher levels of social anxiety, given the significant fears of negative evaluation by others.

As such, people with low social skills or social anxiety have shown increased preferences for online interactions (Caplan 2003; Caplan, 2007; Kim, LaRose & Peng, 2009). In support of this, a recent meta-analysis demonstrated a robust positive correlation between social anxiety and feelings of comfort in online interactions (Prizant-Passal et al., 2016). However, preferences for online interactions have been found to predict more negative outcomes and to increase the risk of PIU, by contributing to increasing reliance on and excessive and compulsive use of SNS (Caplan, 2010). This perceived safety may also be particularly appealing for adolescents, an age associated with increased shyness and self-consciousness (Valkenburg & Peter, 2009).

2.1.1.3 Social compensation hypothesis

The social compensation hypothesis proposes that socially anxious individuals or those with poor offline friendships may especially turn to online socialising (Laghi et al., 2013). It was suggested that those with poor offline social functioning may particularly benefit from online socialising, as it allows opportunities for exploring identity, developing social skills and interacting with new peers, which they may otherwise be missing out on (Selfhout, Branje, Delsing, Bogt & Meeus, 2009). In line with the perceived safety of communicating online outlined above, the internet may serve as an attractive compensatory method of seeking social interactions for individuals with social anxiety symptoms.

It has been proposed that this compensatory use may lead to increased feelings of confidence and self-efficacy for socially anxious individuals, that may translate to and improve offline interactions (Campbell, Cumming & Hughes, 2006). Furthermore, it has been suggested that the reduced social cues in the online environment allows socially anxious individuals to feel more comfortable to self-disclose, subsequently allowing them to develop stronger relationships and enhance their wellbeing (Valkenburg & Peter, 2009). However, there have also been questions raised as to the benefits of this compensatory use, with some suggesting that it may reinforce further avoidance of face-to-face interactions, exacerbating social anxiety and isolation (Erwin, Turk, Heimberg, Fresco & Hantula, 2004), and perpetuating low self-esteem and depression (Lee and Stapinski, 2012).

Alternatively, the social enhancement (or the ‘rich-get-richer’) hypothesis, suggests that it is the more extroverted and socially skilled individuals who will benefit more greatly from online socialising. For these individuals, it is suggested that SNS both provides the ideal opportunity for maintaining existing friendships, and with their strong social skills, they are likely to also find it easier to connect with new people and expand their social network (Selfhout et al., 2009).

2.1.1.4 Patterns of SNS use and social anxiety

Recent research has considered the ways in which socially anxious individuals might interact with SNS, and how these may be associated with different benefits or consequences. Burke, Marlow and Lento (2010) discussed the difference between passive interaction with SNS (i.e. simply consuming the available content), versus directly communicating and interacting with others on SNS. The results demonstrated benefits from direct communication, with decreased loneliness and stronger ties with Facebook friends, whereas passive consumption demonstrated the opposite result (Burke et al., 2010). Social anxiety has shown associations with fears of using the more interactive features of SNS (McCord, Rodebaugh & Levinson, 2014), and a tendency to spend more time engaging in passive rather than interactive use (Erwin et al., 2004), appearing to support the rich-get-richer hypothesis. Similarly, Rauch, Strobel, Bella, Odachowski and Bloom (2013) outline the increasing prevalence of ‘lurking’ behaviour online, where individuals may spend time viewing others’ profiles without commenting, posting or interacting. These passive forms of SNS use are unlikely to provide the benefits proposed by the social compensation hypothesis, instead potentially serving as avoidance and subsequent maintenance of anxiety symptoms (Rauch et al., 2013; Shaw, Timpano, Tran & Joormann, 2015).

2.1.2 The present study

While several recent reviews have been conducted in this broad topic area (Best, Manktelow & Taylor, 2014; Frost & Rickwood, 2017; Ozkan, 2016; Moreno, Jelenchick, Cox, Young, Christakis, 2011; Prizant-Passal et al., 2016; Seabrook. Kern & Rickard, 2016), very few have looked specifically at social anxiety, and none were identified which assess the relationship between social anxiety and SNS. Prizant-Passal et al. (2016) conducted a recent meta-analysis of the relationship between social anxiety and internet use across the age range. However, having only found one study assessing social anxiety and specifically SNS, they were unable to examine the use of SNS and excluded it from the meta-analysis. The literature review above highlights the relevance of looking at social anxiety and SNS use specifically, and in the meantime, numerous studies have been published in this area, increasing the need for a review to synthesise the mixed findings. Furthermore, Prizant-Passal et al. (2016) point to the need to focus on specific areas of internet use, rather than internet use as a general construct, as different internet features may be differentially related to social anxiety. While much of this research has related specifically to Facebook, it seems important to incorporate the wider views of SNS in general, particularly as other forms of SNS are thought to be of increasing importance to younger populations (Smith & Anderson, 2018).

2.1.3 Objective

The current study aimed to systematically review the existing research in relation to the use of SNS and social anxiety in adolescents and young adults, in order to synthesise key findings and shed light on inconsistencies, while highlighting directions for future research. The following primary research question was posed:

- What is the relationship between social anxiety and SNS use in young people?

2.2 Materials and Methods

This review was conducted according to the preferred reporting items for systematic reviews and meta-analyses (PRISMA; Moher, Liberati, Tetzlaff & Altman, 2009).

2.2.1 Search Strategy

Systematic searches were conducted involving key words, selected to comprehensively capture the various ways in which the relationship between social anxiety and the use of SNS has been investigated in young people. Searches were performed on 20th June 2018 across four bibliographic databases: PsycINFO, MEDLINE (EBSCO), Cumulative Index to Nursing and Allied Health (CINAHL) and Scopus. Search alerts were set up to capture further relevant research studies after the search date, reviewed up to 20th November 2018. The search strategy was designed across three main concepts: social networking sites, social anxiety, and young people (Figure 1). Identical search terms were utilised across all databases, however, the searches varied in the application of Medical Subject Headings (MeSH) terms, depending on the availability of this function for each database. Where this function was unavailable, equivalent options were utilised (e.g. CINAHL Headings).

Abstract: (“Social Network*” OR “Social Media” OR “Online Social*” OR “Facebook” OR “Instagram” OR “Twitter” OR “MySpace”). MeSH terms: “Social Networking” OR “Social Media”

AND

Abstract: (“Social* Anx*” OR “Social* Phob*” OR “Anxiety”). MeSH terms: “Anxiety Disorder” OR “Phobia, Social” OR “Anxiety”

AND

Full Text: (“Adolescen*” OR “Young People*” OR “Child*” OR “Youth*” OR “Teen*” OR “Student*” OR “Young Adult*” OR “Undergraduate*”). MeSH terms: “Young Adult” OR “Students” OR “Adolescent”

Fig. 1. Summary of search strategy

2.2.2 Inclusion and Exclusion Criteria

All included papers were required to contribute in some way to the understanding of the relationship between social anxiety and the use of SNS in adolescents and young adults. Studies were only included if they referred specifically to SNS and included a measure of the use of SNS or experiences related to this. In order to ensure consistency, the Ellison and Boyd (2013) definition of SNS was adhered to throughout the screening process. As such, studies that referred to internet use in general, internet gaming, chat rooms, online support forums or computer mediated communication (CMC) were excluded, as were studies relating to SNS as an intervention or recruitment method. Studies were also required to have a specific focus on social anxiety, including a validated measure; therefore, studies which measured general anxiety or shyness were excluded.

Studies were excluded if they did not fit within an age range of 12 to 25 years, defined by Patel, Flisher, Hetrick and McGorry (2007) as signifying ‘young people.’ This age range is crucial as it is the period in which most mental health difficulties begin, is a time of great developmental sensitivity, and represents the population with the highest SNS use (Patel et al., 2007; McGorry, Purcell, Hicki & Jorm, 2007; Office for National Statistics, 2017). Where there was no age range reported, studies with student samples were included if the mean age was below 25; therefore, some older students may have been included. In order to capture research on more current forms of SNS, studies were also only included in the final sample if they were published after 2005. Grey literature and non-English language papers were excluded due to time and cost restraints. Duplicate studies were removed, as were non-peer-reviewed papers, theoretical material, systematic reviews, meta-analyses, descriptive case study articles, qualitative studies and policy documents.

According to these criteria, titles and abstracts (n = 1559) were reviewed and screened by the primary researcher and the reasons for excluding at this stage can be seen in Figure 2. The resulting 36 full-text articles were assessed by two members of the research team, resulting in a final sample of 15 studies. Using the Kappa statistic, inter-rater reliability between reviewers was calculated at 0.73, denoting substantial agreement. Where there were initial discrepancies, these were resolved through discussion of inclusion and exclusion criteria and a consensus decision was reached.

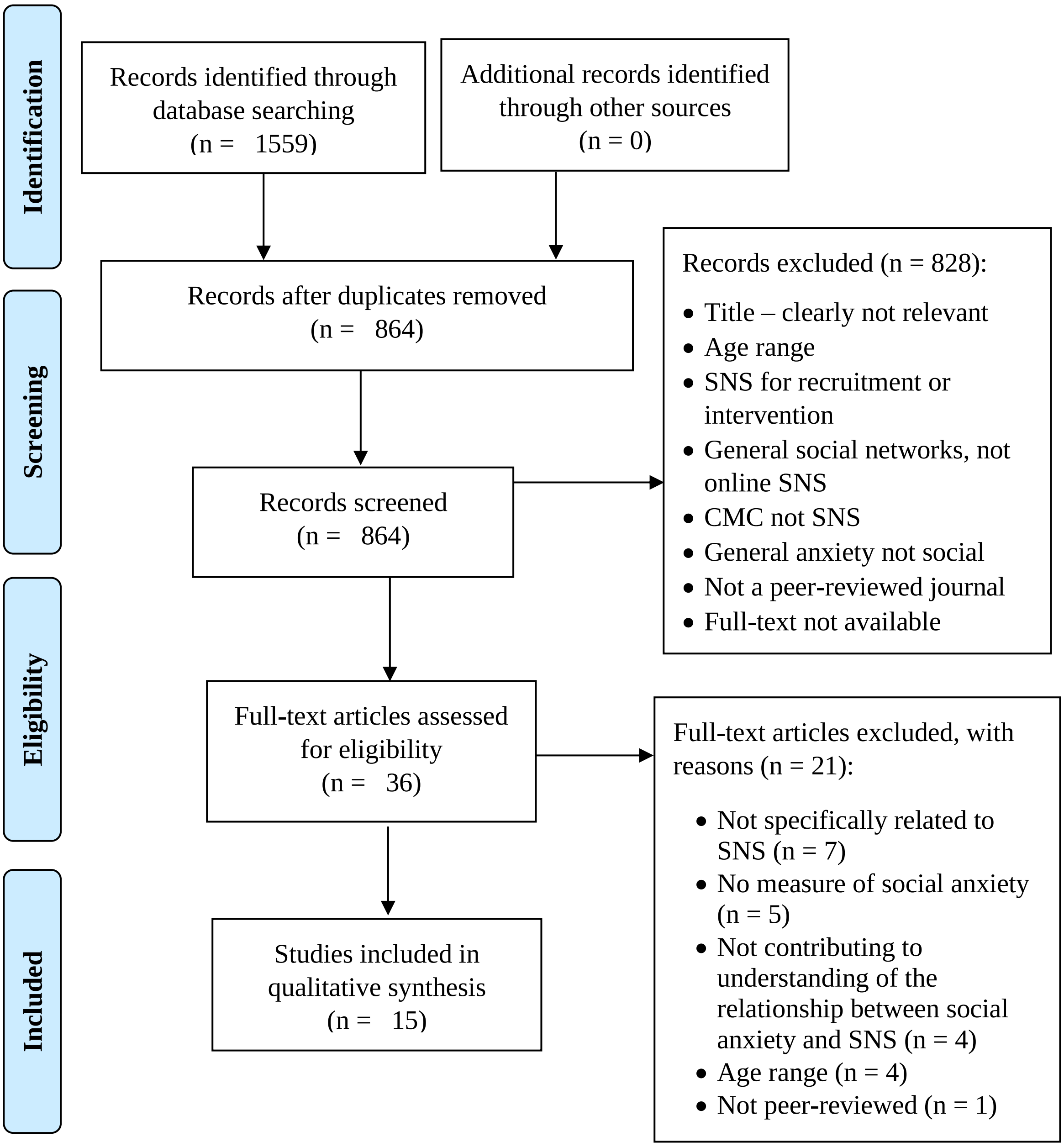

Fig. 2. PRISMA flow diagram (Moher et al., 2009)

2.2.3 Quality Appraisal

The QualSyst tool (Kmet, Lee & Cook, 2004) was utilised for assessing the quality of the included studies, based on the tool’s ability to assess the quality of studies of heterogeneous designs. While most included studies were cross-sectional and correlational in nature, there is some heterogeneity within the sample, and a quality assessment tool was required which could account for this variation. The quantitative version of the QualSyst tool includes 14 items, assessing key areas, such as study design, sampling strategy, sample size, and means of assessment. Each item has possible ratings of 0 (“no”), 1 (“partial”), 2 (“yes”), or “n/a”, with item-specific guidance to inform the rater’s decision. Summary scores are calculated based on the total score obtained across the relevant items, divided by the total possible score, with a maximum summary score of 1.

Two members of the research team conducted quality ratings on four (26.67%) of the included studies. Using the Kappa statistic, inter-rater reliability of all individual item quality ratings was moderate, at 0.59, and the overall summary scores showed high concordance. Where there were initial discrepancies, these were resolved through discussion of the areas of contention and a consensus decision was reached. The remaining 11 studies were quality assessed by one member of the research team.

2.2.4 Data Extraction and Synthesis

An overview of the included studies, with their full references and extracted key features, can be seen in Table 1.

Table 1

Key Study Characteristics

Authors	**Year**	**Country**	**Sample N (% Female)**	**Mean age (range)**	**Sample population**	**Study Design**	**Measure of Social Anxiety (α)**	**Social Anxiety Mean (SD)**	**Key Variables of SNS**	**Quality Rating**
Atroszko et al.	2018	Poland	1157 (51.9%)	20.33	Students	Cross-sectional, correlational	LSAS-SR – Polish shortened version (0.83)	18.29 (5.43)	Facebook addiction	0.86
Berryman, Ferguson & Negy.	2017	USA	467 (71.7%)	19.66	Students	Cross-sectional, correlational	LSAS-SR (0.90)	Not reported	SNS usage; Vaguebooking[a]; Social media importance.	0.64
Chabrol, Laconi, Delfour & Moreau.	2017	France	456 (76.0%)	20.50 (13-25)	Adolescent/ young adult Facebook users	Cross-sectional, correlational	SASA (Subscales 0.70 - 0.89)	44.50 (16.10)	Problematic Facebook use	0.77
Davidson & Farquhar	2014	USA	336 (70.0%)	(20-25)	Students	Cross-sectional, correlational	LSAS-SR (0.90)	Not reported	Facebook intensity; Facebook anxiety; Facebook role conflict; number of unique Facebook groups.	0.64
Fernandez, Levinson & Rodebaugh.	2012	USA	62 (63.0%)	19.00	Students	Cross-sectional, correlational	SIAS - 17 item (0.92)	15.44 (10.59)	Facebook usage; coding of Facebook profiles.	0.73

Authors	**Year**	**Country**	**Sample N (% Female)**	**Mean age (range)**	**Sample population**	**Study Design**	**Measure of Social Anxiety (α)**	**Social Anxiety Mean (SD)**	**Measure of SNS**	**Quality Rating**
Honnekeri, Goel, Umate, Shah & De Sousa	2017	India	316 (65.0%)	19.90	Students	Cross-sectional, correlational	SIAS - 20 item; SPS (not reported)	Not reported Not reported	Facebook usage; satisfaction with Facebook interactions.	0.59
Hu et al.	2017	USA	342 (71.0%)	19.80	Students	Cross-sectional, correlational	SIAS - 19 item (0.93)	Not reported	Facebook intensity; Facebook social relationship satisfaction.	0.86
Lee-Won et al.	2015	USA	243 (71.6%)	19.69, (18-24)	Students	Cross-sectional, correlational	Social Anxiety Scale (0.79)	Individual item mean: 2.84 (0.84)	Problematic Facebook Use; time spent daily on Facebook.	0.91
Lin, Li & Qu.	2017	China	95 (70.5%)	Not reported	Students	Experimental	LSAS-SR – Chinese adaptation (0.94)	Low SA: 35.48 (9.86) High SA: 68.62 (15.04)	The impact of using SNS in response to simulated social exclusion.	0.82
Rauch et al.	2013	USA	26 (100%)	(18-20)	Students	Experimental	Interaction Anxiousness Scale (not reported)	40.30 (8.62)	The impact of prior SNS exposure on anxiety at subsequent face-to-face contact.	0.68
Shaw et al.	2015	USA	75 (55.2%)	19.20, (17-24)	Students	Cross-sectional, correlational	SPS (0.91)	17.33 (12.37)	Facebook usage.	0.95

Authors	Year	Country	Sample N (% Female)	Mean age (range)	Sample population	Study Design	Measure of Social Anxiety (α)	Social Anxiety Mean (SD)	Measure of SNS	Quality Rating
Shin, Lee, Chyung, Kim & Jung.	2016	South Korea	513 (73.9%)	Not reported	Students	Cross-sectional, correlational	SIAS – Korean adaptation. (Subscales 0.85 - 0.92)	Not reported	Patterns of SNS use; interpersonal motives for SNS use; SNS addiction tendency; POSI.	0.86
Szwedo, Mikami & Allen.	2011	USA	138 (58.0%)	Time 1: 13.23 Time 2: 20.53	School students	Longitudinal, correlational	SASA (0.93); Social withdrawal scale from the Pupil Inventory (0.73)	Males: 34.12 (12.90) Females: 32.36 (12.70) Not reported	Peer relationship quality online; POSI; online friendship formation.	0.91
Weidman et al.	2012	USA	Study 1: 108 (74.1%)	Study 1: 18.99	Students	Cross-sectional, correlational	SIAS - 17 item (0.88)	Individual item mean: 2.38 (0.62)	Online self-disclosure; online disinhibition; feelings of reduced online social pressure	0.77
			Study 2: 64 (63.0%)	Study 2: 19.00	Students	Cross-sectional, correlational	SIAS - 17 item (0.92); SPS (0.89).	15.44 (10.59) 21.36 (9.19)	Facebook usage.	
Yildiz Durak.	2018	Turkey	451 (47.5%)	(13-17)	School students	Cross-sectional, correlational	SASA – Turkish adaptation (Subscales from 0.88 - 0.92).	32.58 (10.25)	Social Media Disorder; Problematic Internet Use.	0.73

Note. LSAS-SR = Liebowitz Social Anxiety Scale – Self-Report; SASA = Social Anxiety Scale for Adolescents; SIAS = Social Interaction Anxiety Scale; SPS = Social Phobia Scale; POSI = preference for online interactions. ^{a} ‘vaguebooking’ = posting on social media with little actual information, to solicit attention and concern from others.

2.3. Results

2.3.1 Methodological profile and description of studies

The vast majority of included studies were cross-sectional survey designs (80.0%), with only one longitudinal study (Szwedo et al., 2011), and two experimental studies (Lin et al. 2017; Rauch et al., 2013). Sample sizes ranged from 26 (Rauch et al., 2013) to 1157 (Atroszko et al., 2018), with an average sample of 323 participants. Thirteen of the 15 studies had a predominantly female sample, while one of the remaining studies had an entirely female sample (Rauch et al., 2013). Most studies were conducted in North America (60%).

The majority of studies utilised an undergraduate student sample (80.0%), with a convenience sampling strategy. For most of these studies, the focus of the research was not specific to this age group or population, instead referring to the general population of SNS users. As a result, a high proportion of studies are included in this review largely by default of the convenience of recruiting undergraduates, rather than having a theoretical focus on students or young people. Sixty percent of the included studies looked specifically at Facebook use, while the remaining studies looked more broadly at the use of SNS in general.

2.3.2 Overview of quality

The quality summary scores ranged from 0.59 to 0.95 (M = 0.78), with lower scores tending to reflect inadequate reporting of details and a lack of generalisability of results to wider populations, given the significant bias towards convenience-based undergraduate samples. Quality was also compromised by a reliance on cross-sectional and self-report survey designs, often with adapted and modified versions of measures. While the majority of studies acknowledged the limitations in generalising findings beyond their student sample and the limitations posed by cross-sectional studies, many studies did not report the issue of statistical power within their results. Furthermore, several studies failed to indicate whether multiple testing problems had been addressed and a small number of studies made no reference to the issue of confounding variables.

2.3.3 Measures of social anxiety

All studies relied on self-report measures of social anxiety, with the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) representing the most commonly used measure (n = 5). The included studies varied in their use of either the original 19-item, the 20-item, or the more recent ‘straightforward’ 17-item version of the scale, which is reported to have improved validity with the removal of the reverse-scored items (Rodebaugh et al., 2011). Meanwhile, Shin et al. (2016) utilised a Korean adapted 19-item version of the scale.

Two studies employing the SIAS also used the Social Phobia Scale (SPS, Mattick & Clarke, 1998), developed to be used alongside the SIAS, to allow a comprehensive measure of both the scrutiny fears and interaction anxiety characterising social anxiety. Weidman et al. (2012) standardised and aggregated the SIAS and SPS scores for analysis, due to the high correlation between them. However, Honnekeri et al. (2017) explored the two measures as distinct constructs, with the SIAS reportedly measuring generalised social anxiety disorder (SAD) and the SPS reportedly measuring specific social phobia. They used clinical cut-off scores to split their sample into participants with and without SAD (SIAS scores of 34 or more indicating SAD), and those with and without specific social phobia (SPS scores of 24 or more indicating social phobia); although it is unclear whether participants could be in both the SAD and specific social phobia groups. However, the SIAS and SPS were not designed to make this distinction, rather they were developed to assess different features of social anxiety, with the SIAS capturing fears of social interactions and the SPS capturing fears of scrutiny (Mattick & Clarke, 1998). Furthermore, this distinction between social phobia and SAD is argued to reflect different terminology for the same underlying disorder.

Fernandez et al. (2012) classified 11.3% of their sample as socially anxious, using a cut-off of 28, recommended by Rodebaugh et al. (2011) for the ‘straightforward’ 17-item SIAS. Whereas, Honnekeri et al. (2017) reported 7.8% probable SAD, using a cut-off score of 34 on the 20-item SIAS. However, clearly it is difficult to make comparisons across different versions of the same tool, and with different recommended cut-offs. Using the SPS, Honnekeri et al. (2017) and Shaw et al. (2015) found similar prevalence rates of 23.1% and 25% respectively, both using a clinical cut-off of 24.

Other popular measures included the self-report version of the Liebowitz Social Anxiety Scale (LSAS-SR; Liebowitz, 1987; Baker, Heinrichs, Kim & Hoffman, 2002) and the Social Anxiety Scale for Adolescents (SASA; La Greca & Lopez, 1998). While research has suggested clinical cut-off scores of 30 and 50 respectively (Mennin et al., 2002; Rytwinksi et al., 2009; Greca, 1999), none of these studies reported social anxiety prevalence. Several studies reported adapting the scales, with Atrsozko et al. (2018) and Lin et al. (2017) utilising Polish- and Chinese-adapted versions of the LSAS-SR respectively, while Yildiz-Durak (2018) used a Turkish adaptation of the SASA (Aydin & Tekinsav-Sutcu, 2007). Less commonly used measures included the Social Withdrawal Scale from the Pupil Inventory (Pekarik, Prinz, Liebert, Weintraub & Neale, 1976), and the social anxiety subscale of Fenigstein et al.’s (1975) self-consciousness scale. However, the rationale to use these measures over the numerous more recent and more specific measures of social anxiety is unclear.

2.3.4 Overview of findings

Across the 15 studies, there were several common themes regarding the relationship between social anxiety and the use of SNS, including: frequency of SNS use; patterns and activities of SNS use; addictive or problematic use of SNS; and qualities of SNS interactions and relationships. These main areas will be discussed in reference to the research question, and the key findings can be seen in Table 2.

Table 2

Key Study Findings

Authors	**Year**	**Key Variables of SNS**	**Measures of SNS**	**Significant Association with SA (r)**	
Atroszko et al.	2018	Facebook addiction	Bergen Facebook Addiction Scale – Polish adaptation (Charzynska & Gozdz, 2014).	+ 0.19 (r) **, 0.16 (β) **	
Berryman et al.	2017	Vaguebooking;	Vaguebooking – 3-item measure;	-0.05 (β) NS	
		SNS usage;	How many hours per day;	-0.07 (β) NS	
		Social media importance.	Social Media Use Integration Scale (Jenkins-Guarnieri et al., 2013);	-0.02 (β) NS	
Chabrol et al.	2017	Problematic Facebook Use	Internet Addiction Test (Young, 1998) – adapted to measure Problematic Facebook Use.	+ (0.30) **	
Davidson & Farquhar	2014	Facebook intensity;	Facebook Intensity Scale (Ellison et al., 2007);	(0.06) NS	
		Facebook specific anxiety;	Adapted from LSAS-SR (Liebowitz, 1987).	+ (0.66) **	
Fernandez et al.	2012	Facebook usage;	How often do you use Facebook (0 'never' -10 'hourly or more');	(NR) NS	
		Coding of Facebook profiles.	The Facebook Profile Coding Scheme (Levinson et al., 2012):		
			• No. of FB friends;	- (0.45) **	
			• No. of status updates, posts by self and posts by others;	(NR) NS	
			• Amount of info provided 'about me';	+ (0.32) **	
			• Amount of info provided about interests;	+ (0.27) *	
			• "How socially anxious do you think the profile user is?"	+ (0.27) *	
Honnekeri et al.	2017		Facebook Usage Patterns – modified from Facebook Questionnaire (Ross et al., 2009)	<u>SPS</u>	<u>SIAS</u>
		Facebook usage;	• Time spent online;	+ (NR)*	(NR) NS
		Facebook interaction satisfaction.	• Satisfaction with FB interactions.	(NR) NS	(NR) NS

Authors	**Year**	**Key Variables of SNS**	**Measures of SNS**	**Significant Association with SA (r)**
Hu et al.	2017	Facebook intensity;	Facebook Intensity Scale (Ellison et al., 2007);	(0.01) NS
		Facebook Social Relationship Satisfaction	Social Relationship Satisfaction Scale (Hendrick, 1988) – adapted to measure Facebook interactions.	- (0.15) *
Lee-Won et al.	2015	Problematic Facebook Use;	Problematic Facebook Use – adapted from Koc and Gulyagci (2013);	+ 0.18 (r) **, 0.22 (β) **
		Facebook usage	Time spent daily on Facebook.	0.03 (r) NS
Lin et al.	2017	The impact of using SNS in response to simulated social exclusion.	Whether or not participants used SNS on their phone during the experiment - subsequent impact on physiological arousal and self-reported affect.	0.73 – 0.94 (d) * [a]
Rauch et al.	2013	The impact of prior SNS exposure on subsequent face-to-face contact.	Exposure to stimulus Facebook profile during experiment - subsequent impact on physiological arousal.	0.47 (β) * [b]
Shaw et al.	2015	Facebook usage	Facebook Activity Measure (FAME; Shaw et al., 2015)	
			• Time spent on FB	+ 0.33 (r) **
			• Passive FB use	+ 0.32 (r) **, 0.27 (β) *
			• Content production	0.23 (r) NS, 0.11 (β)
			• Interactive communication	0.21 (r) NS, 0.06 (β)
Shin et al.	2016	Patterns of SNS use;	Patterns of SNS use: e.g. duration of daily SNS use; frequency of daily access to SNS; frequency of posting on SNS; no. of SNS friends;	NR
		POSI;	POSI – modified version of Caplan (Shin & Lee, in press);	+ (0.39) **
		Interpersonal motives for SNS use;	Facebook Use Scale (Oh, 2010) – three subscales used;	+ (0.12) **
		SNS addiction tendency	SNS Addiction Tendency Scale (Seo & Jo, 2013).	+ (0.30) **

Authors	**Year**	**Key Variables of SNS**	**Measures of SNS**	**Significant Association with SA (*r*)**
Szwedo et al.	2011	Peer relationship quality online;	Observational coding of SNS:	
			• No. of friends posting supportive comments;	0.28 (β) **
			• Pictures of same age peers.	0.02 (β)
		Friendship formation online;	"Ever formed a close relationship with someone you met online?"	0.15 (β)
		Preference for Online Communication.	Preference for Online Communication – derived from Morahan-Martin & Schumacher (2003).	0.26 (β) *
Weidman et al.	2012	Internet usage questionnaire (Levinson et al., 2012);	Internet use to avoid face-to-face interactions;	(0.50) *p* NR
			Internet use as a positive substitution for face-to-face interactions;	(0.29) *p* NR
		Online self-disclosure;	Online Self-Disclosure scale from Schouten et al. (2007);	+ (0.28) **
		Online disinhibition;	Online Disinhibition scale from Schouten et al. (2007);	+ (0.42) **
		Feelings of online reduced social pressure	Scales taken from Schouten et al. (2007).	+ (0.43) **
Yildiz Durak	2018	Social Media Disorder;	Social Media Disorder Scale – adapted into Turkish (Savci, 2016);	+ (0.58) **
		Problematic Internet Use	PIUS-Adolescent (Ceyhan et al., 2007).	(0.02) NS

Note. POSI = preference for online interactions; NS = Not significant; NR = Not reported; + = significant positive correlation; - = significant negative correlation; *r* = Pearson's correlation; *d* = Cohen's *d*; β = standardised coefficient; * = p <.05 ** = p < .01;

[a] Social anxiety was associated with significantly greater recovery from social exclusion (in positive affect and meaningful existence), following the use of SNS;

[b] Social anxiety was associated with significantly greater arousal upon face-to-face contact, following prior Facebook exposure.

2.3.4.1 Is there a relationship between social anxiety and frequency of SNS use?

Of the included studies, eight provided a measure of the frequency of SNS use in relation to social anxiety. One of these studies did not report these results (Shin et al., 2016), five studies reported a non-significant correlation, and two studies found a significant association. All but one of these studies relied on simply asking participants to self-report their frequency of SNS use, either as part of a wider measure or as a single item. This reliance on self-report methodology increases the risk of bias, with the potential for recall inaccuracies and socially desirable responding (Paulhus, 1991). Importantly, Junco (2013) has previously found significant differences between self-reported time spent on Facebook, compared to that measured by computer monitoring software, thus raising questions about the validity of these reported findings.

Fernandez et al. (2012) was the only study which extracted additional objective information from participants' Facebook profiles, in relation to the frequency of using Facebook (e.g. posting updates and receiving posts from friends), thus increasing the validity of their assessment. However, it could be argued that their objective information actually reflects frequency of interactive Facebook use and content production, which does not reflect time spent more passively on Facebook. Regardless, they found no significant relationship between social anxiety with either the self-reported frequency of use, or the more objective measures of use, although they neglected to report the size of effect. Other studies that found no evidence of a significant relationship between frequency of SNS use and social anxiety include Berryman et al. (2017) and Lee-Won et al. (2015), both of whom controlled for the influence of various confounding variables in their studies. Davidson and Farquhar (2014) and Hu et al. (2017) also reported no significant relationship; however, it should be noted that both of these studies relate to the wider measure of intensity of use, not specifically the frequency. The reported correlation sizes in these non-significant studies were minimal, ranging from 0.01 to 0.06 (r).

Honnekeri et al. (2017) reported that socially phobic participants spent significantly more time on Facebook compared to those without social phobia; whereas time spent on Facebook did not differ significantly between those with or without SAD. However, the effect sizes were not reported. Furthermore, as mentioned previously, the distinction of SAD versus social phobia does not reflect the intended purpose of the SIAS and SPS measures (Mattick & Clarke, 1998), and Honnekeri et al. (2017) reported a large significant correlation between the SIAS and SPS scores.

Shaw et al. (2015) found a unique significant and moderate positive correlation between social anxiety and time spent on Facebook, which was not replicated for depression or general anxiety. While this stands out as a relatively rare finding, the quality of Shaw et al.’s (2015) paper was rated highly, with clear and consistent reporting throughout. However, the key limitations should be acknowledged, in terms of a cross-sectional and self-report design, with a student sample. Of note, the significant findings in relation to frequency of SNS use and social anxiety both relate to the use of the SPS measure, which could suggest specific features of social anxiety that may be more related to time spent on SNS (e.g. specific fears of scrutiny, rather than more generalised anxiety about social interactions).

In summary, findings largely demonstrated no evidence for a relationship between social anxiety and frequency of SNS use, with mostly small and non-significant correlations, however, there was some evidence of a relationship in relation to the SPS measure. These results should be cautiously interpreted in light of the study limitations, especially regarding the reliance on self-reporting of time spent on SNS, which is clearly subject to respondent bias and recall difficulties. Furthermore, all included studies utilised convenience sampling of student populations, therefore caution is advised in generalising these finding beyond this population. As the majority of these studies looked specifically at time spent on Facebook, it is also possible that differences would exist for other forms of SNS.

2.3.4.2 Is there a relationship between social anxiety and patterns or activities of SNS use?

There were various attempts to quantify and measure the ways in which participants used SNS. Most of these studies are again limited by relying on self-reporting of SNS use, however, some studies incorporated an observational and more objective element of measurement. Fernandez et al. (2012) and Szwedo et al. (2011) both conducted observational coding of participants' Facebook profiles, to extract objective information about their SNS use. Using the Facebook and Internet Usage Questionnaire (Levinson et al., 2012), Fernandez et al. (2012) found that social anxiety was associated with users providing significantly more profile information about themselves, with moderate correlation sizes, and this remained significant when controlling for depression. However, they found no significant correlation with the number of status updates and number of posts by self or by friends, suggesting that individuals higher in social anxiety were not engaging in higher levels of interactive use of Facebook; although they failed to report the effect sizes here.

Shaw et al. (2015) similarly looked at the amount of content produced by socially anxious Facebook users and found that socially anxious individuals are more likely to be ‘passive’ users of Facebook, rather than interacting with others or producing content. When all three forms of Facebook use (passive use, content production, interactive communication) were entered simultaneously into a regression model, only passive Facebook use predicted social anxiety, and this relationship remained even after controlling for depressive and anxiety symptoms. Furthermore, Shaw et al. (2015) found ‘brooding’ (defined here as ruminating and comparing oneself with an unachieved standard) to be a significant mediator in this relationship between passive Facebook use and social anxiety. They proposed that passively using Facebook could trigger negative beliefs about oneself and/or high standards for social performance, which may result in distress and brooding, thus exacerbating social anxiety symptoms. This appears to go against the social compensation hypothesis, suggesting that socially anxious individuals are not utilising SNS as an effective compensatory method of seeking interactions. However, it is consistent with previous findings of passive SNS use predicting more negative outcomes (Burke et al., 2010) and the potential negative consequences of using SNS to engage in negative social comparison or rumination (Feinstein et al., 2016). Shaw et al.’s (2015) study was the highest rated in terms of quality.

Fernandez et al. (2012) further found a significant negative relationship between social anxiety and the number of Facebook friends, which was specific to social anxiety and not replicated with depression and neuroticism. Again, this finding may go against the social compensation hypothesis and suggest support for the social enhancement hypothesis, in that it may be that more socially skilled and extroverted individuals are more likely to benefit from the use of SNS in expanding their social network (Selfhout et al., 2009). In contrast, Honnekeri et al. (2017) found no significant difference in the number of Facebook friends, for participants with either SAD or specific social phobia when compared to participants without SAD or social phobia. However, as already mentioned, this distinction of SAD versus social phobia does not reflect the intended purpose of the measures used. Furthermore, Honnekeri et al. (2017) received the lowest quality rating of the included studies, relying solely on self-report measures and with no apparent consideration of confounding variables; whereas Fernandez et al. (2012) utilised more objective measures and measured the influence of depression and neuroticism. In addition, Fernandez et al. (2012) reported a moderate to large correlation, whereas Honnekeri et al. (2017) failed to report an effect size.

Szwedo et al. (2011) conducted observational coding of Facebook profiles to assess the number of friends posting supportive comments, as a measure of peer relationship quality. Using a longitudinal design, they investigated these variables in relation to social anxiety at two time-points, aged 13 and aged 20, while controlling for several demographic and symptom variables, including depression. Szwedo et al. (2011) found that social anxiety at age 20 significantly predicted the number of friends posting supportive comments, which they proposed may suggest that socially anxious youth pull for more reassuring comments from friends than non-anxious youth. This is a similar concept to that of ‘vaguebooking,’ investigated by Berryman et al. (2017) and defined as posting on social media with little actual information and worded in a way to solicit attention and concern from others. Berryman et al. (2017) did not find a significant correlation between vaguebooking and social anxiety, however there was no effect size reported, whereas Szwedo et al. (2011) reported a moderate correlation. Furthermore, Berryman et al. (2017) failed to provide adequate information about their method of measuring vaguebooking and were one of the lower scoring studies in quality ratings, largely as a result of insufficient reporting.

In contrast, the study of Szwedo et al. (2011) was rated high in quality and was the only research to incorporate a longitudinal design. They were also one of the very few studies to have utilised a wider recruitment strategy, resulting in a relatively diverse sample. However, they did use a questionable measure of social anxiety at age 13, originally developed to measure the behaviour of withdrawal.

In summary, social anxiety showed various associations with patterns and activities of SNS use, including passive Facebook use, brooding, number of friends, and number of supportive comments received from peers. However, these findings largely related to single studies, with a range of effect sizes, and in some cases, were contradicted by other studies; therefore, replication will be important. Again, these results should be interpreted in light of the variability of the quality of the included studies. Furthermore, almost all of these studies looked specifically at Facebook and in student populations, therefore caution is advised in generalising these finding beyond this population and beyond this SNS platform.

2.3.4.4 Is there a relationship between social anxiety and addictive and problematic use of SNS?

Five studies looked at social anxiety in relation to problematic or addictive use of SNS. Overall, there was strong consensus for a positive correlation between social anxiety and problematic use of SNS, with correlations ranging from relatively small ($r = 0.18$) to large ($r = 0.58$). Definitions and methods of measurement of problematic SNS use varied across the studies. Chabrol et al. (2017), Atroszko et al. (2018) and Lee-Won et al. (2015) all looked at problematic use specifically in relation to Facebook, although they each used adaptations of different measures to assess this. Chabrol et al. (2017) utilised the Internet Addiction Test, reportedly the most used and validated tool to assess problematic internet use; which they adapted to relate specifically to Facebook. Atroszko et al. (2018) utilised a Polish adaptation (Charzynska & Gozdz, 2014) of the Bergen Facebook Addiction Scale (Andreassen, Torsheim, Brunborg & Pallesen, 2012), while Lee-Won et al. (2015) measured Problematic Facebook Use using eight items adapted from the Facebook Addiction Scale (FAS; Koc and Gulyagci, 2013).

All three studies found a significant positive association between social anxiety and Problematic Facebook Use, ranging from 0.18 to 0.30 (r). Furthermore, both Atroszko et al. (2018) and Lee-Won et al. (2015) found social anxiety to be a significant predictor of Problematic Facebook Use, within multiple regression models, and after controlling for a number of demographic and personality variables. Both studies were rated similarly highly in terms of quality. Within further moderation analyses, Lee-Won et al. (2015) also found the need for social assurance (defined as the desire for affiliation and companionship, as a means of maintaining a sense of belonging) to be a significant moderator of this relationship. Their results indicated a stronger relationship between social anxiety and Problematic Facebook Use when the need for social assurance was higher, and a non-significant relationship between social anxiety and Problematic Facebook Use when the need for social assurance was low. Lee-Won et al. (2015) suggested that socially anxious individuals who also have a high need for social assurance may experience greater discomfort in the conflict between simultaneously wishing to avoid and seek out social interactions. They proposed that this may lead to attempts to resolve the tension through use of SNS, as this may be perceived as a more comfortable social medium and a potential means of providing almost immediate social assurance.

Shin et al. (2016) and Yildiz-Durak (2018) looked more broadly at SNS addiction tendency and problematic social media use, respectively. Shin et al. (2016)

used the SNS Addiction Tendency Scale (Seo & Jo, 2013), while Yildiz-Durak used a Turkish adaptation (Savci, 2016) of the Social Media Disorder Scale (Van Eijnden et al., 2016). Both studies again found a significant positive correlation with social anxiety, ranging from 0.30 to 0.58 (r), and both found social anxiety to be a predictive factor of problematic SNS use within structural equation modelling. Yildiz-Durak (2018) also separately looked at the relationship between social anxiety and general PIU and found no evidence of a significant relationship there, with a minimal correlation. They suggested that this was evidence of the importance of considering problematic social media use as a separate concept to broader problematic internet use.

Despite the variety in measurement of problematic use of SNS, the positive correlation with social anxiety was universal across the studies, although with varying sizes of effect. This suggests a relatively robust finding, with moderate levels of quality across the studies, and is consistent with a small but significant effect size reported in a meta-analysis (Prizant-Passal et al, 2016). However, with a reliance on cross-sectional study designs, the findings cannot point towards the causal direction of this relationship. Lee-Won et al. (2017) identified the need for social assurance as a potentially important moderating variable in the relationship between social anxiety and PIU, but replication of this will be important. No studies yet appear to have investigated problematic use of SNS beyond Facebook, therefore future research may consider looking at different SNS platforms. Most studies addressed the issue of confounding variables in some way, but none appeared to control for the influence of depression, which may be important for future research to investigate, given the high correlations between anxiety and depression (Lovibond & Lovibond, 1995).

3.4.5 Is there a relationship between social anxiety and qualities of SNS interactions?

Several studies investigated the quality and nature of interactions and relationships on SNS in relation to social anxiety. Two studies explored preferences for online interactions in relation to social anxiety, utilising different measures, but with both finding a significant positive correlation (Shin et al., 2016; Szwedo et al., 2011). Shin et al. (2016) found a moderate positive correlation, with social anxiety showing a significant direct effect on preference for online social interaction, which had a subsequent significant direct effect on SNS addiction tendency within structural equation modelling. Szwedo et al. (2011) found that social anxiety at age 20 was a significant predictor of preferences for online interactions, while controlling for depression. These findings are consistent with the existing literature, with the robust positive correlation reported in a meta-analysis (Prizant-Passal et al., 2016; Caplan, 2007; Caplan, 2010), and both studies were rated relatively highly in terms of quality.

Along a similar theme, Weidman et al. (2012) assessed various ways in which online interactions may feel more comfortable, including: (a) online self-disclosure, assessing the extent to which participants discuss certain sensitive topics; (b) online disinhibition, assessing the extent to which participants felt more at ease and less constrained when communicating online compared to offline; and (c) participants' feelings of reduced social pressure during online interactions, assessing the extent to which participants valued the importance of reduced non-verbal cues and increased controllability for their social experience. Their results suggested significant and moderate positive correlations between social anxiety and online disinhibition and with reduced online social pressure. These results again provide further weight for the relationship with preferences for online interactions and the notion that SNS may provide an appealing social environment for socially anxious individuals. Furthermore, they found that social anxiety was significantly and moderately positively correlated with online self-disclosure. According to Valkenburg and Peter (2009), this may support the social compensation hypothesis, as online self-disclosure may enable socially anxious individuals to develop stronger relationships and enhance their wellbeing.

Weidman et al. (2012) further investigated how social anxiety may be associated with types of compensatory internet use. They found that social anxiety was positively and strongly correlated with using the internet as avoidance of face-to-face interactions (e.g. “Spending time on the internet makes it easier for me to avoid interacting with people face-to-face”). Social anxiety was also positively and moderately correlated with using the internet as a positive substitution for face-to-face interactions (e.g. “My interactions on the internet have led me to feel more comfortable and confident when interacting with people face-to-face”). However, both forms of compensatory use were associated with poorer wellbeing for individuals higher in social anxiety, with increased depression and lower self-esteem satisfaction.

Against the social compensation hypothesis, Szwedo et al. (2011) found that social anxiety did not significantly predict the formation of close online friendships, with a minimal correlation size. Furthermore, Hu et al. (2017) found a significant negative relationship between social anxiety and online relationship satisfaction, albeit with a small correlation size. Honnekeri et al. (2017) found no significant association between social anxiety and satisfaction with online interactions, although no effect size was reported. Taken together, these findings appear to support the idea that while socially anxious individuals may prefer the comfort of SNS and may perceive it as a positive substitution, there may be limited evidence of positive associations with wellbeing, social functioning or satisfying interactions. However, causality cannot be inferred from these cross-sectional studies.

Further possible evidence against the social compensation hypothesis is provided by an experimental study by Rauch et al. (2013) who investigated how prior Facebook exposure may attenuate or increase stress levels at subsequent face-to-face contact. Rauch et al. (2013) found that participants' arousal, measured through galvanic skin response, on seeing a stimulus person face-to-face, was higher if the participant had first viewed the stimulus person on Facebook compared to not having previously viewed them on Facebook. This effect was found to be significantly pronounced for participants higher in social anxiety. These findings appear to support the conclusion of Erwin et al. (2004), that compensatory SNS use for socially anxious individuals may serve to exacerbate anxiety and may ultimately end up reinforcing avoidance and perpetuating isolation. However, Rauch et al. (2013) had the smallest sample of the included studies, and an entirely female undergraduate sample of 18 to 20-year olds, so the generalisability of these findings may be limited. Furthermore, despite being one of the few experimental studies, the quality was rated quite moderately.

In contrast, in another experimental study, Lin et al. (2017) found that socially anxious participants were able to utilise SNS to recover from simulated social exclusion; whereas for the less socially anxious participants, the use of SNS actually hindered recovery. This provides an example whereby socially anxious individuals may benefit more greatly from the use of SNS, supporting them to gain social capital and increase their levels of connection, in line with the social compensation hypothesis. This study was rated relatively highly for quality and demonstrated large effect sizes.

In summary, these studies demonstrated various associations between social anxiety and SNS interactions, largely lending support for the perceived ‘safety’ of online interactions, but largely without the proposed benefits of the social compensation hypothesis. These findings are chiefly based on single studies, so the conclusions must be tentative and should be interpreted in light of the varying quality of studies. In addition, the results should be interpreted with caution, considering the limited generalisability of the samples and with the largely cross-sectional design in mind.

2.4. Discussion

The relationship between social anxiety and SNS use is complex and has attracted growing attention, but the literature is still in its infancy. This review sought to clarify the nature of this relationship in adolescents and young adults, for whom SNS represent a significant medium of their social interactions (Selfhout et al., 2009). The aim was to both synthesise the current findings and identify future directions for research. Most consistently, the results support a positive relationship between social anxiety and problematic use of SNS. However, as all of the studies looking at problematic SNS use utilised a cross-sectional design, no conclusions can be drawn regarding the causality of this relationship.

A less consistent finding was the relationship between social anxiety and time spent on SNS, which is often viewed as a characteristic of problematic use (Tokunaga & Rains, 2010). The majority of studies found no evidence for a significant relationship, which is consistent with previous systematic reviews finding no clear correlation between social anxiety and time spent online (Prizant-Passal et al., 2016; Seabrook et al., 2016). However, two studies in the current review found evidence for a significant positive correlation between time spent on SNS and social anxiety measured using the SPS, suggesting potential differences depending on measurement of social anxiety. Although it should again be noted that almost all of these studies relied solely on participants' self-reported time spent on SNS, which has shown significant differences to that measured by computer monitoring software (Junco, 2013).

Much of the research reviewed here may be viewed as pointing away from the social compensation hypothesis and the proposed positive implications of SNS use in relation to social anxiety. Overall, findings suggested more passive use of Facebook, fewer friends on Facebook, using SNS to avoid face-to-face interactions~~,~~ and increased stress levels at face-to-face contact. In addition, there were no associations found between social anxiety and online friendship formation and no evidence for satisfaction with online interactions. Furthermore, several studies supported the relationship between social anxiety and a preference or perceived comfort in online interactions, a key component of PIU, with feelings of reduced online pressure and disinhibition. Taken together, the findings lend support to the concept that SNS represent a more comfortable option. However, through passive and avoidant use of SNS, this could contribute towards reinforcing anxiety and maintaining avoidance for socially anxious individuals, rather than posing clear benefits (Erwin et al., 2004). However, it should be stressed that these are tentative conclusions, based on cross-sectional and correlational studies, therefore causality cannot be inferred, and stronger experimental and prospective designs are needed.

However, there is some support for positive implications of SNS use in young people with social anxiety. For example, the finding that socially anxious individuals experience greater recovery from social exclusion following the use of SNS (Lin et al., 2017). In addition, there was a positive correlation with online self-disclosure (Weidman et al., 2012), which is thought to support the development of stronger relationships with positive implications for wellbeing (Valkenburg & Peter, 2009). These results relate to single studies, therefore further investigation and replication of key findings will be important.

It is important to note that the studies discussed here illustrate how the relationship with SNS use is a complex one, involving multiple individual differences and contextual factors. The results of this review suggest some potentially important mediators and moderators in the outcomes of SNS use, such as the user's need for social assurance, passive use of SNS and brooding. Future research should continue attempting to unpick the possible mechanisms and identify factors which may help to explain the complexity, rather than simply attempting to define SNS use as 'positive' or 'negative.'

Importantly, with increased understanding of the factors that may influence the outcomes of SNS use, young people can be supported to make informed decisions about their SNS use. For example, it may be important to educate SNS users on the potential value of utilising the more interactive features of SNS, rather than more passive forms, such as 'lurking' (Rauch et al., 2013).

2.4.1 Limitations and future directions

Due to time and cost constraints, the grey literature and non-English studies were excluded from this review. As a result, there is a risk of having missed relevant findings, particularly those that were non-significant, given that published studies tend to be biased towards significant results. However, there is also a risk of bias through including literature which has not been peer-reviewed, which may have the potential for less rigorous methodology. Overall, this review is argued to have been conducted in a rigorous and systematic way, and with open and transparent reporting of the decisions made.

The key findings summarised here should be interpreted in light of the quality of the available evidence and the methodological limitations. A key limitation of the included studies was the over-reliance on convenience sampling of undergraduate students, which clearly limits the generalisability of the results. While university students are said to constitute a markedly active Facebook user population (Lee Won et al., 2015), the profile of Facebook holders is known to be diverse, and future research should attempt to incorporate this diversity, through wider sampling strategies. Furthermore, in relation to unpicking the implications related to social anxiety, it seems important to utilise clinical samples of social anxiety populations, to consider the implications of SNS use in mental health treatment and outcomes.

Another primary limitation of the evidence presented is the reliance on cross-sectional studies. Clearly this impairs the ability to discuss causal relationships, but it also increases the potential bias of confounding factors, making it more difficult to draw reliable conclusions (Frost & Rickwood, 2017). While most of the included studies made reference to the issue of confounding variables and made attempts to control for the impact of a number of these, a small number of studies made no reference to this issue. Of those that addressed it, several controlled for personality variables, which have reportedly been found to influence problematic SNS use significantly (Lee-Won et al., 2015). Several studies also included depression as a control variable, assessing the degree to which social anxiety uniquely contributed to associations with SNS, over and above that of depression. Future studies should continue to address these issues, particularly depression, given the high correlation with anxiety (Lovibond & Lovibond, 1995). Future studies should also aim to improve the standard of evidence using prospective and experimental designs, where there can be more control over confounding variables and greater conclusions can be drawn about causality.

As previously noted, the included studies are limited by reliance on self-report measures, known to introduce social desirability and recall bias (Fisher, 1993; Junco, 2013). Therefore, there is a need for future research to consider using more observational measures, utilising advances in technology. Certain smart phone models currently allow users to view figures for how much time they have spent on different applications, which would provide a more objective and unbiased measure of SNS use. While this was not utilised by any of the current studies, it should be incorporated into future research, where possible. In addition, studies may consider building on the methods of Fernandez et al. (2012) and Szwedo et al. (2011), by extracting objective data from the users’ SNS profile. It should also be pointed out that the included studies utilised a wide range of different self-report measures, both for social anxiety and for SNS variables, making it more difficult to compare the findings.

There appears to be a significant gap in the literature in relation to specific SNS platforms other than Facebook. Given that younger populations are said to be increasingly opting for alternative platforms (Smith & Anderson, 2018), future research in youth populations may consider exploring some of these.

2.4.2 Conclusions

In conclusion, the current review has provided a novel synthesis of the existing literature pertaining to the relationship between social anxiety and SNS use in young people. The results help to clarify certain findings, such as the relationship between social anxiety and problematic use of SNS, while also illustrating the complexity of the interaction with individual differences, contextual factors and various possible outcomes. There are many avenues for future research, both in following up potentially important variables in need of further replication and investigating further potential risk and protective factors that may help to explain the complexity. There is also a significant gap in the literature in relation to specific platforms of SNS other than Facebook. Furthermore, there are many opportunities for strengthening the current evidence base, using wider sampling strategies, increased reliance on objective measures, and studies of experimental design.

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Chapter Three – Bridging Section

The previous chapter provides evidence about how social anxiety may relate to the use of SNS. However, the reviewed literature highlights the substantial focus on undergraduate and non-clinical samples, with a dearth in the literature relating to individuals with clinical levels of social anxiety and other mental health difficulties. The subsequent chapters and empirical research consider the relevance of this topic to clinical youth populations, with high levels of symptoms and social disability. While social anxiety continues to be a key focus, the symptoms of depression and psychotic-like experiences will also be considered.

Chapter Four – Empirical Paper

Online Socialising in Youth Mental Health: Investigating the Roles of Social Connectedness, Basic Needs Satisfaction, Multiple Group Memberships, and Fears of Negative Evaluation.

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This paper has been prepared for the Computers in Human Behaviour Journal – please refer to Appendix A for details of the guidance for authors.

Highlights

- Clinical youth reported similar value from their online and offline interactions.
- Clinical youth reported lower online social connectedness than control samples.
- Fears of negative evaluation were lower in online compared to offline interactions.
- Total levels of problematic internet use were similar across all samples.

Abstract

Recent theories suggest that individuals with poor social functioning and existing psychopathology may be both at increased risk of negative internet use, while potentially also able to derive greater benefits through compensatory opportunities. However, there is currently a dearth of research investigating online socialising in clinical populations. This cross-sectional study investigated the online socialising and problematic internet use of a sample of young people accessing mental health services (n = 30), compared with two age-matched control samples. Self-reported online and offline interactions were compared for levels of social connectedness, multiple group memberships, basic needs satisfaction and fears of negative evaluation, at a within-group and between-group level. In the clinical sample, fears of negative evaluation were lower in online interactions compared to offline interactions, however, levels of social connectedness, needs satisfaction and group memberships were similar across online and offline interactions. Despite spending greater time socialising, the clinical sample reported significantly lower levels of social connectedness compared to controls. Overall, levels of problematic internet use appeared similar across the samples, although certain subscales were higher in the clinical sample. The results support the idea that online socialising may be perceived as less threatening than face-to-face interactions, however, there was limited evidence for either compensatory benefits or increased risks of online socialising for the clinical sample. These results reflect early explorative findings; therefore, replication and extension will be important.

Keywords: Online socialising, social networking sites, adolescents, young adults, problematic internet use

4.1 Introduction

4.1.1 Online socialising: Negative implications for mental health

There has been significant focus on the possible negative implications of online socialising, particularly problematic internet use (Caplan, 2007; Lee-Won, Herzog, & Gwan Park, 2015; Prizant-Passal, Shechner, & Aderka, 2016). There is no broadly accepted definition of problematic internet use (PIU), but it will be discussed here as a maladaptive preoccupation with the internet, with significant distress and impairment (Shapira et al., 2003). The cognitive-behavioural model of PIU (Davis, 2001) suggests that underlying psychopathology, social isolation and/or lack of social support contribute to PIU. Therefore, clinical populations may be at marked risk of PIU. However, very little is currently known about online socialising in clinical populations, as most studies have sampled undergraduate students.

Attention has been paid to the area of depression, largely with contradictory findings. The ‘internet paradox’ theory originally stated that, despite being a social technology, the internet led to reduced social involvement and wellbeing, and increased depression and loneliness (Kraut et al., 1998). However, other studies have found no evidence for a relationship between depression and internet use or online socialising (Kraut et al., 2002; Jelenchick, Eickhoff, & Moreno, 2013), and reviews have concluded mixed findings (Seabrook, Kern, & Rickard, 2016). Recent studies have highlighted how the quality of internet use may help to explain these discrepant findings. For example, using the internet for non-communication purposes has been found to predict both depression and social anxiety; whereas using it for communication predicted less depression (Selfhout, Branje, Delsing, Bogt & Meeus, 2009).

The unique features of online socialising are thought to be especially relevant for social anxiety. Online interactions can be seen as allowing greater control over self-presentation, with reduced non-verbal cues, and feelings of reduced social pressure (Valkenburg & Peter, 2014; Weidman et al., 2012). It is thought that these features lead to feelings of perceived safety online, which makes it particularly appealing for socially anxious individuals (Casale, Fioravanti, Flett, & Hewitt, 2014). Social anxiety has shown robust associations with a preference for online interactions (Prizant-Passal et al., 2016), which is thought to be a key component of PIU (Caplan, 2010), therefore socially anxious individuals may be at elevated risk of PIU. In line with this, social anxiety has been consistently linked to increased levels of PIU (Prizant-Passal et al., 2016).

Central to social anxiety is the fear of being negatively evaluated in social situations (World Health Organisation, 2018). Social anxiety is associated with a variety of behaviours to avoid this anticipated threat of negative evaluation and is linked with attentional biases for detecting these threats (Carleton, Collimore & Asmundson, 2007). Yen et al. (2012) found lower levels of fear of negative evaluation during online compared to offline interactions, lending further support for online socialising as a ʻsaferʼ social environment. Research in this area remains limited, but fears of negative evaluation may be an important aspect of understanding the appeal of online socialising and potentially the processes contributing to maladaptive engagement. This may be especially relevant to young people, as adolescence is associated with increased self-consciousness and concern about othersʼ opinions (Choudhury, Blakemore & Charman, 2006).

Another area that has received little attention is that of attenuated (i.e. subthreshold) psychotic symptoms. These symptoms frequently occur in individuals with complex needs, social disability and distress (Fowler et al., 2010). Therefore, according to Davis (2001), risks of PIU may again be elevated. Studies have indeed found higher levels of PIU in youth with attenuated psychotic symptoms or psychotic-like experiences (Pelletier-Baldelli, Ives & Mittal, 2015; Mittal, Dean & Pelletier, 2013). However, it has also been suggested that the internet may provide positive compensatory social opportunities to buffer against social isolation for individuals with symptoms of psychosis (Highton-Williamson, Priebe & Giacco, 2014). Overall, there remains very little research investigating the relationship between psychotic-like symptoms and PIU or online socialising. Prevalence of these symptoms is high in clinical youth populations (Gaudiano & Zimmerman, 2013) and this is argued to be an important line of investigation.

4.1.2 Online socialising: Positive implications for wellbeing

Research into the potential value of online socialising has been somewhat limited. One area that has generated interest is that of social connectedness, defined as an innate psychological drive of belonging to groups and engaging in meaningful interactions (Baumeister & Leary, 1995). Connectedness is thought to be especially important during adolescence and has been found to contribute to psychosocial wellbeing (Allen, Ryan, McInerney & Waters, 2014). Online socialising has largely shown positive correlations with social connectedness (Allen et al., 2014; Seabrook et al., 2016). However, it can also provide opportunities for this to be undermined, such as through cyber-ostracism (Abrams, Weick, Thomas, Colbe & Franklin, 2011). Grieve, Indian, Witteveen, Tolan and Marrington (2013) found that social connectedness derived from Facebook still appeared to provide social bonding. It also demonstrated moderate positive associations with subjective wellbeing, and negative associations with anxiety and depression (Grieve et al., 2013). However, Valkenburg and Peter (2009) suggest that these positive effects of online socialising are primarily found for adolescents who use the internet to maintain existing friendships, rather than forming new contacts.

A feature related to social connectedness is the concept of social group membership, which has shown positive implications for wellbeing, and has been found to play an important role in helping individuals adjust to life transitions (Reicher & Haslam, 2006). Having multiple group memberships is argued to protect against the development of depression and play a role in reducing symptoms of depression (Cruwys et al., 2013). No research yet appears to have investigated multiple group memberships in online interactions. However, online socialising is thought to extend the reach and accessibility of social networks (Seabrook et al., 2016), therefore, it could increase opportunities for multiple group memberships.

Self-determination theory (Deci & Ryan, 1991) has been recently applied to the area of online socialising. This theory states that psychological wellbeing is predicated on the three key needs of autonomy, competence, and relatedness. Interactions in close personal relationships are said to be essential for wellbeing, satisfying the need of relatedness, and to a lesser degree, autonomy and competence (Ryan & Deci, 2000). Wong, Yuen and On Li (2014) found online socialising to provide individuals with both relatedness and autonomy and found overall needs satisfaction to significantly negatively predict PIU. They suggested that individuals lacking basic needs satisfaction may be more vulnerable to becoming reliant on the internet and seeking these needs from online interactions (Wong et al., 2014).

4.1.3 Social compensation vs. social enhancement

The social compensation hypothesis proposed that individuals with poor offline friendships may particularly benefit from online socialising, as it allows opportunities for exploring identity, developing social skills and interacting with new peers, which they may otherwise miss out on (Selfhout et al., 2009). This is thought to be especially relevant for clinical populations at risk of social isolation, such as social anxiety and psychosis (Laghi et al., 2013; Highton-Williamson et al., 2014). According to this hypothesis, online social interactions may plausibly provide opportunities to derive connectedness, needs satisfaction and group memberships, for individuals where these needs may otherwise be lacking.

Alternatively, according to the social enhancement (or the ‘rich-get-richer’) hypothesis, it may be those individuals with strong social skills and strong offline social functioning who are more able to benefit from online socialising. It is suggested that they would be better placed to capitalise on the opportunities to connect with new people and expand their social network (Selfhout et al., 2009). Support for these opposing hypotheses has been mixed (Valkenburg & Peter, 2007). However, Cole, Nick, Zelkowitz, Roeder and Spinelli (2017) found that online socialising provided a more meaningful source of social support for individuals with low levels of in-person social support, whereas it was more redundant for those who already had in-person social support.

To reconcile the discrepant findings, research has begun to look at specific online activities and the quality of interactions. Generally, research indicates that more interactive use of social networking sites (SNS) is predictive of more positive outcomes (Neubaum & Kramer, 2015; Selfhout et al., 2009; Berryman, Ferguson &

Negy, 2017). Instant messaging has been described as a ‘training ground’ for social skills (Selfhout et al., 2009), which may lead to increased feelings of confidence and self-efficacy in offline interactions (Campbell, Cumming & Hughes, 2006). However, more passive use is unlikely to offer the same compensatory benefits and has been associated with more negative outcomes (Burke, Marlow & Lento, 2010; Rauch, Strobel, Bella, Odachowski, & Bloom, 2013; Selfhout et al., 2009). Therefore, the benefits predicted by the social compensation hypothesis may depend on the nature of the online socialising. Social anxiety has been linked with a tendency to engage in more passive internet use (Erwin, Turk, Heimberg, Fresco & Hantula, 2004; McCord et al., 2014), suggesting less chance of compensatory benefits.

4.1.4 Gaps in the literature

Almost all studies have used non-clinical, undergraduate samples, despite the continued focus on consequences for mental health. Social anxiety, depression and psychotic-like symptoms have each demonstrated links with SNS use or PIU in various ways, although research looking at psychotic-like symptoms is noticeably sparse. Theories suggest that individuals with poor social functioning and existing psychopathology may both be at increased risk of negative outcomes, but may also derive greater benefits through compensatory opportunities. Therefore, it seems important to understand more about the potential value of online socialising in individuals with impaired social functioning and symptomatology. This research is important for young people, where we know that use of SNS is extremely prevalent (Office for National Statistics, 2018), peer relationships are of great salience (Davis, 2012), and poor social functioning can predict poor long-term outcomes (Fowler et al., 2010).

4.1.5 The present study

The present research explored the nature of online socialising in a sample of young people recruited from mental health services in the UK. It aimed to describe both online and offline socialising within the sample, while identifying levels of PIU. Furthermore, it sought to investigate how online socialising compares with face-to-face interactions, in social connectedness, group memberships, needs satisfaction and fears of negative evaluation. Finally, the study used an existing dataset of undergraduate students and young people not in education, employment or training (NEET), to explore how these findings may differ for young people with different levels of symptoms and social functioning.

Research questions:

1) How do clinical, NEET and undergraduate youth spend their time socialising?
2) How do levels of problematic internet use differ between clinical, NEET and undergraduate youth?
3) How do online and offline socialising differ, regarding social connectedness, basic needs satisfaction, multiple group memberships, and fears of negative evaluation?
4) How does social connectedness and multiple group memberships differ between the clinical, NEET and undergraduate samples?

4.2 Methods

A cross-sectional observational design was used, to describe how young people accessing mental health services are engaging with online socialising. Within-subjects comparisons were used to investigate differences between online and offline socialising, and a between-subjects comparison was used to compare differences between the clinical, NEET and undergraduate youth samples.

4.2.1 Participants

Clinical sample participants were recruited via opportunity sampling from NHS community youth mental health services in England (June 2018 - January 2019). The recruitment sites represent secondary mental health services for young people aged 14 to 25, with non-psychotic moderate to severe symptoms and/or moderate to severe impairment in functioning (e.g. social, occupational, or school). Participants were eligible to take part in this study provided they had been accepted into the service and allocated a lead care professional. For ethical reasons, referral criteria excluded any participants who lacked mental capacity, lacked a sufficient level of English to understand the measures and what the study involved, or who were deemed inappropriate by their lead care professional due to current mental state or level of risk.

Out of 48 referrals received from clinicians in the Youth Services, three were excluded as they did not meet the inclusion criteria, three participants declined to take part, and 12 further participants either did not respond or disengaged during the recruitment process. Demographic characteristics for the 30 recruited participants can be seen in Table 3, alongside the control samples.

The comparison data were collected as part of student research at the University of Sussex (Berry, Easterbrook, Empson & Fowler, in press). The undergraduate sample was recruited from the University of Sussex (January 2015 - August 2017) and the NEET sample was recruited from a service specifically for young people not in education, employment or training (January 2016 - November 2018).

Table 3

Demographic characteristics

Sample	N	Gender (% female)	Age range	Mean age (SD)
Clinical	30	80.0	15-26	20.3 (3.13)
NEET	54	37.0	16-25	19.5 (2.13)
Undergraduate	190	68.9	18-25	20.8 (1.40)

Note. NEET = Not in education, employment or training.

The young people recruited from mental health services will largely be referred to as the clinical sample. While the undergraduate and NEET samples represent different populations, for ease of reference, they will largely be referred to as the control samples. It should be noted that there were no exclusion criteria regarding use of mental health services, therefore, they are not technically non-clinical samples.

4.2.2 Measures

4.2.2.1 Online and offline socialising

The Time Use Survey (TUS; Hodgekins et al., 2015) is a semi-structured interview capturing time spent in structured activities (paid/voluntary work, education, leisure, sport, housework, childcare), in addition to unstructured time spent socialising (e.g. time spent socialising at home or at others′ homes). Participants retrospectively report on time spent in these different activities over the past month, which is averaged into weekly hours. The total time spent per week in structured activity reflects the level of overall social functioning (Hodgekins et al., 2015), with clinical cut-off scores identifying ranges of social disability: 30 to 45 hours = at risk; 15 to 30 hours = social disability; less than 15 hours = severe social disability (Hodgekins et al., 2015). Time spent socialising is collected separately for face-to-face and indirect socialising, which for the purpose of this study, was further separated into online socialising (e.g. instant messaging, SNS, online gaming). An additional question was added, asking whether participants were socialising with existing friends or meeting new people online. The TUS has been validated in clinical and non-clinical youth populations and was found to be an acceptable tool for assessing social functioning (Hodgekins et al., 2015).

4.2.2.2 Problematic internet use

Levels of PIU were captured using the Generalised Problematic Internet Use Scale 2 (GPIUS2; Caplan, 2010), which has five subscales: preference for online socialising, mood regulation, cognitive preoccupation, compulsive internet use, and negative outcomes. These subscales are said to represent different cognitive and behavioural features of PIU, and the resulting negative outcomes. The overall index score and the separate subscale scores are used in the current study. Response options for the 15 scale items (e.g. “I find it difficult to control my internet use”) range from 1 (definitely disagree) to 8 (definitely agree), which are summed to derive the overall index score (ranging from 15 to 120), with higher scores reflecting greater PIU. The scale has demonstrated good construct validity and has been frequently used with youth populations (Caplan, 2010). Internal consistency of each of the subscales was reported to be excellent, ranging from 0.82 to 0.87 (Caplan, 2010).

4.2.2.3 Features of online and offline socialising

Online and offline social connectedness was captured using a modified version of the Social Connectedness Scale (SCS; Lee, & Robbins, 1995). The original eight scale items (e.g. “I feel so distant from people”) were retained, but participants were instructed to rate the items twice, based first on face-to-face social interactions, and again considering only online social interactions. Responses ranged from 1 (strongly agree) to 6 (strongly disagree), with higher scores reflecting higher levels of social connectedness. Grieve et al. (2013) similarly adapted the Social Connectedness Scale-Revised (Lee, Draper, & Lee, 2001) to measure both online and offline social connectedness, and demonstrated good internal consistency.

The Multiple Groups Membership (MGM) subscale of the Exeter Identity Transition Scale (Haslam et al., 2008) was used to assess the degree to which participants belong to multiple social groups. Participants completed the four items (e.g. “I belong to lots of different groups”) based first on face-to-face social interactions, and then repeated for online interactions. Responses ranged from 1 (strongly agree) to 7 (strongly disagree), with average total scores derived for online and offline interactions, and higher scores reflecting higher levels of multiple group memberships. The measure has shown strong internal consistency (Jetten, Haslam & Haslam, 2012), and has proved to be valid and reliable in previous psychological research (Haslam et al., 2008; Iyer et al., 2009).

The Basic Needs Satisfaction Scale – Relationships Version (BNSS; La Guardia, Ryan, Couchman, & Deci, 2000) is a 9-item self-report measure assessing need satisfaction in interpersonal relationships. Although designed to assess specific relationships, it can also be applied to relationships in general (La Guardia et al., 2000), as was used for the present study. Participants were asked to rate the items (e.g. “I feel loved and cared about”) based first on face-to-face interactions, and then for online interactions. Items are rated from 1 (not at all true) to 7 (very true), with total average scores derived, and with higher scores reflecting greater needs satisfaction (La Guardia et a., 2000).

The Brief Fear of Negative Evaluation Scale-II (BFNE-II; Carleton et al., 2007) is a 12-item self-report measure, with responses ranging from 0 (not at all characteristic of me) to 4 (extremely characteristic). Participants completed the items (e.g. “I am afraid that others will not approve of me”) based first on face-to-face social interactions, and again for online interactions. Total scores are derived by summing the item responses, with higher scores reflecting greater fears of evaluation.

4.2.2.4 Symptom measures

The Patient Health Questionnaire (PHQ-9) is a 9-item self-report measure assessing severity of depression, measuring symptom frequency over the past two weeks. A total score is derived by summing the item responses. Recommended clinical cut-off scores for severity of depression are: none/minimal (0-4); mild (5-9); moderate (10-14); moderately severe (15-19); severe (20-27; Kroenke, Spitzer, & Williams, 2001). Internal reliability and test-retest reliability has been demonstrated as excellent (Kroenke et al., 2001).

The Prodromal Questionnaire (PQ-16; Ising et al., 2012) is a 16-item self-report measure assessing psychotic-like experiences. Participants rate items as either true or false, and rate corresponding distress for true items on a scale of 0 (none) to 3 (severe). The total score is based on the number of statements endorsed as true, with an additional total summed distress score, which is more reflective of the impact of the symptoms (Mittal et al., 2013). Higher scores reflect greater frequency of psychotic-like symptoms and greater associated distress. Six or more items rated as true represents the recommended cut-off for classifying individuals as at-risk of psychosis (Ising et al., 2012). Good internal consistency was demonstrated in participants accessing secondary mental health services (Ising et al., 2012).

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 20-item self-report measure, providing a total score between 0 and 80, where higher scores indicate higher levels of social anxiety. Peters (2000) recommends a clinical cut-off score of 37 or higher to identify social anxiety. The SIAS has demonstrated good internal consistency and test-retest reliability in clinical and non-clinical samples (Mattick & Clarke, 1998).

4.2.2.5 Control sample measures

The comparison dataset included the TUS, the GPIUS2, the SCS, the MGM, the SIAS, and the PQ-16. The SCS and the MGM had been modified in the same manner as reported for the clinical sample, to collect information regarding participants’ online and offline socialising separately. Socialising data collected in the TUS was not separated into specifically online socialising; therefore, online socialising data is unavailable for these samples.

4.2.2.6 Scale reliability

Cronbach’s alpha for the self-report measures generally demonstrated good or excellent internal consistency; however, the PQ-16 and the online-MGM demonstrated reliability lower than 0.70 in the clinical sample.

4.2.3 Procedure

4.2.3.1 Clinical sample

The research proposal was reviewed and approved by the NHS Research Ethics Committee and the Health Research Authority (Reference: 18/EM/0034). The research was advertised to clinicians at service meetings, who were responsible for approaching and referring potential participants according to the inclusion/exclusion criteria. Participants provided consent to be contacted by the research team, with parental consent obtained for participants under 16. Assessments took place over one appointment, taking approximately one hour, at the NHS service base or participants' home. Written informed consent was collected from all participants, with parental informed consent and participant assent for those under 16. Study measures were administered in the same order as described above, with the TUS semi-structured interview administered first. The self-report measures were either self-administered or verbally-administered by the researcher, depending on participant preference. All participants received a £5 gift voucher as a token of gratitude and were asked if they would like to receive a summary of the research findings.

4.2.3.2 Control samples

Full ethical approval was received from the University of Sussex (Reference: ER/CB321/2-10). Assessments were completed by research students, with training and supervision. The TUS was administered first, but the order of the self-report measures was variable, and again may have been self-administered or administered by the researcher. Only anonymised data was shared for the purpose of this research.

4.2.5. Statistical analyses

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS; Version 25), and non-normal distributions were addressed using non-parametric tests. One-way independent ANOVA analyses and Kruskall-Wallis tests examined differences between the samples, comparing time spent socialising, levels of PIU, social connectedness, and multiple group memberships. Post-hoc tests were used instead of planned contrasts, as the analyses were exploratory and not based on firm hypotheses (Field, 2009). Paired-subjects t-tests and Wilcoxon-signed rank tests examined the within-group differences of online and offline socialising, regarding social connectedness, basic needs satisfaction, multiple group memberships, and fears of negative evaluation. The Holm method of adjusting for multiple comparisons was used throughout (Wright, 1992).

4.3 Results

4.3.1 Descriptive statistics

Descriptive statistics for levels of PIU, symptoms and TUS demographics are reported, along with prevalence of mental health difficulties and social disability (Table 4). Levels of social disability are indicated by the hours per week spent in structured activity (Hodgekins et al., 2015). A Kruskall-Wallis test showed a significant main effect of group on levels of structured activity, H (2) = 37.06, $p < .001$. Mann Whitney post hoc tests, with adjustments for multiple comparisons, revealed that both the NEET group (U = 2419.5, $p < .001$) and the clinical group (U = 1913.5, $p < .01$) reported significantly lower levels of structured activity compared to the undergraduate sample.

A one-way independent ANOVA showed a significant main effect of group on levels of social anxiety, *F* (2, 271) = 24.495, *p* < .001. Tukey's HSD tests, with adjustments for multiple comparisons, revealed that the clinical group had significantly higher levels of social anxiety than both the NEET group (*p* < .001) and the undergraduate group (*p* < .001).

No GPIUS2 guidance has been found for suggesting a cut-off score to identify clinically relevant levels of PIU. Caplan (2010) reported a mean of 33.00 (SD = 17.67) in his development of the scale, with a sample of predominantly students; although no subscale means were reported. More recently, Hahn, Reuter, Spinath and Montag (2017) reported a mean of 32.90 (SD = 15.10) in a population of adults, with subscale means ranging from 4.50 (SD = 3.00) for negative outcomes to 9.60 (SD = 5.30) for mood regulation.

Descriptive statistics for online and offline levels of connectedness, group memberships, needs satisfaction and fears of negative evaluation are reported (Table 5), with non-clinical data from the literature for comparison. There were no norms for comparison regarding online interactions, as the measures were not originally designed for use in this way. Clinical sample means for connectedness, group memberships and needs satisfaction appear markedly lower than the normative data.

Table 4. *Demographic statistics for symptoms, problematic internet use and Time Use Survey*

			Clinical (n = 30)	NEET	n	Undergraduate	n
Problematic Internet Use (GPIUS)		***Mean (SD)***	**56.1 (18.4)**	**47.6 (22.3)**	29	**52.5 (16.8)**	108
Subscales:	Preference		11.83 (6.94)	10.00 (6.19)		7.31 (4.02)	
	Mood regulation		16.10 (5.35)	12.38 (6.47)		16.20 (4.52)	
	Cognitive		8.73 (4.25)	8.43 (5.40)		9.61 (4.91)	
	Compulsive		10.60 (5.65)	9.52 (6.47)		11.73 (5.76)	
	Negative		8.83 (4.22)	7.22 (4.78)		7.68 (4.73)	
Social Anxiety (SIAS)		***Mean (SD)***	**44.3 (15.5)**	**27.4 (17.1)**	53	**24.7 (13.2)**	189
	Clinical threshold (SIAS > 36)	No. (%)	22 (73.3)	17 (32.1)		37 (19.6)	
Depression (PHQ-9)		***Mean (SD)***	**18.0 (5.4)**	n/a		n/a	
Severity:	None (0-4)	No. (%)	0 (0.0)	n/a		n/a	
	Mild (5-9)		2 (6.7)	n/a		n/a	
	Moderate (10-14)		6 (20.0)	n/a		n/a	
	Moderately severe (15-19)		8 (26.7)	n/a		n/a	
	Severe (20+)		14 (46.7)	n/a		n/a	
PQ-16		***Mean (SD)***	**9.7 (2.7)**	**7.2 (4.3)**	50	**3.7 (3.0)**	188
PQ-16 - Distress			**20.0 (7.1)**	**9.6 (8.3)**	50	**3.6 (4.7)**	188
	At-risk (PQ-16 > 6)	No. (%)	28 (93.3)	31 (62.0)		46 (24.5)	
TUS – Structured Activity	(hours p/week)	***Median (IQR)***	**35.7 (23.7)**	**23.9 (34.0)**	54	**46.3 (23.7)**	190
Social disability:	At-risk (30 – 45 hours)	No. (%)	9 (30.0)	5 (9.4)		59 (31.2)	
	Clinical (15 – 30 hours)		8 (26.7)	15 (28.3)		30 (15.9)	
	Severe (< 15 hours)		4 (13.3)	19 (35.8)		2 (1.1)	
TUS – Direct Socialising	(hours p/week)	***Median (IQR)***	**19.4 (31.2)**	**9.2 (36.6)**	54	**10.4 (16.4)**	190
TUS - Indirect Socialising	(hours p/week)	***Median (IQR)***	**29.4 (26.7)**	**16.0 (25.4)**	54	**12.6 (14.0)**	190

Note. NEET = Not in education, employment or training; SIAS = Social Interaction Anxiety Scale; PHQ-9 = Public Health Questionnaire-9; PQ-16 = Prodromal Questionnaire-16; TUS = Time Use Survey; IQR = Interquartile range.

Table 5.

Demographic statistics for online and offline socialising

		Clinical (n = 30)	NEET (n = 27)	Undergrad. (n = 107)	Normative data
		Mean (SD)	*Median (IQR)*	*Median (IQR)*	*Mean (SD)*
SCS	Direct	26.1 (9.5)	39.0 (17.0)	41.0 (10.0)	38.9 (8.1) [a]
	Online	27.2 (9.8)	35.0 (14.0)	38.0 (12.0)	n/a
MGM	Direct	3.5 (1.4)	4.3 (3.8)	5.3 (2.0)	5.1 (1.4) [b]
	Online	3.7 (1.3)	4.0 (2.8)	4.3 (2.0)	n/a
BNSS	Direct	3.6 (1.1)	n/a	n/a	6.2 (0.8) [c]
	Online	3.6 (1.1)	n/a	n/a	n/a
BFNE	Direct	37.5 (10.6)	n/a	n/a	32.8 (10.0) [d]
	Online	29.4 (14.5)	n/a	n/a	n/a

Note. NEET = Not in education, employment or training; SCS = Social Connectedness Scale; MGM = Multiple Group Memberships Scale; BNSS = Basic Needs Satisfaction Scale; BFNE = Brief Fears of Negative Evaluation – II. [a] Lee and Robbins (1995); [b] Jetten, Branscombe, Haslam, & Haslam (2015). [c] La Guardian et al. (2000); [d] Carleton et al. (2007)

4.3.2 How do clinical, NEET and undergraduate youth spend their time socialising?

Descriptive statistics for time spent socialising are displayed in Table 4. Kruskall-Wallis tests compared the time spent directly and indirectly socialising between the samples. Direct socialising captured in the Time Use Survey includes any face-to-face unstructured socialising, while indirect socialising refers to any non-face-to-face socialising (e.g. online, text, telephone-calls). A significant main effect of group was found for time spent both socialising directly (H (2) = 9.55, $p < .01$) and indirectly (H (2) = 18.39, $p < .001$). Mann Whitney post hoc tests, with adjustments for multiple comparisons, revealed that the clinical group reported significantly greater time socialising indirectly compared to the undergraduate sample (*U* = 1507.5, *p* < .001).

Mann Whitney post hoc tests also revealed that the clinical group reported significantly greater time socialising directly compared with the undergraduate sample (*U* = 1821.0, *p* < .01). This was an unexpected finding, as the clinical sample had higher levels of social disability than the undergraduate sample. A hypothesis was posed that the undergraduate sample may spend greater time socialising in structured activities (e.g. eating out, going to the cinema), which would be captured under the ‘leisure’ category of the Time Use Survey, rather than spending time in the more unstructured activities captured under the ‘direct socialising’ category (e.g. socialising at home or at friends’ homes). A Kruskall-Wallis test compared the time spent in leisure activities between the samples, finding a significant main effect of group (*H* (2) = 28.68, *p* < .001). Mann Whitney post hoc tests, with adjustments for multiple comparisons, revealed that the undergraduate group (*Median* = 8.38, *IQR* = 6.9) reported significantly greater time spent in leisure activities, compared with both the clinical (*Median* = 4.23, *IQR* = 9.1), *U* = 1684.50, *p* <.001 and NEET samples (*Median* = 4.96, *IQR* = 6.3), *U* = 3060.00, *p* < .001.

4.3.2.1 Online socialising

Online socialising data was only available for the clinical sample (Table 6). One male participant reported having spent no time socialising online over the past month. Only four participants (3 female, 1 male) reported socialising through online gaming in the past month, with the majority reporting use of SNS and instant messaging. No participants reported online socialising solely for meeting new people; 76.70% reported interacting with existing friends, and 23.30% reported interacting with both existing friends and meeting new people. A Wilcoxon signed-ranks test was conducted to compare the time spent online versus directly socialising in the clinical sample and revealed no significant difference ($Z = 0.031$, $p = 0.98$, $r = 0.004$).

Table 6

Time Use Survey descriptives for online socialising

Time Use Survey	Clinical Sample (n =30)	
Hours per/week	*Median (IQR)*	*Range*
Online socialising total	21.6 (26.6)	0.0 – 84.0
Social networking sites (SNS)	8.8 (15.6)	0.0 - 56.0
Instant messaging	4.4 (10.2)	0.0 – 56.0
Online gaming	0.0 (0.0)	0.0 – 14.0

4.3.3 How do levels of PIU differ between clinical, NEET and undergraduate youth?

A one-way independent ANOVA was conducted but revealed no significant main effect of group on PIU. Welch's F is reported, as the Levene's test revealed statistically significant differences in variance between the groups (*Welch's F* (2, 50.34) = 1.269, $p = 0.29$, $\eta^2 = 0.02$). Field (2009) recommends utilising the Welch value rather than transforming the data, as transformations tend to be of limited value.

Further one-way independent ANOVA analyses were conducted to examine between-group differences in the PIU subscales (Table 7). There was a significant main effect of group on the preference for online interaction subscale. Welch's F is reported, due to statistically significant differences in variance between the groups. With adjustments for multiple comparisons, Tukey's HSD tests revealed that the clinical group (*p* < .001) had significantly higher levels compared to the undergraduate sample.

There was also a significant main effect of group on the mood regulation subscale. Welch's F is reported again, due to statistically significant differences in variance. Tukey's HSD tests, with adjustments for multiple comparisons, revealed that both the clinical group (*p* < .05) and the undergraduate group (*p* < .01) had significantly higher levels than the NEET sample. There were no other significant main effects of group on the PIU subscales.

Table 7

One-way ANOVA between-group comparisons

	Welch's F	*df*	η^2
Preference for online	7.541**	2, 45.24	0.12
Mood regulation	4.467*	2, 48.89	0.08
Cognitive preoccupation	0.870[a]	2, 164	0.01
Compulsive use	1.773[a]	2, 164	0.02
Negative outcomes	0.996[a]	2, 164	0.01

Note. [a] = *F* ANOVA. Adjustments made for multiple comparisons.
* *p* < .05, ** *p* < .01, *** *p* < .001

4.3.4 How do online and offline socialising differ?

Paired samples t-tests and Wilcoxon signed-ranks tests were conducted to assess statistically significant differences between online and offline socialising (Table 8), with adjustments for multiple comparisons. In the clinical sample, fears of negative evaluation were significantly lower in online (Median = 35.50, IQR = 22.25) compared to offline interactions (Median = 41.00, IQR = 16.25). There were no significant differences found in social connectedness, basic needs satisfaction, or multiple group memberships. The NEET sample similarly showed no significant difference in connectedness or group memberships, while the undergraduate sample reported significantly higher social connectedness and group memberships in their offline socialising.

Table 8

Within-group comparisons of online and offline socialising

	Clinical			NEET			Undergraduate		
	r	*Z*	*df*	*r*	*Z*	*df*	*r*	*Z*	*df*
Connectedness	0.12	-0.666[a]	29	0.20	-1.439	26	0.38	-5.513***	106
Group membership	0.13	-0.716[a]	29	0.04	-0.303	26	0.24	-3.579***	106
Needs satisfaction	0.04	0.219[a]	29		n/a			n/a	
Fears of evaluation	0.43	-3.369 ***	29		n/a			n/a	

Note. NEET = Not in education, employment or training; [a] = (*t*) Paired samples t-test.
* $p < .05$, ** $p < .01$, *** $p < .001$

4.3.5 How does online and offline socialising differ between the clinical, NEET and undergraduate samples?

Table 9 displays Kruskall-Wallis and one-way ANOVA between-group comparisons, with posthoc tests displayed in Table 10, adjusted for multiple comparisons. Significant main effects of group were found for social connectedness, both online and direct, with the clinical sample demonstrating significantly lower levels than both the undergraduate and NEET samples. There was also a significant main effect of group on direct multiple group memberships, with the clinical sample scoring significantly lower than the undergraduate sample. Online group memberships showed no significant main effect of group ($\eta^2 = 0.03$).

Table 9

Between-group comparisons

	H	*df*
Social connectedness - direct	38.894***	2
Social connectedness - online	20.787***	2
Group memberships - direct	17.35***	2
Group memberships - online	3.026[a]	2, 48.25

Note. [a] = Welch's F One-way ANOVA; * *p* < .05, ** *p* < .01, *** *p* < .001

Table 10

Mann Whitney U posthoc comparisons

	Clinical vs. student		Clinical vs. NEET		NEET vs. student	
	U	*r*	*U*	*r*	*U*	*r*
SCS direct	392.5***	0.54	178.5***	0.48	1253.0	0.09
SCS online	715.5***	0.40	237.0***	0.37	1330.0	0.05
MGM direct	827.5***	0.35	336.0	0.15	1087.0	0.17

Note. NEET = Not in education, employment or training; SCS = Social Connectedness Scale; MGM = Multiple Group Memberships; * *p* < .05, ** *p* < .01, *** *p* < .001

4.4 Discussion

This study investigated online socialising in young people accessing mental health services, describing the nature of use within this sample, reporting levels of PIU, and investigating how online socialising compares with face-to-face interactions. Furthermore, it aimed to compare this sample with two samples of young people with different levels of symptoms and social functioning.

4.4.1 Time spent socialising

The clinical group reported a significantly greater amount of time socialising indirectly, compared to the undergraduate sample. This appears consistent with the social compensation hypothesis and the preference for online interactions generally associated with social anxiety and low social skills (Laghi et al., 2013). However, the clinical group also reported significantly more time socialising directly, compared to the undergraduate sample. Given the high levels of symptoms within the clinical sample, often associated with poor social functioning or social isolation (Fowler et al., 2010), this finding is unexpected. This may pose a potential limitation in the method of measuring socialising using the Time Use Survey, in which structured socialising tends to be captured within the 'leisure' domain, whereas 'socialising' captures more unstructured social activities (e.g. socialising at home or at others' homes). Indeed, the undergraduate sample had significantly higher levels of time spent in leisure activities compared to the clinical sample, suggesting that clinical participants spend more time socialising in an unstructured format, but less time socialising in structured activities in public settings.

The clinical data begin to provide a picture of how young people accessing mental health services may be engaging with online socialising. The clinical sample reported a similar amount of time spent socialising online as they did face-to-face, which could suggest that online socialising is providing a supplementary form of social contact, rather than a substitution of face-to-face interactions. Of the online socialising, the greatest time was spent on SNS, followed by instant messaging, with little time spent socialising through online gaming. The high levels of SNS use may be important to investigate further within clinical samples, as this can reflect more passive use, which has been found to predict more negative outcomes, compared with instant messaging (Rauch et al., 2013; Burke et al., 2010). Most participants reported interacting with existing friends online. This suggests online socialising largely may not be acting as a means of meeting new people and expanding social networks, suggested as one potential benefit in line with the social compensation hypothesis (Selfhout et al., 2009). However, it may be acting as a valuable means of maintaining existing friendships, which Valkenburg and Peter (2009) suggested to have more positive effects than making new contacts online.

4.4.2 Problematic internet use

There was no significant difference in overall levels of PIU between the samples. This appears to contradict the suggestion that existing psychopathology and psychosocial difficulties, such as depression, social anxiety and poor social functioning, would identify those at marked risk of PIU (Davis, 2001; Caplan, 2003; Caplan, 2007). While the clinical sample had the highest mean scores, this did not approach significance, and carried a relatively small effect size. However, analysis at a subscale level revealed some significant differences between the groups. The clinical sample had significantly higher levels of a preference for online interaction compared with the undergraduate sample, which is consistent with Caplan's (2010) suggestion that this preference will be more relevant to socially anxious individuals or those with poor social skills.

The clinical sample also had significantly higher levels of the mood regulation subscale when compared with the NEET sample, suggesting they were more inclined to use the internet as a method of alleviating distress. Emotion regulation difficulties are common within mental health populations (Berking & Wupperman, 2012; Garnefski et al., 2002; Pelletier-Baldelli et al., 2015), which may help to explain the higher levels of PIU mood regulation in the clinical sample.

Emotion regulation difficulties have been linked to the development and maintenance of various forms of psychopathology (Berking & Wupperman, 2012), and maladaptive emotion regulation strategies are associated with negative outcomes (Brougham et al., 2009). Therefore, it may be important to know more about potential maladaptive use of the internet as an emotion regulation strategy, which could exacerbate and complicate existing difficulties for clinical populations.

The undergraduate sample showed similar levels of mood regulation as the clinical sample and were also significantly higher than the NEET sample. This is an interesting finding, given that the undergraduate sample had the lowest levels of symptoms. One possible explanation is that undergraduate students use the internet as a coping strategy for stress, with high levels of stress previously found in student populations (Brougham, Zail, Mendoza & Miller, 2009).). However, this is beyond the scope of the present study.

Overall, the similar levels of PIU across the groups may suggest the possibly pervasive nature of features of PIU across this generation of young people who have grown up with social media. PIU may be an important concept for those supporting young people to be aware of, particularly those working in youth mental health, for whom PIU could contribute to further negative outcomes and potentially exacerbating existing difficulties. Alternatively, these results could reflect a need to update the concept of PIU, given the commonplace role of online socialising in young people’s lives today. Across the samples, mean levels of PIU seemed markedly higher than those reported by Caplan (2010) in development of the scale. However, it is important to note the difficulty in comparing the current PIU data with that of Caplan (2010), given the increasing levels of engagement with SNS use and the technological advances that have taken place (We Are Social, 2018).

4.4.3 Comparisons between online and offline socialising

Fears of negative evaluation were significantly lower in online interactions, compared to offline interactions in the clinical sample. This is consistent with Yen et al. (2012) and supports the literature regarding the perceived safety of the online social environment (Prizant-Passal et al., 2016). Perceived safety online has been suggested to support the development of stronger social bonds (Valkenburg & Peter, 2009). However, despite the significantly lower fears of evaluation online, levels of connectedness, group membership and needs satisfaction were similar across online and offline interactions. This appears to contradict the social compensation hypothesis and indicates that although the online social domain may be an appealing alternative for fearful individuals, the observed benefits may be few (Erwin et al., 2004; Lee & Stapinski, 2012). There have been suggestions that 'safer' online interactions could reinforce avoidance of feared direct interactions, potentially contributing to exacerbated anxiety in face-to-face situations (Erwin et al., 2004). This is beyond the scope of the present study, but it may be important to know more about this risk within clinical samples, where avoidance of face-to-face interactions could exacerbate existing difficulties and complicate treatment outcomes.

With similar levels of social connectedness, group memberships, and basic needs satisfaction in both online and offline social interactions, online socialising did not appear to provide an alternative social environment that was able to compensate for the lack of social needs being met in face-to-face interactions in the clinical sample (e.g. the social compensation hypothesis). However, neither did it appear to disadvantage individuals, by providing significantly less than face-to-face interactions. As such, online interactions could represent an alternative form of socialising that supplements and augments direct interactions (Cole et al., 2017; Seabrook et al., 2016).

4.4.4 Control sample comparisons

4.4.4.1 Social connectedness

The clinical sample had significantly lower levels of online social connectedness compared to the control samples. This appears consistent with the rich-get-richer hypothesis, as the young people with lower levels of symptoms demonstrated more successful online interactions in this respect. Similarly, it may contradict the social compensation hypothesis, as despite the high social anxiety of the clinical sample, they were at a disadvantage in online interactions, rather than deriving compensatory benefits. However, as the clinical sample had significantly lower social connectedness in both online and offline domains, this appears to emphasise the difficulty of the clinical sample in experiencing connectedness in either domain, rather than reflecting a disadvantage specifically in their online socialising. This highlights the vulnerability of these individuals and future research may consider investigating factors which promote conditions of connection, or those factors which risk further detriment.

The NEET sample reported similar levels of connectedness to the undergraduate sample. Therefore, although the NEET sample had the lowest levels of social functioning and had higher symptom levels than the undergraduate sample, they appeared equally able to engage in positive interactions, regarding connectedness. It is suggested that the low social functioning in the NEET group largely reflects the lack of time spent in education and employment, rather than reflecting a difficulty in interpersonal functioning, as is likely the case in the clinical sample. The NEET sample showed similarly high connectedness in both online and offline socialising, whereas the clinical group showed similarly low levels in both domains.

The undergraduate sample had significantly lower connectedness in their online socialising compared to direct socialising. This may contradict the rich-get-richer hypothesis and appears more consistent with the findings of Cole et al. (2017), that for those with existing in-person support, online interactions may be more redundant. However, despite their significantly lower online social connectedness, it remained significantly higher than the clinical sample, further emphasising the gap between these groups.

4.4.4.2 Multiple group memberships

Multiple group memberships in direct interactions were significantly lower for clinical participants compared to undergraduate students, again highlighting the interpersonal difficulties of the clinical sample. However, there was no difference between the samples for online group memberships. Therefore, the clinical sample were not at a significant disadvantage online, as was the case with social connectedness. This may highlight the comparatively unsuccessful nature of online interactions for providing multiple group memberships, as the undergraduate sample reported significantly lower levels online compared to their direct group memberships, however, the same pattern was seen for undergraduate social connectedness. The NEET group again showed similar levels to the undergraduate sample, for both online and direct group memberships, suggesting relatively positive experiences of group membership. It should be noted that there was relatively low internal consistency of the online version of the multiple group memberships scale in the clinical sample, which may have hindered comparisons.

4.4.5 Limitations

The generalisability of these findings may be limited by the small size of the clinical sample. However, the nature of the clinical youth sample is a strength of the study, given the lack of previous research in this population. Furthermore, while this sample was relatively small, there was sufficient power to detect clinically relevant effect sizes. As this was a fairly diverse clinical sample, particularly in terms of mental health difficulties, there are limited specific conclusions that can be drawn. Future clinical studies with larger samples may consider comparing findings for participants with different mental health difficulties, ages and genders.

Comparisons across samples were limited by differences in the data collection regarding indirect rather than online socialising. However, the presence of the control samples was a strength of this study, allowing a comparison for the clinical sample. The broad inclusion criteria of the samples should be noted, as this means there was likely to be overlap, with some of the NEET and undergraduate participants potentially also accessing mental health services.

The cross-sectional design limits conclusions regarding causality and the reliance on self-report methodology increases the possibility of bias, such as socially desirable responses (Fisher, 1993). However, efforts were made to put participants at ease and instructions were provided regarding answering honestly. The Time Use Survey relies on participants' recall over the previous month, which may introduce further errors. However, participants made use of calendars and diaries to support their recall. Future studies investigating online socialising may consider making use of technology for more objective reporting, for example, extracting information from participants' SNS profiles.

4.5 Conclusions

This research presents some new insight on the topic and it is hoped that this will help to generate continued exploration of online socialising for young people experiencing mental health difficulties. The findings indicate similar levels of social connectedness, needs satisfaction and group memberships in both online and offline interactions for the clinical sample, despite lower fears of negative evaluation in online interactions. Furthermore, despite spending greater time socialising, the clinical sample reported significantly lower levels of connectedness and direct group memberships compared to controls. The results did not appear to demonstrate benefits in support of the social compensation hypothesis, instead highlighting the vulnerability of these young people, who may be struggling to connect with their peers in both online and offline interactions. Risks of problematic internet use appeared similar across the samples, however, the mood regulation and preference for online interaction aspects appeared more prevalent in the clinical sample. In particular, the mood regulation subscale may be an important direction for future research, given the prevalence of emotion regulation difficulties in clinical populations and the potential role in maintaining existing difficulties. These results reflect early explorative findings; therefore, replication and extension will be important.

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Chapter Five – Additional Methods and Results

This chapter provides additional methodological information, which was omitted from the empirical paper to provide a clearer focus. Additional results are also reported, with attention to the process of managing missing data, and exploratory correlational analyses.

5.1 Additional Methods

5.1.1 Ethical considerations in the clinical sample

5.1.1.1 Consent

To ensure fully informed consent, participants were required to have mental capacity to understand what the study involved and consider their decision to take part. This was largely assessed by the care coordinator at the time of referring to the study. However, given the fluctuating nature of mental capacity, and the possible impact of acute mental health difficulties (Okai et al., 2007), this issue was also considered during research assessments. All participants were initially presumed to have capacity. There were no concerns about any participants’ ability to understand what the study involved and weigh up the information to make a decision about taking part. Participants were informed of their right to withdraw, and that any decision not to take part or to withdraw would not impact their treatment from the Youth Service. Participants were given information sheets at least 48 hours prior to giving their informed consent, to allow time to consider their decision and any questions they may have.

5.1.1.2 Protection from harm

The content of the study was not anticipated to cause greater distress than routine clinical care. However, participants were informed of the possible risk of finding the research measures upsetting, given that they required reflecting on their current mental health and levels of connection with others. Efforts were made to build rapport and put participants at ease and there were no overt signs of distress displayed during the research appointments. Participants were notified of limitations regarding their right to confidentiality, where harm to the participant or others was of concern, including regarding online interactions. Participants also provided consent for clinically relevant information to be shared with their lead care professional (e.g. scores on symptom measures, responses to suicide/self-harm risk items), to manage risk and inform their ongoing care.

5.1.2 Power calculations

With 30 participants, there was estimated to be adequate power ($b = 0.8$) to detect findings with a medium effect size (d) in the range of 0.5 - 0.6, using two-tailed paired t-tests (Clark-Carter (2004). For the comparison with the control samples, an adjusted sample size of 91 was calculated, based on the mean sample size across the three groups (Clark-Carter, 2004). This estimate provided sufficient power ($b = 0.8$) to detect a medium effect size (η^2), using a one-way independent ANOVA with two degrees of freedom.

5.1.3 Assumptions of normality

Normality of distributions were assessed through visual inspection of histograms and P-P plots, with several variables displaying visibly skewed distributions. Skewness and kurtosis statistics were converted to z-scores and inspected for values greater than 1.96 (Field, 2009), and alongside significant results on the Shapiro-Wilks test, several variables were deemed to violate the assumption of normality. Following consultation with the literature and a Statistics Tutor (Dr. D. Peck), it was decided that non-normal distributions would be addressed by using non-parametric tests, rather than transformations or bootstrapping. These were argued to be of limited value and result in moving away from the original variables, both conceptually and numerically (Dr. D. Peck; Field, 2009; Erceg-Hurn & Mirosevich, 2008). Outliers were present in the data but were retained, as they appeared to reflect legitimate scores and were judged not to have an undue influence on the analyses (Clark-Carter, 2004).

5.2 Additional Results

5.2.1 Missing data

There were no missing data in the clinical sample, however, there was a range of missing data across the control samples. The missing data largely related to the Generalised Problematic Internet Use Scale 2 (GPIUS2), the Social Connectedness Scale (SCS), and the Multiple Group Memberships Scale (MGM), as these measures were only introduced in the second year of data collection in the control samples. Pairwise deletion was employed for 107 participants, for whom data was missing for the entire measures of the GPIUS2, SCS and MGM. Pairwise deletion was used for a further three cases missing the entire measures of the SCS and MGM or for whom data was missing for more than 20% of the measure (Garson, 2015). Preliminary analyses did not identify any significant differences between the cases with and without this missing data, in terms of age (t (242) = 1.031, p = .304), gender (t (242) = -1.453, p = 0.148) or structured activity levels (t (240) = 0.676, p = .50). Following the pairwise removal of missing data, there remained sufficient power to detect a medium effect size (η^2), using a one-way independent ANOVA with two degrees of freedom (Clark-Carter, 2004). Demographic characteristics for the NEET and undergraduate samples following pairwise deletion can be seen in Table 19; although the exact number of participants included in different analyses varied according to the data present for different measures.

Table 11

Demographic characteristics following pairwise deletion

Sample	N	Gender (% female)	Age range	Mean age (SD)
NEET	27	29.60	16-23	18.70 (1.96)
Undergraduate	107	67.60	18-25	21.10 (1.20)

Note. NEET = Not in education, employment or training

The remaining missing data across the control samples ranged from a low of 0% for multiple group memberships, up to 24.6% for problematic internet use (PIU). The missing PIU data was due to an inaccurate version of the GPIUS2 being used for some control sample participants, resulting in missing data for items 2, 14 and 15. The expectation maximisation method within SPSS was used to manage the missing data of individual items. This is advised to be a superior method compared to using mean substitution (Clark-Carter, 2004; Fox-Wasylyshyn & El-Masri, 2005), and has been found to show similar results to multiple imputation techniques (Dong & Peng, 2013).

5.2.2 Additional analyses

5.2.2.1 PIU correlations with symptoms and social functioning in the clinical sample

Pearson′s correlational analyses assessed relationships between PIU with symptoms and social functioning in the clinical sample. The results (Table 12) indicated a significant and large positive association between PIU and distress from psychotic-like symptoms. This remained significant after controlling for depression and social anxiety (*r* (25) = 0.46, *p* < .05) and after adjusting for multiple comparisons. Moderate positive correlations existed for social anxiety and depression with PIU, but these were non-significant when adjusting for multiple comparisons, and when controlling for the confounding influence of each other. There was no significant association between PIU and structured activity or time spent directly socialising. There were moderate positive significant correlations between PIU with time spent online socialising and time spent on SNS; however, these were no longer significant after adjusting for multiple comparisons. (Table 13). There was a significant and moderate positive correlation between distress in relation to psychotic-like symptoms with the mood regulation subscale. This remained significant when controlling for social anxiety, depression, and the psychotic like symptoms themselves (*r* (25) = 0.42, *p* < .05). There was also a large and significant positive correlation between distress from psychotic-like symptoms and the negative outcomes subscale of PIU, which again remained significant when controlling for social anxiety, depression, and the psychotic like symptoms themselves (*r* (25) = 0.47, *p* < .05).

There was a significant positive correlation between the preference for online interactions subscale with both depression and social anxiety. The large correlation with social anxiety remained significant when controlling for depression (*r* (25) = 0.56, *p* < .01). However, the moderate correlation with depression was no longer significant when controlling for social anxiety (*r* (25) = 0.29, *p* = 0.13). There was also a significant positive correlation between time spent socialising online and a preference for online interactions, and a significant negative correlation between time spent directly socialising and a preference for online interactions. Finally, there was a significant negative correlation between the cognitive preoccupation subscale with the time spent in structured activity.

Table 12

Pearson's correlations of problematic internet use, with symptoms and social functioning in the clinical sample

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.Problematic internet use											
2. Structured activity	-.32										
3. Direct socialising	-.29	.18									
4. Online socialising	.36*	-.12	-.01								
5. Instant messaging	.15	-.25	-.02	.81**							
6. Social networking sites	.43*	.12	-.03	.64**	.09						
7. Online gaming	.02	-.17	.20	.46*	.64**	-.18					
8. Social anxiety	.43*	-.61**	-.30	.32	.42*	.04	.12				
9. Depression	.37*	-.25	-.40*	.16	.05	.24	-.12	.29			
10. Psychotic-like symptoms	.26	-.04	-.47**	.06	.11	.07	-.35	.28	.38*		
11. Psychotic symptoms distress	.53**	-.02	-.32	.29	.17	.34	-.23	.38*	.50**	.78**	

* $p < .05$, ** $p < .01$

Table 13

Pearson's correlations for problematic internet use subscales with symptoms and social functioning in the clinical sample

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. PIU – Preference for online												
2. PIU – Mood regulation	0.38*											
3. PIU – Cognitive preoccupation	0.34	0.27										
4. PIU – Compulsive internet use	0.29	0.43*	0.56**									
5. PIU – Negative outcomes	0.04	0.38*	0.27	0.61**								
6. Psychotic-like symptoms	0.16	0.18	0.25	0.06	0.30							
7. Psychotic symptoms distress	0.35	0.40*	028	0.34	0.52**	0.78**						
8. Depression	0.40*	0.09	0.19	0.32	0.24	0.38*	0.50**					
9. Social anxiety	0.61**	0.18	0.21	0.19	0.17	0.28	0.38*	0.29				
10. Direct socialising	-0.36*	-0.03	-0.21	-0.17	-0.19	-0.47**	-0.32	-0.40*	-0.30			
11. Online socialising	0.45*	0.26	0.20	0.19	0.06	0.06	0.29	0.16	0.32	-0.01		
12. Structured activity	-0.33	-0.07	-0.41*	-0.30	0.06	-0.04	-0.02	-0.25	-0.61**	0.18	-0.12	

Note. PIU = Problematic Internet Use; * *p* < .05 ** *p* < .01

5.2.2.2 Exploratory correlations

Given the novel nature of this research, additional correlational analyses were conducted to explore other potentially important associations in online and offline socialising. Previous research has shown how features of online socialising may correlate with symptoms. For example, Grieve et al. (2013) found online social connectedness had significant negative correlations with depression. Therefore, further Pearson’s correlations were conducted within the clinical sample, to investigate associations between social connectedness, needs satisfaction, group memberships and fears of negative evaluation, with PIU and symptoms. Given the exploratory nature of these analyses, no adjustments for multiple comparisons were applied, and there were no attempts to control for the influence of other variables. Therefore, the results should be interpreted with caution (Table 14).

Fears of negative evaluation in both online and direct interactions showed significant positive correlations with distress in relation to psychotic-like symptoms, depression, social anxiety, and problematic internet use, with moderate to large correlation sizes. There was also a significant negative association between online fears of negative evaluation and needs satisfaction from online interactions. While direct fears of negative evaluation were similarly negatively associated with needs satisfaction from direct interactions. Furthermore, there was a significant and moderate positive correlation between fears of negative evaluation in direct interactions and the amount of time spent socialising online. Whereas there was a significant and moderate negative correlation between fears of negative evaluation in online interactions and the amount of time spent socialising directly.

Social connectedness in direct interactions showed significant and large negative correlations with depression, social anxiety and problematic internet use.

Social connectedness in online interactions was significantly and moderately negatively correlated with depression and psychotic-like symptoms. Online and direct multiple group memberships showed no significant correlations with either symptoms or problematic internet use, although there were some moderate correlations that did not reach significance. Needs satisfaction from direct interactions showed significant and large negative correlations with problematic internet use, depression, social anxiety, and psychotic-like symptoms, regarding both the level of symptoms and the level of distress experienced in relation to these. Online needs satisfaction showed only a significant moderate negative correlation with depression.

Table 14

Pearson's correlations between social connectedness, group memberships, needs satisfaction and fears of negative evaluation with symptoms and PIU

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. SCS-Direct															
2. SCS-Online	.50**														
3. MGM-Direct	.53**	.23													
4. MGM-Online	.04	.49**	.37*												
5. BNSS-Direct	.77**	.49**	.40*	.12											
6. BNSS-Online	.27	.61**	.14	.42*	.39*										
7. BFNE-Direct	-.20	.07	-.09	.26	-.49**	-.12									
8. BFNE-Online	.04	-.05	.12	.23	-.26	-.40*	.67**								
9. SIAS	-.43*	-.05	-.34	.13	-.50**	.03	.70**	.37*							
10. PHQ-9	-.52**	-.37*	-.16	.12	-.79**	-.37*	.47**	.37*	.29						
11. PQ-16 True	-.21	-.36*	-.04	-.12	-.38*	-.16	.29	.33	.28	.38*					
12. PQ-16 Distress	-.31	-.29	.03	.08	-.48**	-.29	.54**	.52**	.38*	.50**	.78**				
13. TUS-Direct	.16	.14	.17	-.02	.36	.07	-.33	-.36*	-.30	-.40*	-.47**	-.32			
14. TUS-Online	-.24	.23	-.11	.27	-.14	.20	.37*	.07	.32	.16	.06	.29	-.01		
15. GPIUS2	-.51**	-.04	-.07	.30	-.46**	-.13	.52**	.42*	.43*	.37*	.26	.53**	-.29	.36*	

Note. SCS = Social Connectedness Scale; MGM = Multiple Group Memberships; BNSS = Basic Needs Satisfaction Scale; BFNE = Brief Fears of Negative Evaluation; SIAS = Social Interaction Anxiety Scale; PHQ-9 = Public Health Questionniare-9 (depression); PQ-16 = Prodromal Questionnaire-16 (psychotic-like symptoms); TUS = Time Use Survey; GPIUS = Generalised Problematic Internet Use Scale 2. * $p < .05$ ** $p < .01$

5.3 Discussion of Additional Results

5.3.1 Problematic internet use (PIU)

A significant large positive correlation was found between total PIU with distress from psychotic-like symptoms in the clinical sample, which remained significant after controlling for depression and social anxiety. This adds further weight to previous findings (Pelletier-Baldelli et al., 2015) and it is consistent with Mittal et al. (2013), who similarly looked at the distress or impact of the psychotic-like symptoms. Given the lack of research investigating the relationship between psychotic-like symptoms and PIU or online socialising, this may be one important avenue for future research in clinical populations.

One possible explanation for this relationship is that individuals experiencing high levels of distress from psychotic-like symptoms may turn to the internet as a method of emotion regulation and distress alleviation. Young people with attenuated psychotic-like symptoms have shown impairments in managing emotions (Green et al., 2012; Pelletier-Baldelli et al., 2015), and using the internet as a method of mood regulation is a significant component of PIU (Caplan, 2010). In line with this, the mood regulation subscale showed a significant and moderate positive correlation with distress from psychotic-like symptoms. Future research may seek to unpick how much this association relates specifically to distress from psychotic-like symptoms, or whether it relates to more general psychopathological distress.

Distress in relation to psychotic-like symptoms was also significantly positively associated with the negative outcomes subscale, with a large effect size. Caplan (2010) suggested that using the internet for mood regulation purposes will predict more compulsive internet use, and this may lead to more negative outcomes.

This highlights the importance of understanding more about PIU for individuals with distressing psychotic-like symptoms, as they may be at higher risk of experiencing associated negative outcomes, which may exacerbate existing difficulties and result in a vicious dysfunctional cycle (Caplan, 2003).

Moderate correlations were found for depression and social anxiety symptoms with total PIU, although these were non-significant when controlling for each other's confounding influence, or after adjusting for multiple comparisons. In non-clinical studies, previous findings have largely supported a positive association between social anxiety with PIU (Prizant-Passal et a., 2016), although findings for depression have been less consistent (Seabrook et al., 2016). Future studies with larger samples may draw clearer conclusions about the relationship between PIU with social anxiety and depression in clinical youth populations.

At a subscale level, there was a significant and large positive association between social anxiety and the preference for online interaction, which remained significant when controlling for depression. These findings are consistent with the existing literature (Prizant-Passal et al., 2016) and may help to explain the significantly higher levels of the preference for online interactions in the clinical sample. There was also a significant moderate association between depression and a preference for online interactions, although this was no longer significant when controlling for social anxiety. This again appears consistent with the existing literature, which has suggested that depression is relevant to the construct of a preference for online interactions, but that this may largely be explained by the confounding influence of social anxiety (Caplan, 2003; Caplan, 2007).

The moderate correlation between total PIU with time spent socialising online was non-significant after adjusting for multiple comparisons. The preference for online interaction subscale showed a significant positive association with time spent online, however all other subscales were non-significant. Time spent online was also not significantly correlated with any symptoms. The limited findings in this area highlight the need to look beyond simply time spent online in order to understand the potential for problematic use. This corresponds with the existing literature, suggesting that attention should be paid to the specific activities and quality of online socialising instead of simply time spent online (Berryman et al., 2017; Burke et al., 2010; Rauch et al., 2013).

There was a moderate to large correlation between time spent on SNS with total PIU. Although this was non-significant after adjusting for multiple comparisons, it may suggest that the use of SNS poses a more relevant concern to PIU than instant messaging, which had a small and non-significant correlation with PIU. This may be consistent with previous research regarding the more positive use of instant messaging and more passive use of SNS (Selfhout et al., 2009).

There were no significant correlations between total PIU and time spent directly socialising, or time spent in structured activity, which appears to contradict the proposed key roles of social isolation and social functioning in the development of PIU (Davis, 2001; Caplan, 2003). Furthermore, there were limited associations between time spent directly socialising or time spent in structured activity with the PIU subscales. There was a significant negative correlation between structured activity with the cognitive preoccupation subscale. This could indicate that those with lower levels of structured activity spend more time thinking about the internet, perhaps as they have fewer other activities to occupy their time with. Alternatively, it could indicate that those with higher levels of preoccupation with the internet subsequently find it harder to spend time engaged in structured activities. There was also a negative correlation between a preference for online interaction and time spent directly socialising, suggesting that those who have a greater preference for online interactions spend less time in direct socialising. However, as all of these results are cross-sectional and correlational in nature, conclusions about causality cannot be inferred.

5.3.2 Exploratory correlations

Fears of negative evaluation were linked to the amount of time spent socialising, in both online and direct domains. Given the correlational nature of these findings, causality cannot be inferred, however tentative interpretations are suggested. Fewer fears in online socialising were associated with greater time spent directly socialising. One possible interpretation is that individuals who have more frequent direct interactions experience less fear in the online context. This appears consistent with the rich-get-richer hypothesis, as it may be those who have greater offline social functioning who have a better experience in online interactions.

Greater fears in direct socialising were associated with greater time spent socialising online. This may be interpreted as those with greater fears of evaluation in direct interactions opting to spend greater time socialising online, due to the perceived safety online and potential avoidance of feared face-to-face interactions. Alternatively, it is possible that the more time is spent socialising online, the greater the fears of face-to-face interactions may become. For example, if time spent socialising online is at the cost of face-to-face socialising, or specifically to avoid face-to-face interactions, then opportunities to gather evidence that disconfirms the fears of negative evaluation will be few, therefore the fears may be maintained or exacerbated. However, time spent online has not been shown to be a reliable predictor of outcomes of online socialising (Prizant-Passal et al., 2016), therefore the previous interpretation may be more likely.

Fears of negative evaluation were also associated with basic needs satisfaction, with greater fears of evaluation in direct interactions associated with lower needs satisfaction in direct socialising. Similarly, fears of evaluation in online interactions were associated with lower levels of needs satisfaction in online socialising. It is possible that fears of negative evaluation disrupt the ability to engage in satisfying interactions. Fears of negative evaluation may result in preoccupation with detecting threats (Carleton et al., 2007), with a more inhibited and self-conscious social style (Valkenburg & Peter, 2007), potentially resulting in less authentic and satisfying interactions.

Needs satisfaction was associated with lower levels of symptoms, which is consistent with self-determination theory (Ryan & Deci, 2000). This association was most apparent for needs satisfaction from direct interactions, with significant negative correlations, of moderate to large strength, with all symptoms. It was less apparent for needs satisfaction from online interactions, with only a moderate correlation with lower levels of depression. Consistent with Wong et al. (2014), there was a negative correlation between direct needs satisfaction with levels of PIU; although the same result was not found for online needs satisfaction.

Similarly, social connectedness derived from direct interactions was associated with lower levels of PIU, with a large effect size; while the same result was not found for social connectedness derived from online interactions. Direct social connectedness showed significant correlations with lower levels of social anxiety and depression. Whereas online social connectedness showed moderate correlations with lower levels of depression and psychotic-like symptoms. This is consistent with the findings of Grieve at al. (2013) which showed online social connectedness had significant negative correlations with depression.

Multiple group memberships, in either the online or direct domain, showed no significant correlations with symptoms or PIU. Direct group memberships demonstrated only a small and non-significant negative correlation with depression, whereas online group memberships demonstrated a small and non-significant positive correlation with depression. This contradicts previous findings that have found an association between multiple group memberships and reduced levels of depression (Cruwys et al., 2013). It should be noted that the internal consistency of the online group membership scale was relatively low; therefore, the data may be somewhat limited in this respect. However, it is interesting to note that this low scale reliability can only be seen in the clinical sample and related only to the online version of the measure.

5.3.3 Summary

The large correlations between PIU with distress from psychotic-like symptoms suggests the need for further research in this area, particularly in relation to use of the internet as a means of mood regulation. The exploratory correlations appear to point towards the value of direct interactions over and above that of online interactions; although online interactions still demonstrated some negative associations with levels of symptoms and PIU. Fears of negative evaluation were significantly linked with time spent socialising and the levels of needs satisfaction derived from interactions, in addition to showing strong associations with depression, anxiety, distress from psychotic-like symptoms and PIU. These findings further highlight the potential role of fears of negative evaluation in understanding online interactions; however, further research is needed to replicate and extend these results.

Chapter Six – Discussion and Critical Appraisal

This chapter aims to bring the findings from the previous chapters together, to position them within the existing literature, and consider the theoretical and clinical implications. Strengths and limitations of the work are considered, and possible future directions for research are discussed throughout. The chapter finishes with an overall conclusion to the portfolio.

6.1 Theoretical and Clinical Implications

6.1.1 Problematic internet use (PIU)

The previous chapters indicate the relevance of PIU to young people, and particularly in relation to various mental health symptoms. The systematic review indicated the largely consistent association between PIU with social anxiety. While chapter five indicated a large correlation between PIU with distress from psychotic-like symptoms, and moderate correlations with social anxiety and depression. What was apparent in chapter four, however, was the relatively high levels of PIU across all three samples of young people in the empirical research. It seems important then for healthcare professionals, and others involved in supporting young people, to be aware of PIU, the possible risk factors, and the associated negative outcomes. This may be especially important in services supporting those with existing mental health difficulties or poor social functioning, for whom PIU may further complicate their recovery and outcomes and may be an important treatment target. For individuals with social anxiety or psychotic-like symptoms, PIU may reflect an especially relevant risk factor.

However, given the high rates of PIU found across all three samples in chapter four, it is also suggested that the concept and measurement of PIU may need to be reviewed and updated. With the increasing availability and accessibility of online socialising and the rising rates of engagement with SNS (We Are Social, 2018), normative levels of PIU may have changed. Furthermore, there may be new constructs of PIU to consider, given the changing patterns of online socialising in younger populations (Smith & Anderson, 2018; Selfhout et al., 2009).

While there was no significant difference in overall levels of PIU across the samples, chapter four demonstrated significant differences in the subscales of a preference for online interaction and mood regulation. These may suggest components of PIU that are especially relevant to clinical populations and which may warrant focus in future research. While there has already been substantial focus on the association between a preference for online interactions with social anxiety in non-clinical populations, there has been limited focus, if any, in clinical populations. The mood regulation component of PIU appears to have received relatively little attention in any population and is suggested to be an important area for future investigation. This research is felt to be especially important in clinical populations, where emotion regulation difficulties tend to be prevalent and where maladaptive emotion regulation strategies may complicate existing difficulties and treatment outcomes (Garnefski et al., 2002; Berking & Wupperman, 2012).

6.1.2 The social compensation hypothesis

Overall, the previous chapters do not lend much support for the social compensation hypothesis. The systematic review highlighted how social anxiety was associated with more passive use of Facebook and less friends on Facebook (Shaw et al., 2015; Fernandez et al. 2012). It also identified findings of greater stress levels at face-to-face interactions, and engaging in online interactions to avoid face-to-face interactions, which was further associated with increased depression and lower self-esteem satisfaction (Rauch et al., 2013; Weidman et al., 2012). Furthermore, there were no associations found between social anxiety and the formation of online friendships and no evidence for positive associations with relationship satisfaction (Szwedo et al., 2011; Honnekeri et al., 2017). In summary, these findings suggest less beneficial use of SNS and potentially indicate the use of SNS in a more avoidant and fearful way for those with social anxiety. However, there was some support for the social compensation hypothesis, with positive associations with online self-disclosure, and greater recovery from social exclusion following the use of SNS (Lin et al., 2017; Weidman et al., 2012).

The empirical findings suggested that online interactions were able to provide similar levels of connectedness, needs satisfaction and group membership as direct interactions for clinical youth participants. However, these levels appeared low compared to non-clinical norms, and therefore may not have offered much benefit or value to participants in line with the social compensation hypothesis. In comparison to the control samples, the clinical sample derived significantly less social connectedness from online interactions, which may offer further support against the social compensation hypothesis. Furthermore, the exploratory correlations appeared to indicate the value of direct interactions over and above that of online interactions; with greater negative associations with symptoms and PIU.

This portfolio further highlights the complexity of unpicking the outcomes of SNS use. Both the systematic review and the empirical findings add further weight to the suggestion that time spent online is a poor predictor of PIU and mental health outcomes and further attention needs to be paid to the specific processes and mechanisms that may be involved. For example, the systematic review identified passive use of SNS and a high need for social assurance as factors that may increase the risk of negative outcomes. Findings such as these may help to highlight conditions when the proposed benefits of the social compensation hypothesis are less likely to be met. However, these findings largely related to single studies, therefore replication and extension of results will be important. Further research will be important to increase understanding about the mechanisms and conditions which may support compensatory and beneficial use versus detrimental use. To the author’s knowledge, no research has yet been carried out looking at these processes or mechanisms in clinical populations, therefore, this will be an important next step. Further research may begin to build on the relatively simplistic views of the social compensation hypothesis, and may help to develop theoretical models which take account of a variety of factors, including individual differences of the user, specific features and quality of the SNS use, and wider social factors.

6.1.3 Social anxiety and fears of negative evaluation

The findings from the systematic review suggest several areas where a relationship between social anxiety and the use of SNS may be evident. Furthermore, the empirical research revealed significant findings between fears of negative evaluation, a central component of social anxiety, with online socialising. With the systematic review highlighting the potential risk factor of using SNS to avoid face-to-face interactions, it seems important to understand more about the degree to which online socialising may serve as an avoidance behaviour for those with high levels of social anxiety and fears of evaluation. If online socialising can be understood as an avoidance behaviour, it may be seen as potentially maintaining and reinforcing the fears of evaluation and anxiety experienced in direct interactions (Erwin et al., 2004). This will be important to know more about, particularly for clinical populations, where it may complicate existing mental health difficulties.

Fears of negative evaluation may also be an important mechanism that helps to explain the quality of SNS interactions. Exploratory correlations suggested associations between these fears with low needs satisfaction in social interactions. It is possible that high levels of fear in online interactions result in preoccupation with threats and a potentially inhibited social style, which may result in less satisfying interactions. In line with this, the reduced fears of evaluation in online interactions could suggest the potential for more satisfying interactions online. This is similar to the suggestion that the perceived safety of online interactions encourages greater self-disclosure, which may result in higher quality relationships (Valkenburg & Peter, 2009). However, in the current findings, online interactions still demonstrated low levels of connection, membership and needs satisfaction, suggesting that the lower fears of evaluation did not support higher quality interactions. Further research is needed to clarify the role that fears of negative evaluation may play, and how this may be associated with potential benefits or negative consequences.

6.1.4 Online socialising and youth mental health

Youth mental health services in England represent a population of young people with often complex needs, high levels of symptoms and social disability. Psychotic-like symptoms are common within this population, as can be seen in the current clinical sample, which suggested that over 90% of participants were in the at-risk category of psychotic-like symptoms. Research looking at online socialising in relation to psychotic-like symptoms is still very much in its infancy, but the current empirical findings suggest the need for further exploration. One suggested avenue for future research is investigating how the association between PIU and distress from psychotic-like symptoms may be explained through attempts to use the internet as a means of emotion regulation, found to be impaired in individuals with psychotic-like symptoms (Green et al., 2012; Pelletier-Baldelli et al., 2015). Comorbid psychotic-like symptoms are suggested to act as complicating factors in the course of anxiety and depression, showing associations with greater severity and poorer prognosis (Wigman et al., 2012). Similarly, PIU is suggested to exacerbate existing psychosocial difficulties and may subsequently complicate treatment outcomes. Therefore, it will be important to know more about the interplay between PIU and psychotic-like symptoms and the potential impact that this may have on the recovery of young people accessing mental health services.

The literature outlined in this portfolio highlights the crucial importance of social functioning during adolescence. Social connectedness, group membership and needs satisfaction have all been shown to demonstrate positive implications for wellbeing (Allen et al., 2014; Cruwys et al., 2013; Wong, Yuen & Li, 2014). Therefore, it is a significant finding that neither online or direct interactions appear to be providing much of these experiences for young people accessing mental health services. This highlights the vulnerability of these individuals, who may be at higher risk of negative outcomes, if they are less able to engage in satisfying and close personal interactions. Future research should attempt to identify factors and processes which may enhance the connection, membership and needs satisfaction derived from online interactions, which may serve to act as protective factors for psychosocial wellbeing (Ryan & Deci, 2000; Reicher & Haslam, 2006; Allen et al., 2014). The current literature points towards the importance of engaging in interactive use of SNS, so this may be one important avenue to follow-up within clinical youth samples.

Importantly, with greater understanding of the processes and mechanisms that can contribute to more beneficial or more negative consequences of SNS use, young people can be provided with information that allows them to make informed choices about their SNS use. In addition, this information could be used to inform the assessment, formulation and interventions for young people in clinical populations. For younger populations, it will also be important for parents to be informed about the potential protective and risk factors of SNS use.

6.2 Strengths and Limitations

The primary strength of this work is believed to be the novel use of a clinical youth sample, which was felt to be a significant gap in the current literature. Given the associations found between online socialising and mental health or wellbeing, clinical populations in general seem an important area. However, given the developmental sensitivity of adolescents, and the proposed role that social functioning can play as a protective or risk factor to wellbeing, this topic seems of great importance in vulnerable young people experiencing mental health difficulties. The current empirical study highlights the frequency of online socialising in this population, further emphasising the need to know more about the potential implications. While this portfolio begins to describe online socialising in youth mental health populations, it is hoped that it will help to generate continued investigation. It is argued that there should be a focus on the specific nature of online socialising in this population, helping to inform understanding about the potential processes and mechanisms that may support positive internet use.

Another strength of this work is felt to be the relevance of the topic. Positive responses were received from both the young people who took part, and the clinical teams who supported the recruitment, regarding the relevance of the research and the importance to young people. The positive responses received from the clinical teams is believed to have supported the recruitment process and helped to overcome potential gatekeeping issues (Hoyland, Hollund & Olsen, 2015). Furthermore, these positive responses are believed to highlight the importance of this research and indicate the need for further work in this area.

An additional strength is felt to be the inclusion of the two age-matched control samples. The availability of this data greatly increased the comparisons that could be made and subsequent conclusions. However, there are also limitations to consider regarding these comparisons. The NEET and undergraduate samples had a substantial amount of missing data, requiring pairwise deletion of cases. This technique has been criticised for posing a risk of bias (Fox-Wasylyshyn & El-Masri, 2005); however, no significant differences were found between the participants with and without this missing data.

It is important to note that the clinical and control samples had relatively broad inclusion criteria and limited exclusion criteria. This means that there was likely to have been overlap, with some of the undergraduate and NEET participants also likely to be accessing mental health services. This is not felt to be a major limitation, as the clinical sample does not represent a strict population of individuals with specific symptoms or of a certain severity. Instead, they represent a sample of young people who are likely to have higher levels of symptoms and poorer social functioning than the general population of young people, and who as a result, may be more vulnerable to negative SNS use, or better situated to capitalise from the potential benefits.

In addition, the different time frames of data collection should be discussed, with the clinical sample recruited during 2018 to 2019, while the undergraduate sample recruitment ran from 2015 to 2017, and the NEET sample ran from 2016 to 2018. While these do not represent drastically different time points, the rate of technological advancements must be considered. For example, from 2017 to 2018 alone, there were global increases in engagement with social networking sites and with smart phones (We Are Social, 2018). Therefore, it may be more difficult to directly compare internet use across the three samples.

This also represents a wider issue, as it is difficult to compare the findings of studies and discuss the consistency or discrepancy of results when the concept of online socialising has changed over time. When research in this area first began, it was largely focused on computer mediated communication, which includes email, chat rooms, internet forums and instant messaging. Clearly, online socialising has moved on since then, with the development and rapid growth in the popularity of social networking sites. Furthermore, much of the more recent research has looked specifically at Facebook, which appears to already be less relevant to younger populations (Smith & Anderson, 2018). The systematic review focused only on research that had been published after 2005, therefore this should be less of an issue for these results. But overall, research has not been able to keep up with the rapidly rising rates of internet use (Pelletier-Baldelli et al., 2015). As such, there are likely to continue to be gaps in our understanding about how more recent SNS platforms may interact with young people’s wellbeing. Future research should consider investigating more recent forms of SNS, popular with younger users, such as Snapchat and Instagram.

The systematic review identified limitations in the wider literature in relation to the frequent use of cross-sectional and self-report designs, and the same limitations apply in the present study. Given the time restrictions of educational research, this methodology is an appealing option. This was certainly the case for this research, given the novel and exploratory nature of the research questions, of which a cross-sectional and self-report design allowed the investigation of multiple variables. However, it remains important for future research to improve the quality of the evidence base and provide stronger evidence for initial exploratory findings, through utilising more experimental and prospective study designs.

A wider limitation in the use of self-report measures in this study was the restriction placed on participant responses. Many young people who took part in this project were passionate about the topic and were keen to share their stories and perspectives. Participants shared their experiences with online socialising, both positive and negative, discussing the personal impact of cyber-bullying, body image comparisons, and online support groups. Various young people disclosed that they had made recent decisions to cut down on their SNS use or delete their SNS profiles altogether. For some participants, it sounded like online socialising was a topic that was discussed within their clinical care from the Youth Services and was considered a risk factor for deterioration in their mental health. However, for others, it was discussed as a protective factor, with great amounts of social support accessed online. What was clear, however, was the great relevance of the topic to the majority of participants. However, these views could not be captured within the quantitative and questionnaire-based design of this research. Future qualitative research may be useful in following up on findings and providing depth to understanding. For example, exploring the topic of fears of evaluation in online and direct socialising, or considering the different specific uses of SNS and the perceived personal benefits or disadvantages.

6.3 Final Conclusions

This portfolio sought to investigate the nature of online socialising in young people experiencing mental health difficulties; a population who have been largely overlooked in the literature thus far. The discussion highlighted the ways in which online interactions may be perceived as safer or more comfortable; however, there was limited evidence for compensatory benefits. It is possible that online interactions may provide a supplementary social domain that could support social functioning in young people accessing mental health services, but attention should be paid to conditions that would augment the experience of connectedness, satisfaction and group membership for these vulnerable individuals. Problematic internet use was shown to be consistently correlated with social anxiety in chapter two, and significantly correlated with distress in relation to psychotic-like symptoms in chapter five. Given the lack of existing research in relation to psychotic-like symptoms and problematic internet use, this seems an important avenue for future research. Regardless, the results highlight the relevance of problematic internet use, specifically in clinical youth populations, where levels of social anxiety and psychotic-like symptoms tend to be high, but also across youth populations. This portfolio also highlights the complexity of the relationship between online socialising and the possible consequences of use. It is argued that any attempt to simply label online socialising as ‘good’ or ‘bad’ should be abandoned, and the importance of seeking to understand the underlying processes and mechanisms is emphasised.

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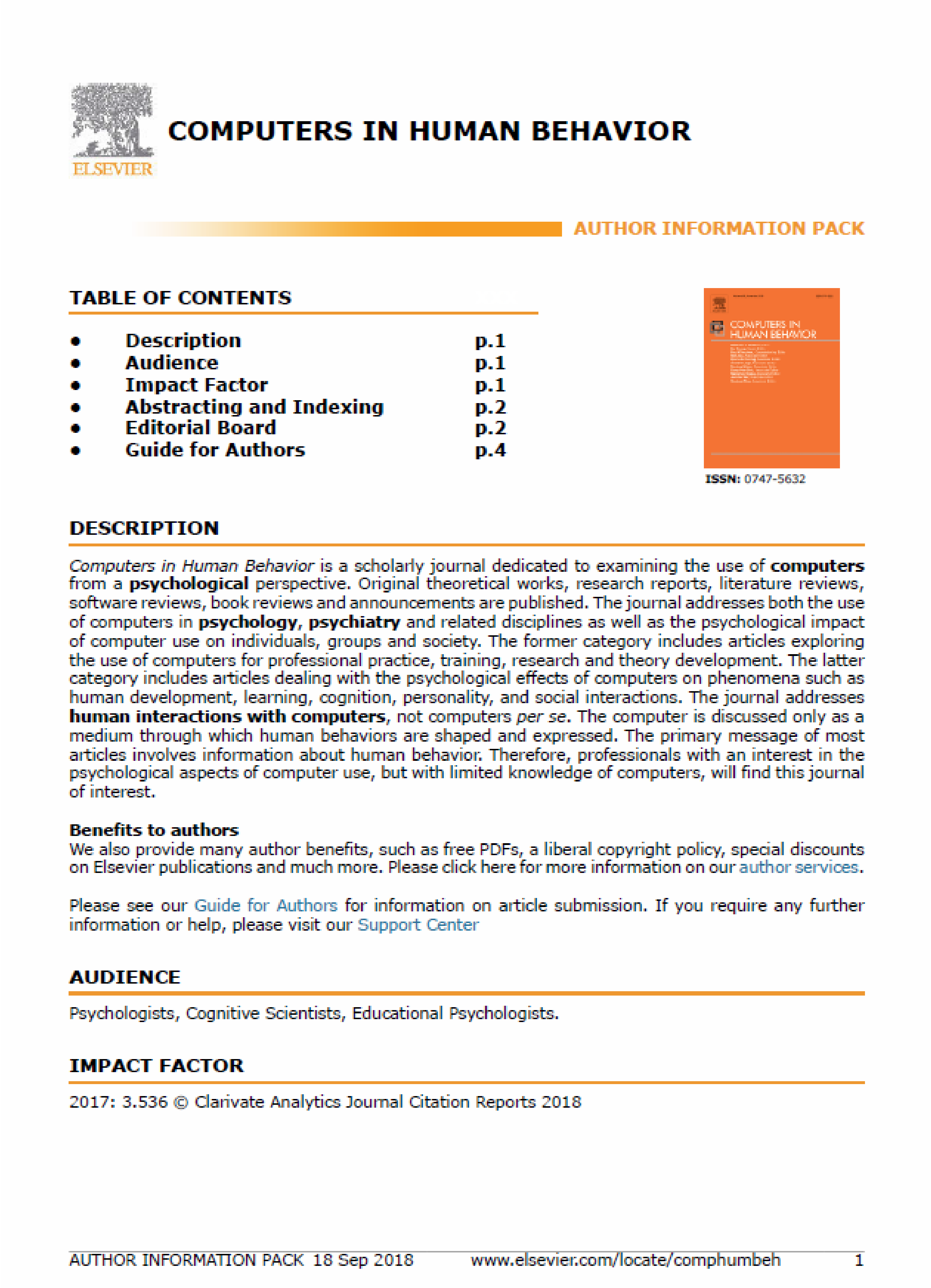
Table of Appendices

Appendix A – Journal Submission Guidelines for Computers in Human Behaviour.



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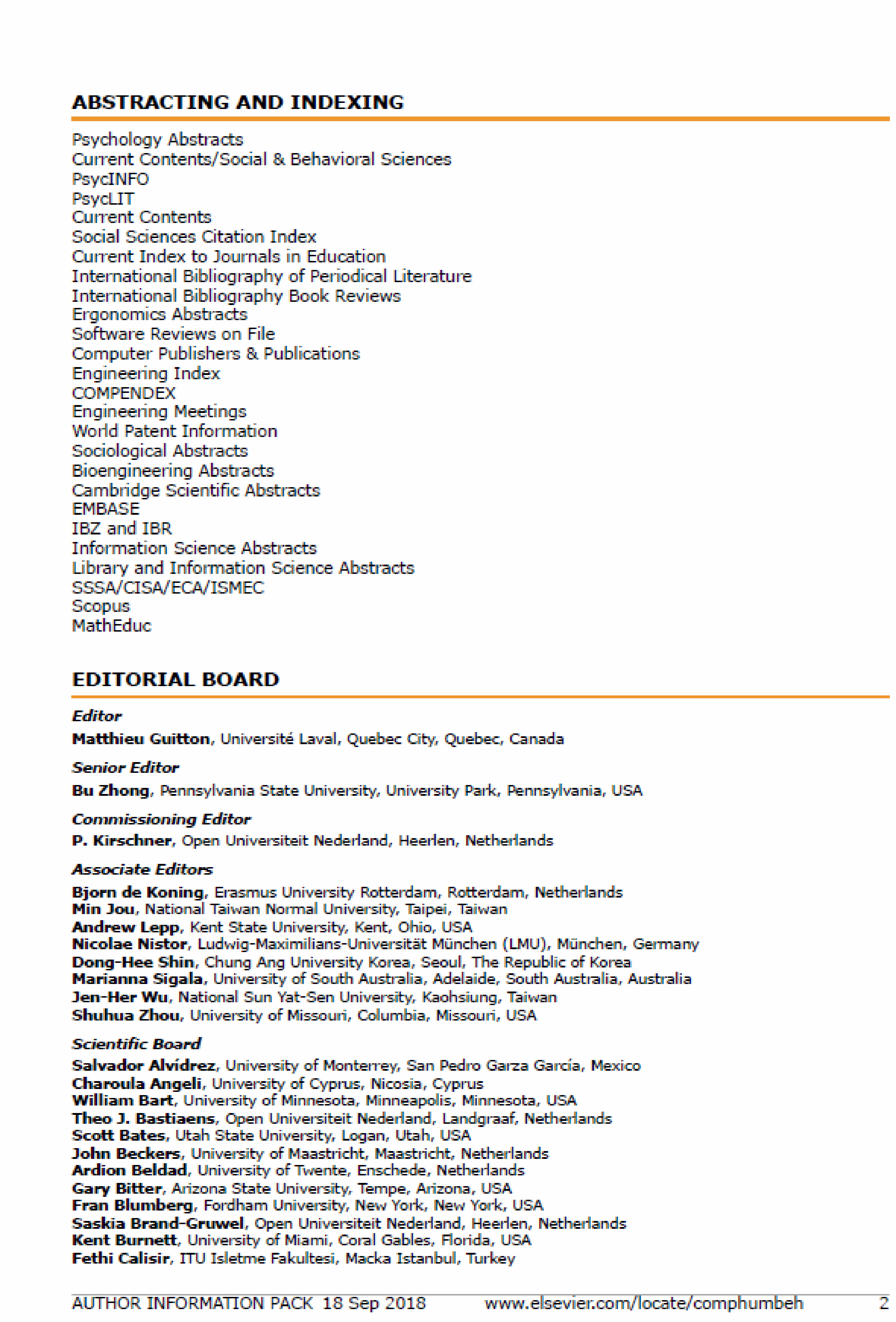

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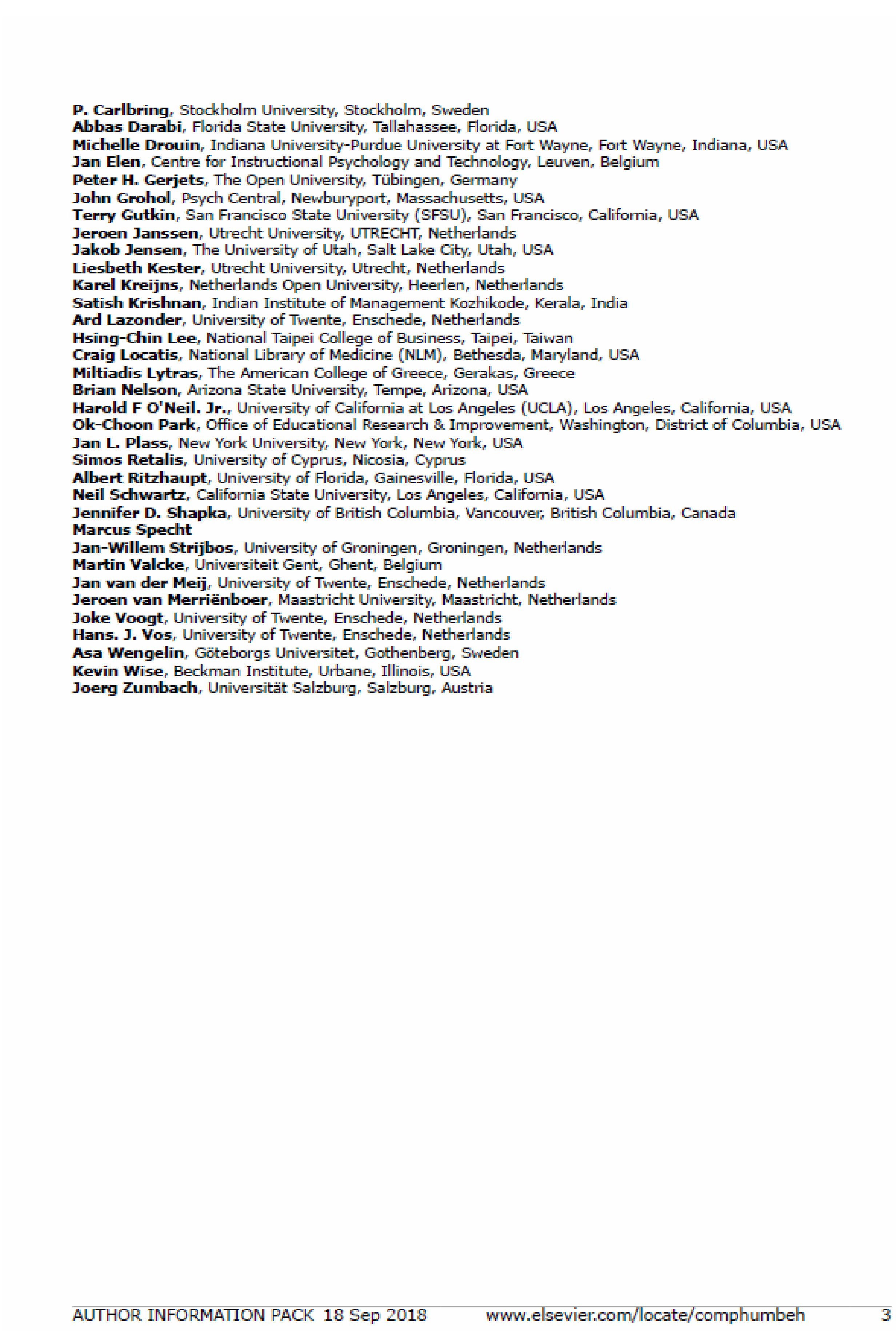

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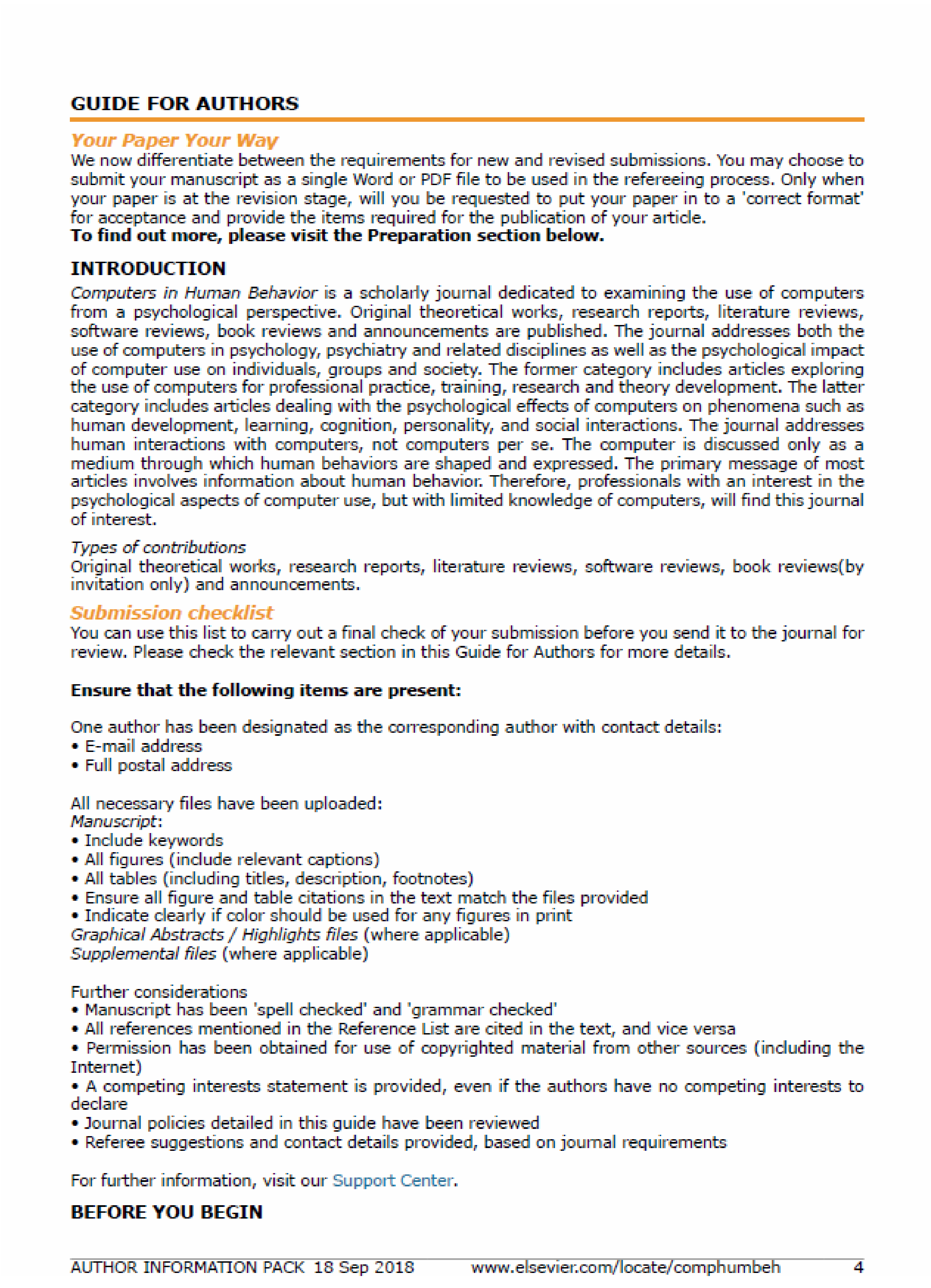

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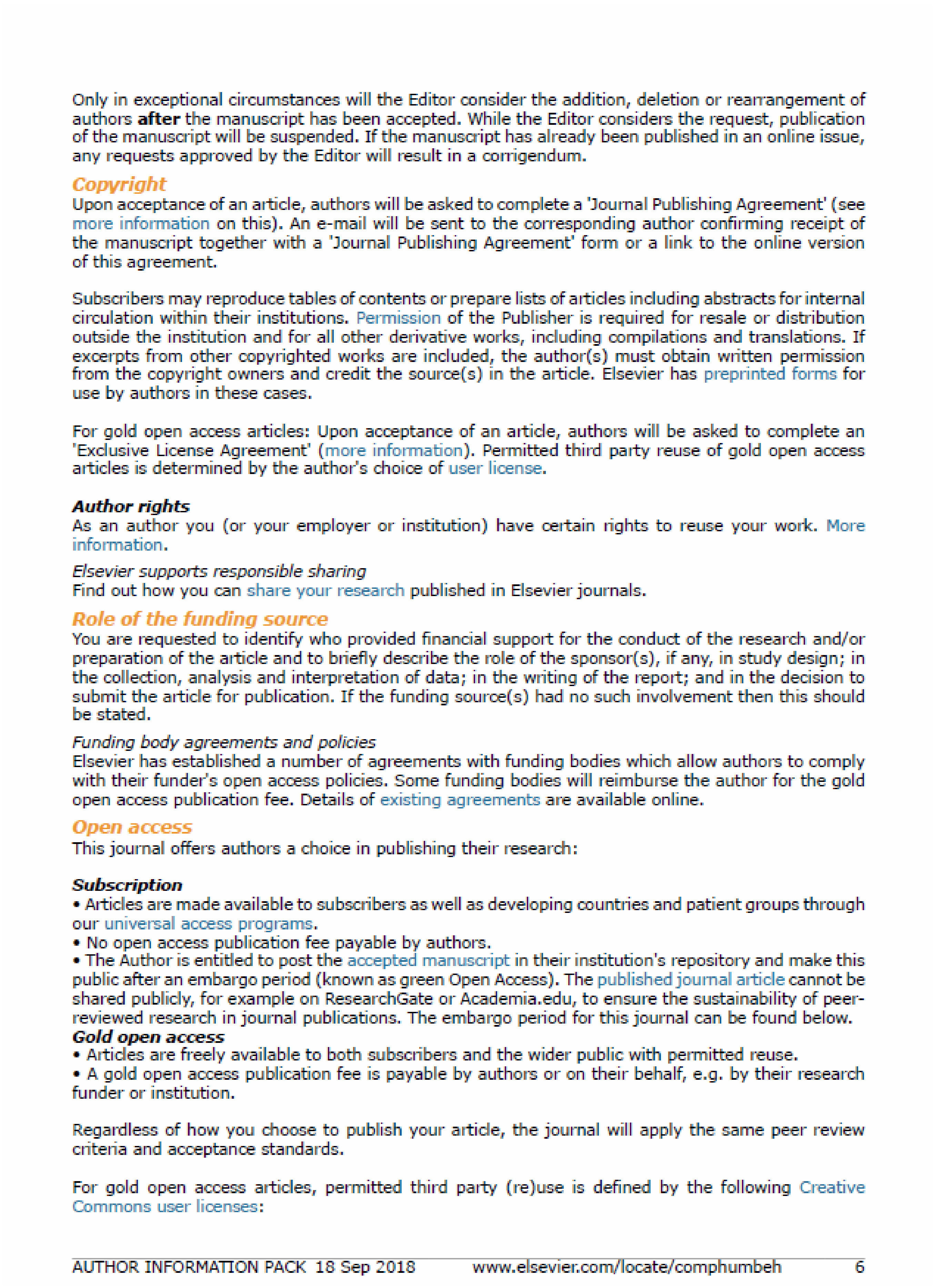

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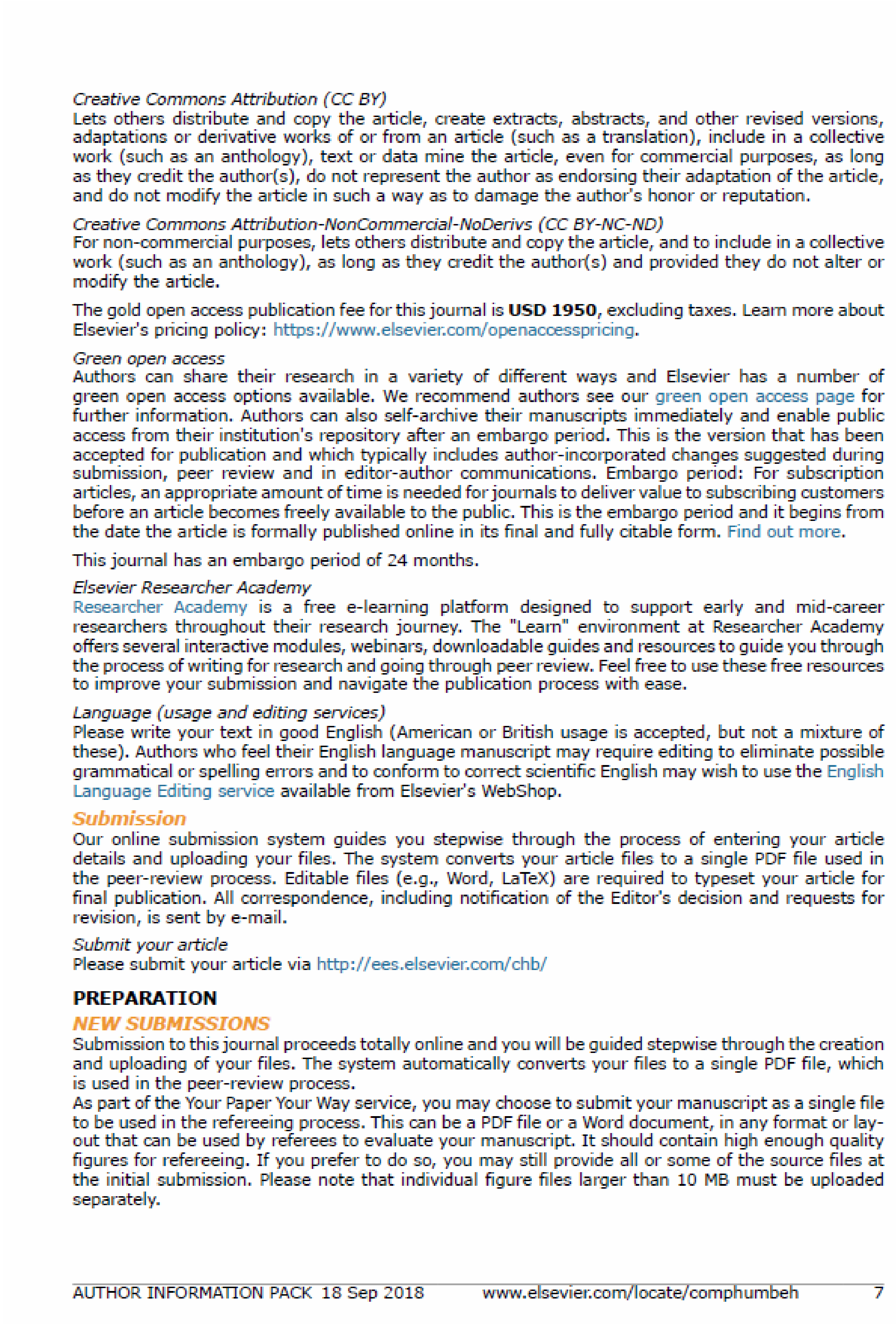

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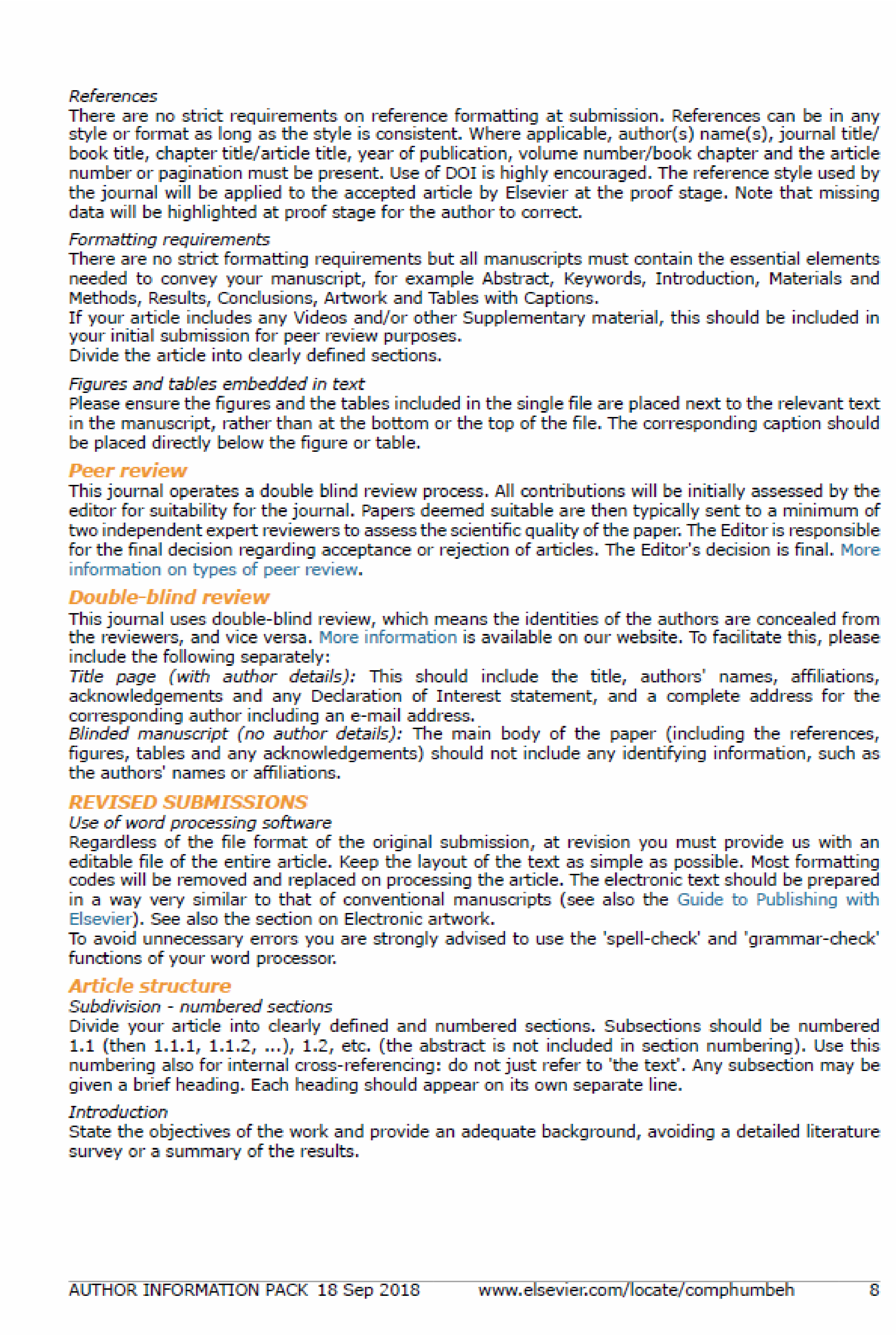

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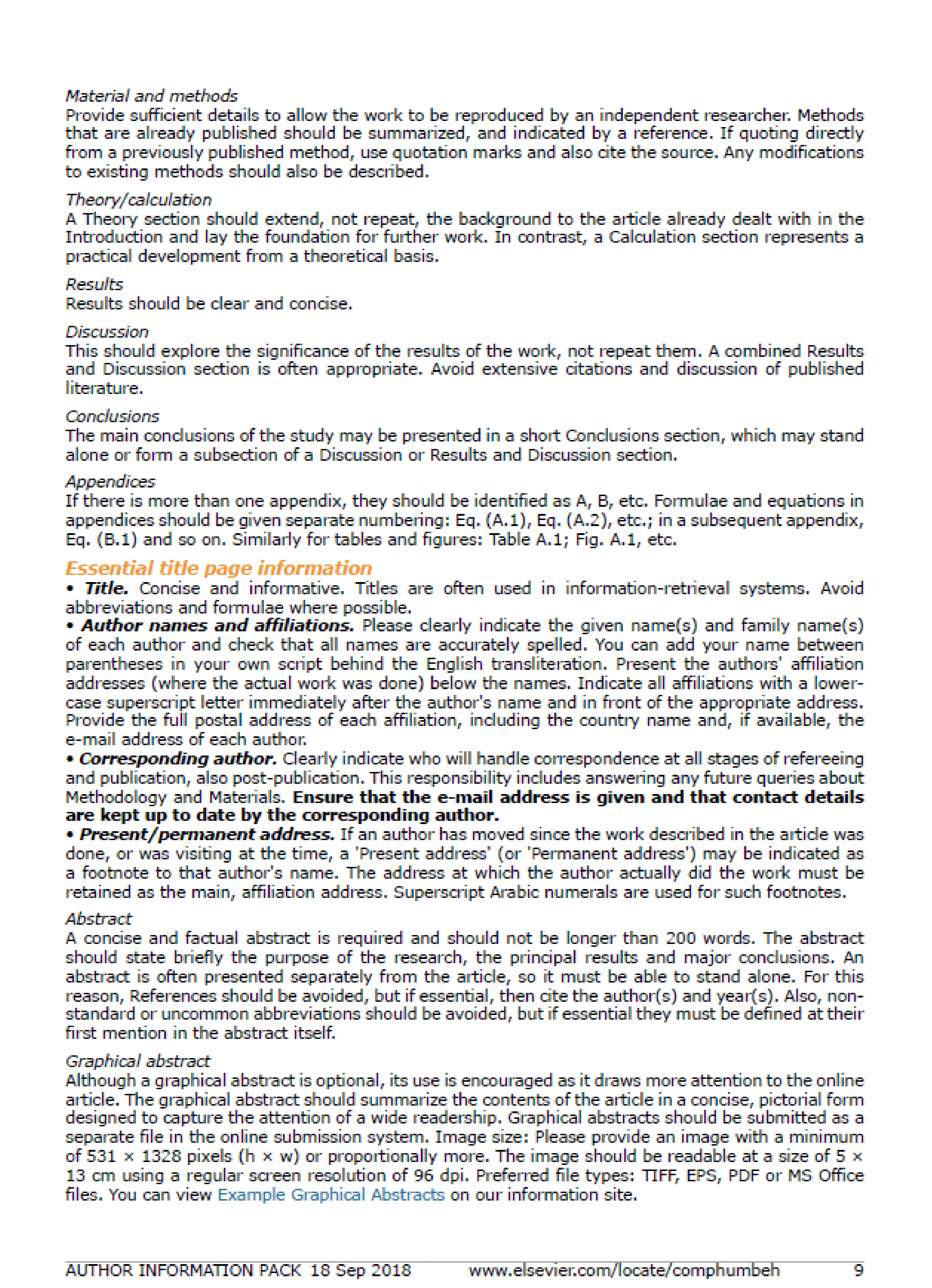

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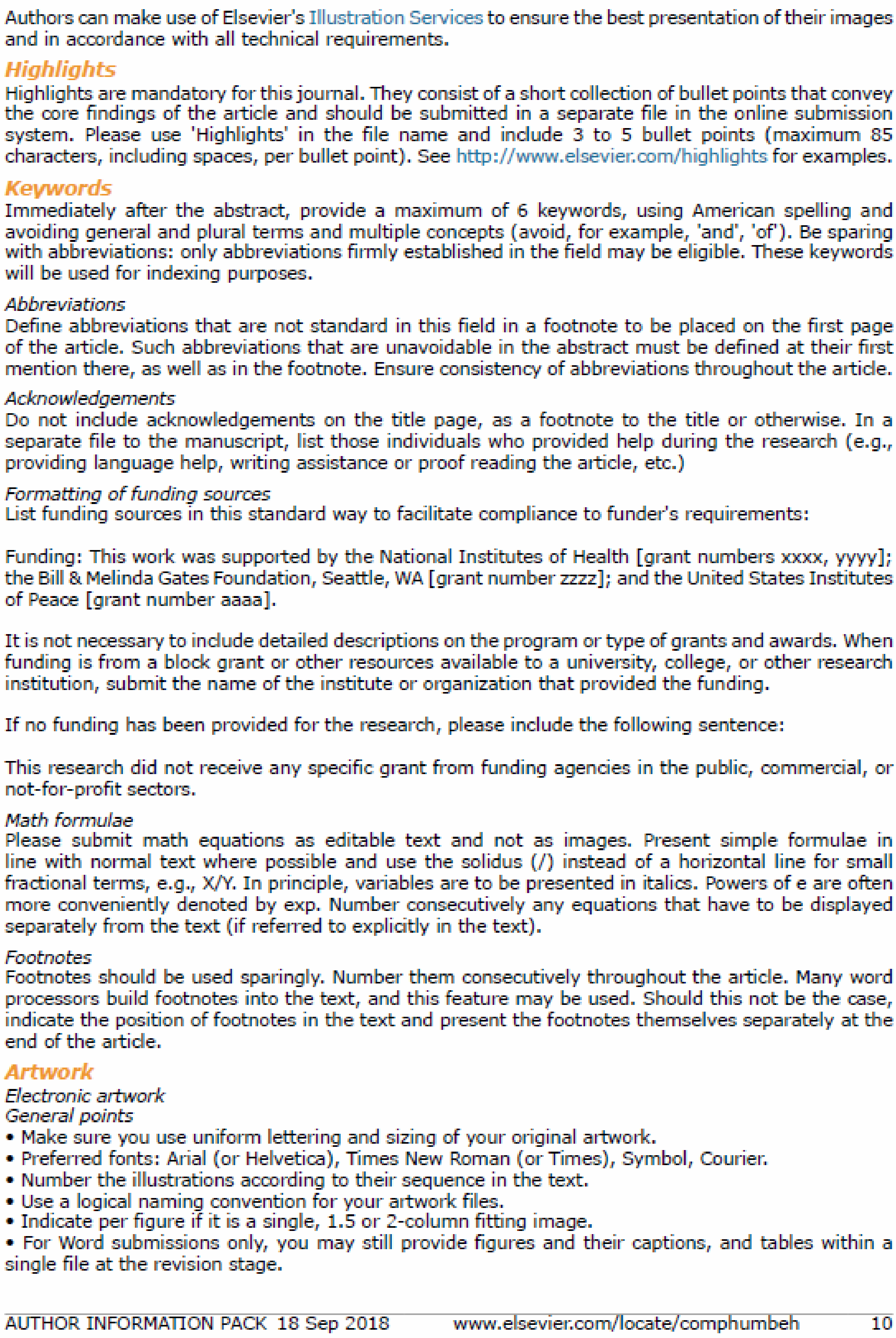

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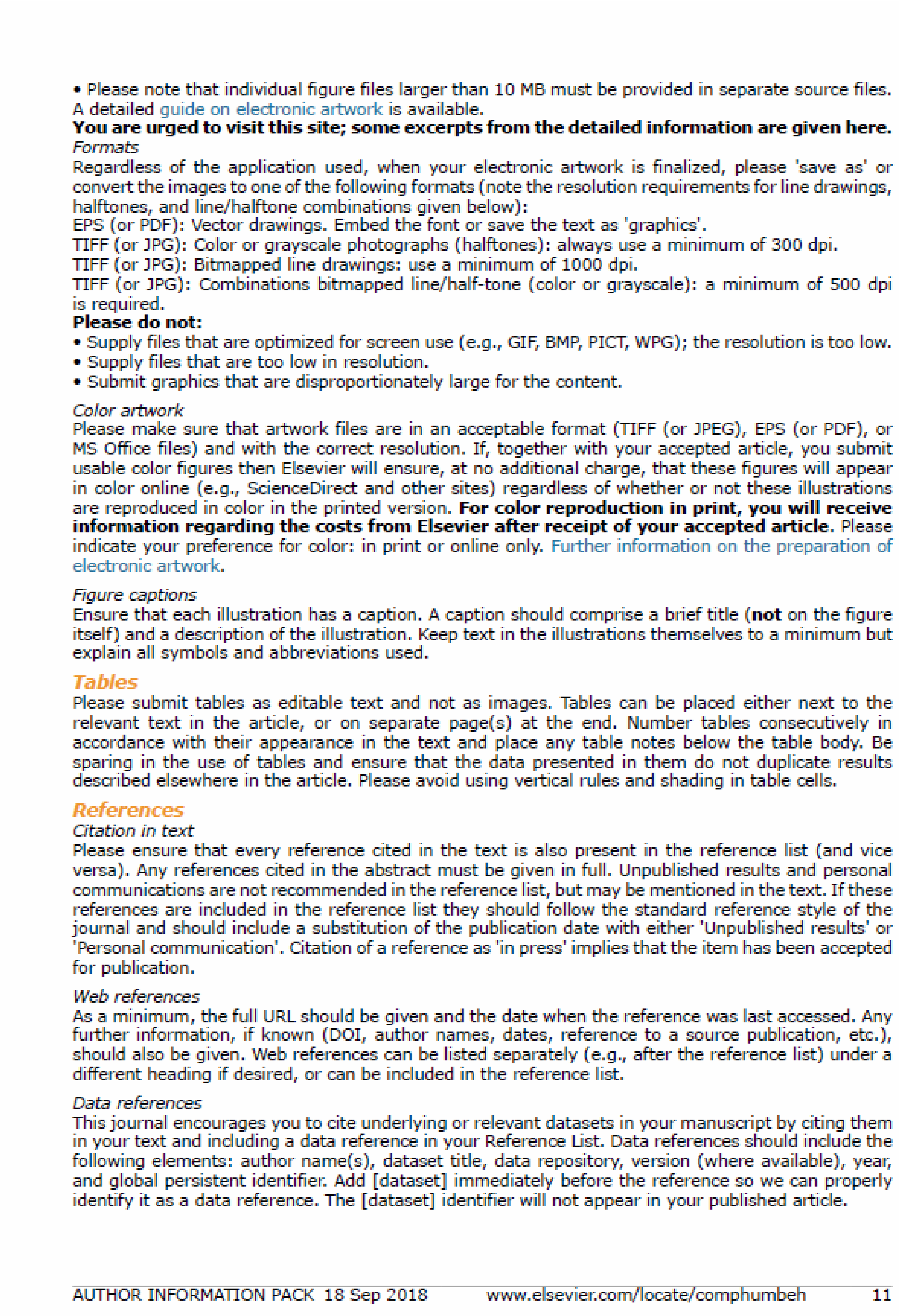

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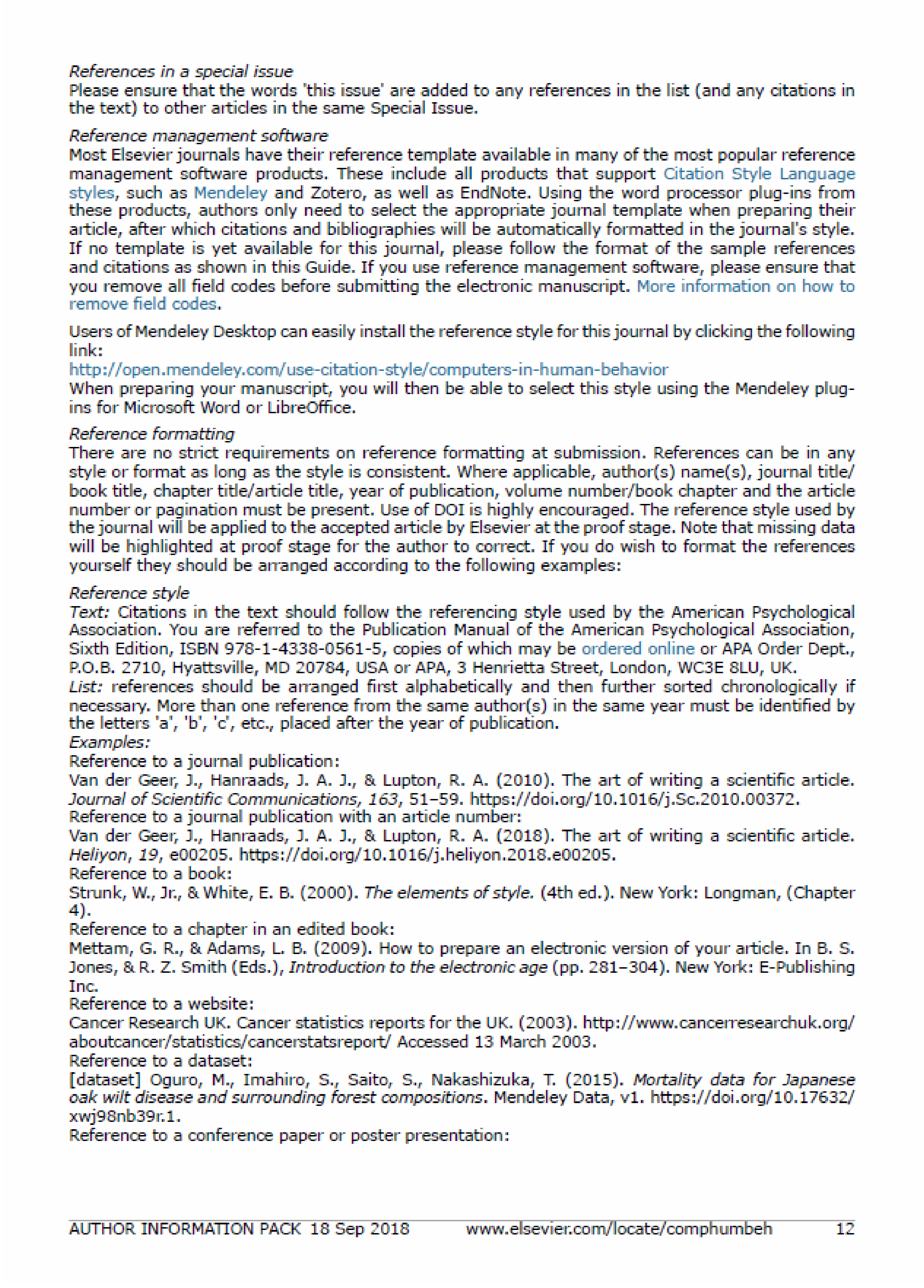

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Reference to a journal publication:
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Reference to a journal publication with an article number:
Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2018). The art of writing a scientific article. *Heliyon, 19*, e00205. https://doi.org/10.1016/j.heliyon.2018.e00205.
Reference to a book:
Strunk, W., Jr., & White, E. B. (2000). *The elements of style.* (4th ed.). New York: Longman, (Chapter 4).
Reference to a chapter in an edited book:
Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.
Reference to a website:
Cancer Research UK. Cancer statistics reports for the UK. (2003). http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/ Accessed 13 March 2003.
Reference to a dataset:
[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions*. Mendeley Data, v1. https://doi.org/10.17632/xwj98nb39r.1.
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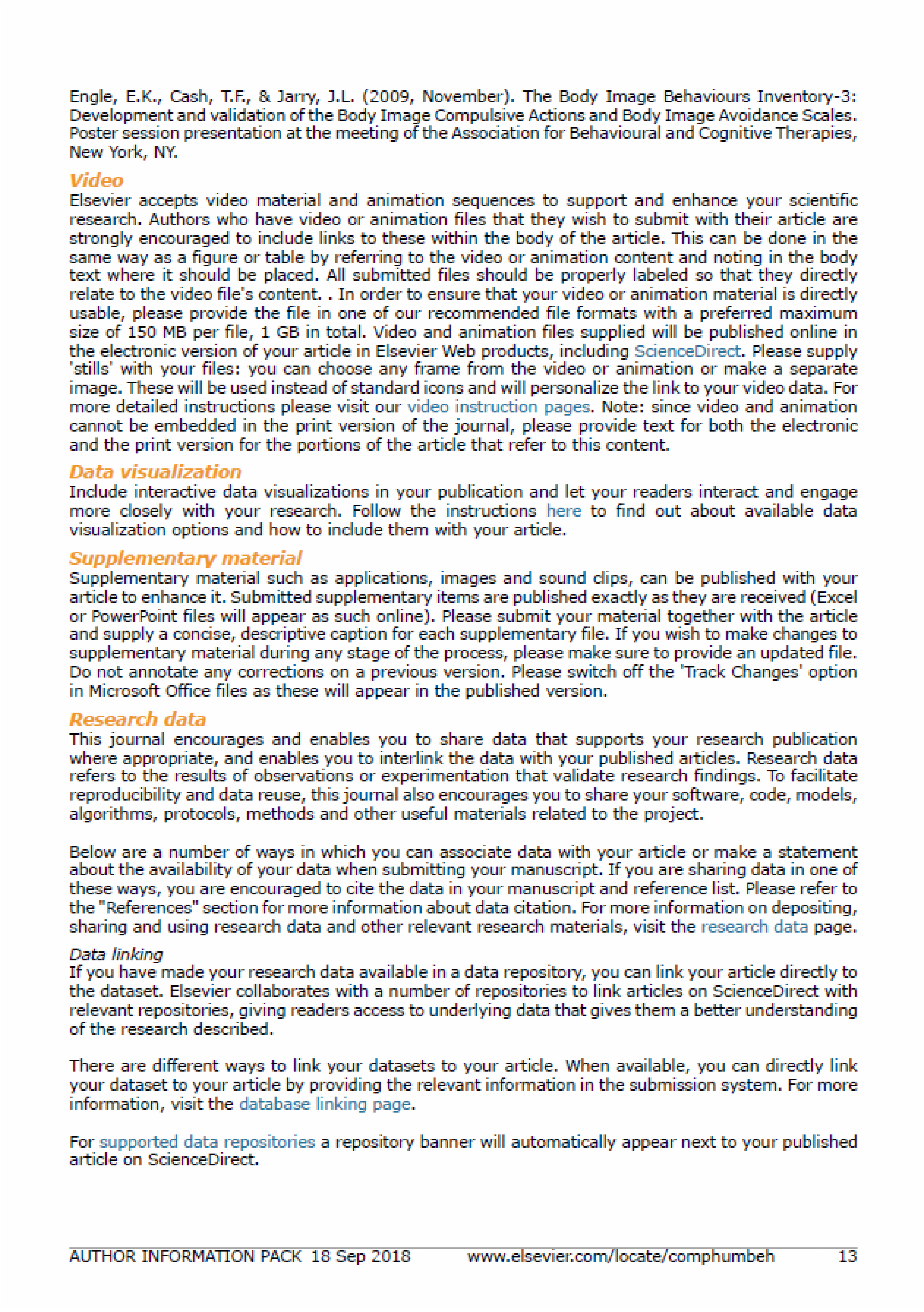

Engle, E.K., Cash, T.F., & Jarry, J.L. (2009, November). The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales. Poster session presentation at the meeting of the Association for Behavioural and Cognitive Therapies, New York, NY.

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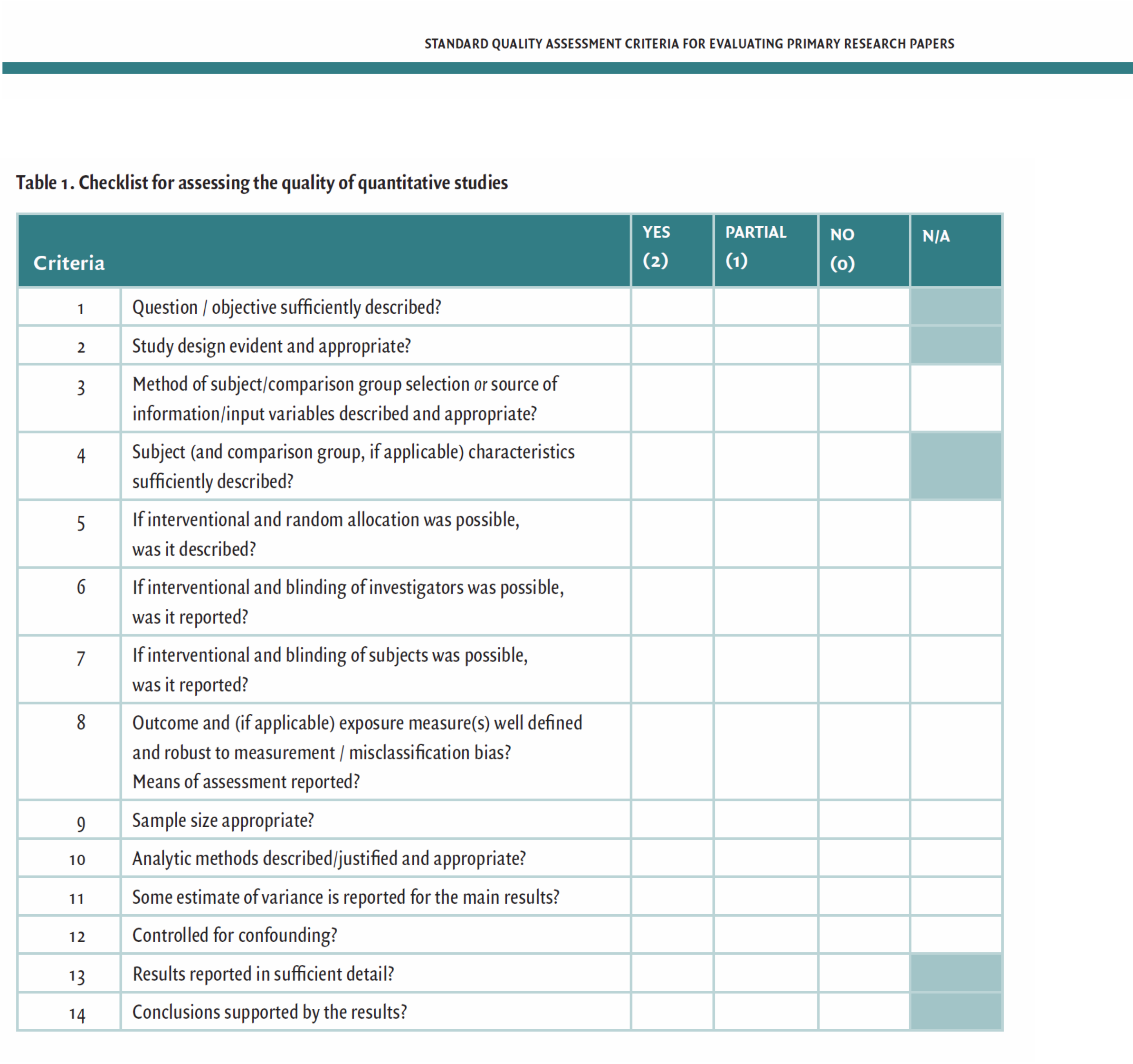
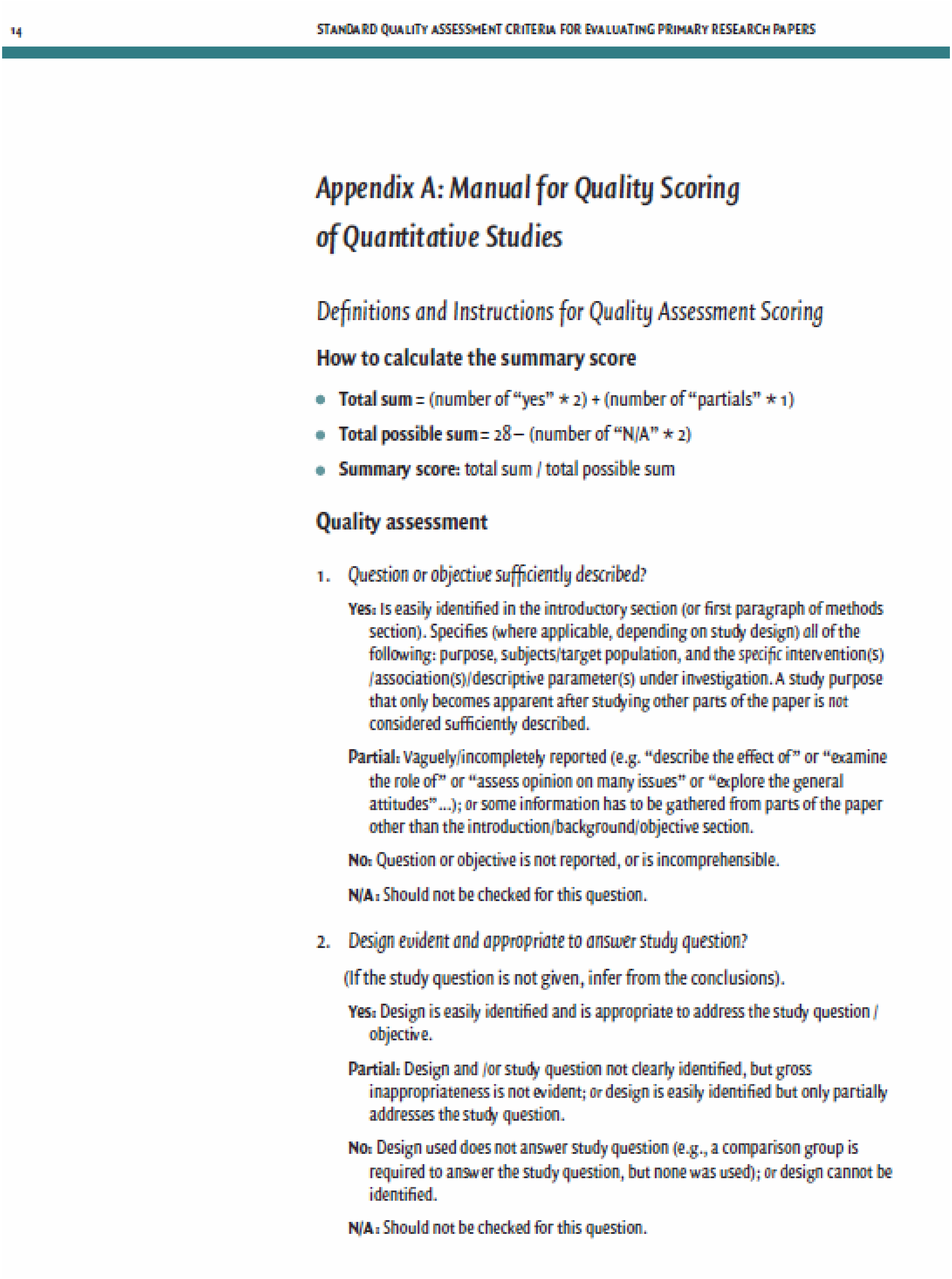
Appendix B – QualSyst – Quality Rating Tool.



STANDARD QUALITY ASSESSMENT CRITERIA FOR EVALUATING PRIMARY RESEARCH PAPERS

Table 1. Checklist for assessing the quality of quantitative studies

Criteria		YES (2)	PARTIAL (1)	NO (0)	N/A
1	Question / objective sufficiently described?				▨
2	Study design evident and appropriate?				▨
3	Method of subject/comparison group selection *or* source of information/input variables described and appropriate?				
4	Subject (and comparison group, if applicable) characteristics sufficiently described?				▨
5	If interventional and random allocation was possible, was it described?				
6	If interventional and blinding of investigators was possible, was it reported?				
7	If interventional and blinding of subjects was possible, was it reported?				
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?				
9	Sample size appropriate?				
10	Analytic methods described/justified and appropriate?				
11	Some estimate of variance is reported for the main results?				
12	Controlled for confounding?				
13	Results reported in sufficient detail?				▨
14	Conclusions supported by the results?				▨



Appendix A: Manual for Quality Scoring of Quantitative Studies

Definitions and Instructions for Quality Assessment Scoring

How to calculate the summary score

- **Total sum** = (number of "yes" * 2) + (number of "partials" * 1)
- **Total possible sum** = 28 – (number of "N/A" * 2)
- **Summary score:** total sum / total possible sum

Quality assessment

1. *Question or objective sufficiently described?*

   Yes: Is easily identified in the introductory section (or first paragraph of methods section). Specifies (where applicable, depending on study design) all of the following: purpose, subjects/target population, and the specific intervention(s) /association(s)/descriptive parameter(s) under investigation. A study purpose that only becomes apparent after studying other parts of the paper is not considered sufficiently described.

   Partial: Vaguely/incompletely reported (e.g. "describe the effect of" or "examine the role of" or "assess opinion on many issues" or "explore the general attitudes"...); or some information has to be gathered from parts of the paper other than the introduction/background/objective section.

   No: Question or objective is not reported, or is incomprehensible.

   N/A: Should not be checked for this question.

2. *Design evident and appropriate to answer study question?*

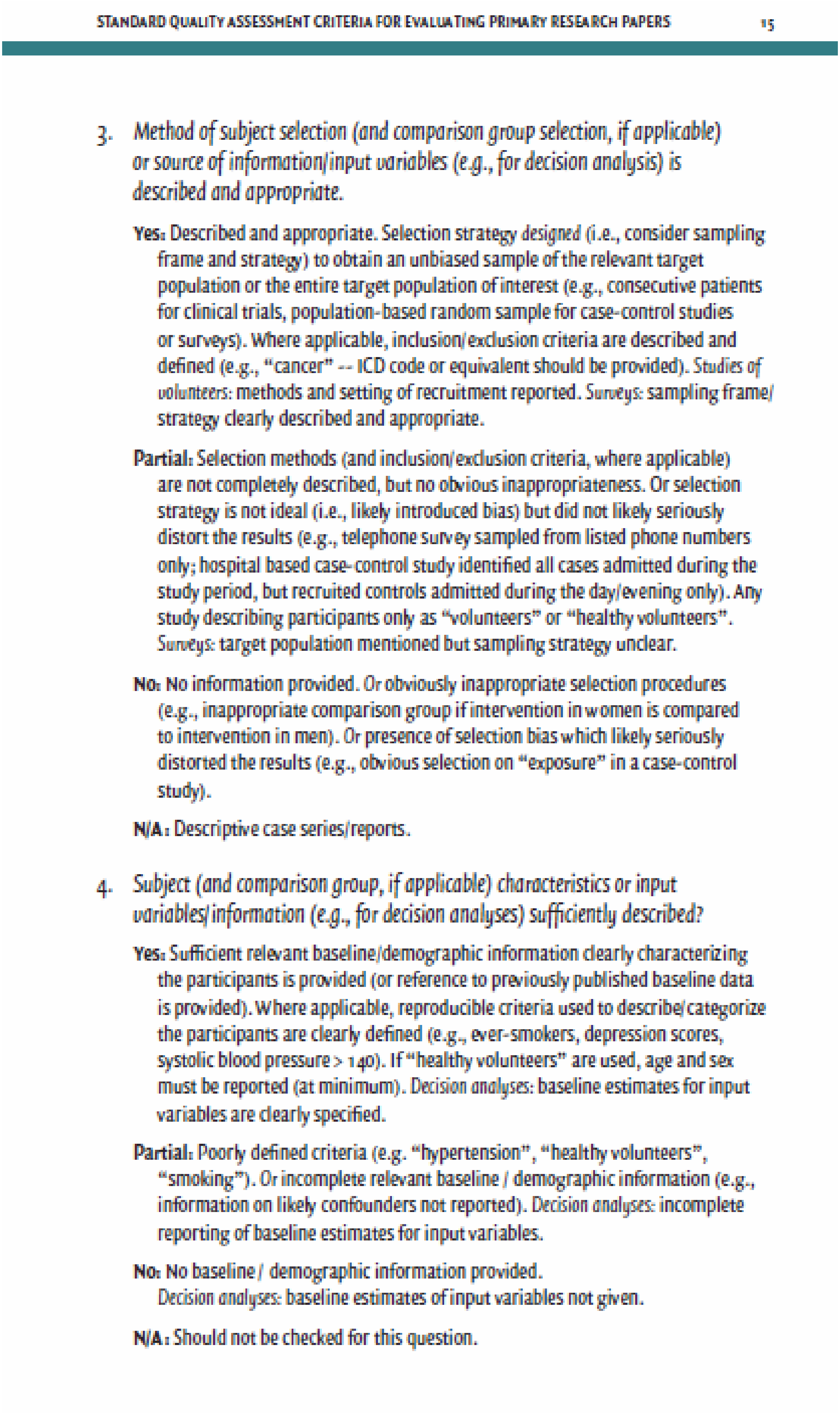
   (If the study question is not given, infer from the conclusions).

   Yes: Design is easily identified and is appropriate to address the study question / objective.

   Partial: Design and /or study question not clearly identified, but gross inappropriateness is not evident; or design is easily identified but only partially addresses the study question.

   No: Design used does not answer study question (e.g., a comparison group is required to answer the study question, but none was used); or design cannot be identified.

   N/A: Should not be checked for this question.



3. *Method of subject selection (and comparison group selection, if applicable) or source of information/input variables (e.g., for decision analysis) is described and appropriate.*

Yes: Described and appropriate. Selection strategy *designed* (i.e., consider sampling frame and strategy) to obtain an unbiased sample of the relevant target population or the entire target population of interest (e.g., consecutive patients for clinical trials, population-based random sample for case-control studies or surveys). Where applicable, inclusion/exclusion criteria are described and defined (e.g., "cancer" -- ICD code or equivalent should be provided). *Studies of volunteers:* methods and setting of recruitment reported. *Surveys:* sampling frame/strategy clearly described and appropriate.

Partial: Selection methods (and inclusion/exclusion criteria, where applicable) are not completely described, but no obvious inappropriateness. Or selection strategy is not ideal (i.e., likely introduced bias) but did not likely seriously distort the results (e.g., telephone survey sampled from listed phone numbers only; hospital based case-control study identified all cases admitted during the study period, but recruited controls admitted during the day/evening only). Any study describing participants only as "volunteers" or "healthy volunteers". *Surveys:* target population mentioned but sampling strategy unclear.

No: No information provided. Or obviously inappropriate selection procedures (e.g., inappropriate comparison group if intervention in women is compared to intervention in men). Or presence of selection bias which likely seriously distorted the results (e.g., obvious selection on "exposure" in a case-control study).

N/A: Descriptive case series/reports.

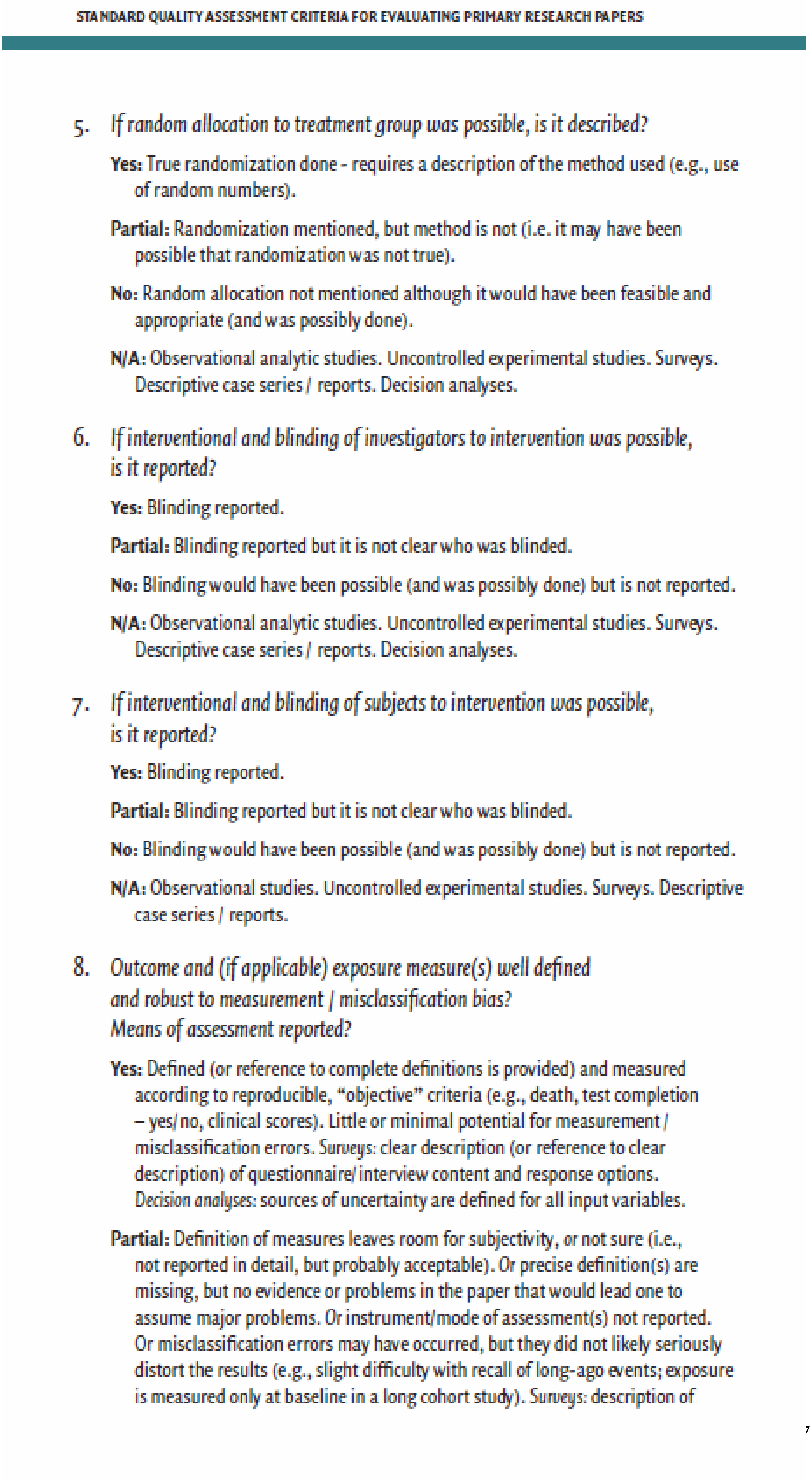
4. *Subject (and comparison group, if applicable) characteristics or input variables/information (e.g., for decision analyses) sufficiently described?*

Yes: Sufficient relevant baseline/demographic information clearly characterizing the participants is provided (or reference to previously published baseline data is provided). Where applicable, reproducible criteria used to describe/categorize the participants are clearly defined (e.g., ever-smokers, depression scores, systolic blood pressure > 140). If "healthy volunteers" are used, age and sex must be reported (at minimum). *Decision analyses:* baseline estimates for input variables are clearly specified.

Partial: Poorly defined criteria (e.g. "hypertension", "healthy volunteers", "smoking"). Or incomplete relevant baseline / demographic information (e.g., information on likely confounders not reported). *Decision analyses:* incomplete reporting of baseline estimates for input variables.

No: No baseline / demographic information provided. *Decision analyses:* baseline estimates of input variables not given.

N/A: Should not be checked for this question.



5. *If random allocation to treatment group was possible, is it described?*

Yes: True randomization done - requires a description of the method used (e.g., use of random numbers).

Partial: Randomization mentioned, but method is not (i.e. it may have been possible that randomization was not true).

No: Random allocation not mentioned although it would have been feasible and appropriate (and was possibly done).

N/A: Observational analytic studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports. Decision analyses.

6. *If interventional and blinding of investigators to intervention was possible, is it reported?*

Yes: Blinding reported.

Partial: Blinding reported but it is not clear who was blinded.

No: Blinding would have been possible (and was possibly done) but is not reported.

N/A: Observational analytic studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports. Decision analyses.

7. *If interventional and blinding of subjects to intervention was possible, is it reported?*

Yes: Blinding reported.

Partial: Blinding reported but it is not clear who was blinded.

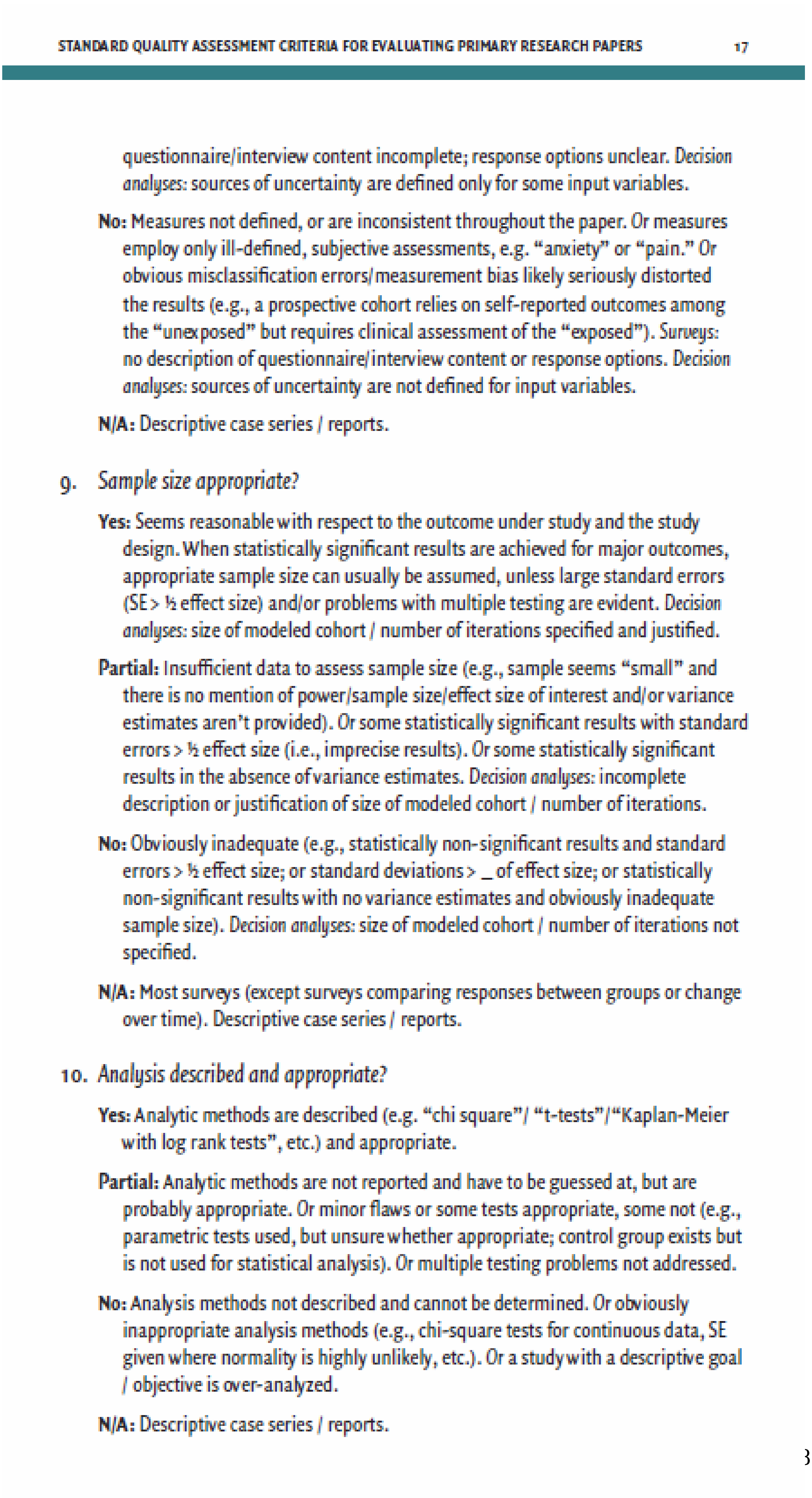
No: Blinding would have been possible (and was possibly done) but is not reported.

N/A: Observational studies. Uncontrolled experimental studies. Surveys. Descriptive case series / reports.

8. *Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?*

Yes: Defined (or reference to complete definitions is provided) and measured according to reproducible, "objective" criteria (e.g., death, test completion – yes/ no, clinical scores). Little or minimal potential for measurement / misclassification errors. *Surveys:* clear description (or reference to clear description) of questionnaire/ interview content and response options. *Decision analyses:* sources of uncertainty are defined for all input variables.

Partial: Definition of measures leaves room for subjectivity, or not sure (i.e., not reported in detail, but probably acceptable). Or precise definition(s) are missing, but no evidence or problems in the paper that would lead one to assume major problems. Or instrument/mode of assessment(s) not reported. Or misclassification errors may have occurred, but they did not likely seriously distort the results (e.g., slight difficulty with recall of long-ago events; exposure is measured only at baseline in a long cohort study). *Surveys:* description of



questionnaire/interview content incomplete; response options unclear. *Decision analyses:* sources of uncertainty are defined only for some input variables.

No: Measures not defined, or are inconsistent throughout the paper. Or measures employ only ill-defined, subjective assessments, e.g. "anxiety" or "pain." Or obvious misclassification errors/measurement bias likely seriously distorted the results (e.g., a prospective cohort relies on self-reported outcomes among the "unexposed" but requires clinical assessment of the "exposed"). *Surveys:* no description of questionnaire/interview content or response options. *Decision analyses:* sources of uncertainty are not defined for input variables.

N/A: Descriptive case series / reports.

9. *Sample size appropriate?*

Yes: Seems reasonable with respect to the outcome under study and the study design. When statistically significant results are achieved for major outcomes, appropriate sample size can usually be assumed, unless large standard errors (SE > ½ effect size) and/or problems with multiple testing are evident. *Decision analyses:* size of modeled cohort / number of iterations specified and justified.

Partial: Insufficient data to assess sample size (e.g., sample seems "small" and there is no mention of power/sample size/effect size of interest and/or variance estimates aren't provided). Or some statistically significant results with standard errors > ½ effect size (i.e., imprecise results). Or some statistically significant results in the absence of variance estimates. *Decision analyses:* incomplete description or justification of size of modeled cohort / number of iterations.

No: Obviously inadequate (e.g., statistically non-significant results and standard errors > ½ effect size; or standard deviations > _ of effect size; or statistically non-significant results with no variance estimates and obviously inadequate sample size). *Decision analyses:* size of modeled cohort / number of iterations not specified.

N/A: Most surveys (except surveys comparing responses between groups or change over time). Descriptive case series / reports.

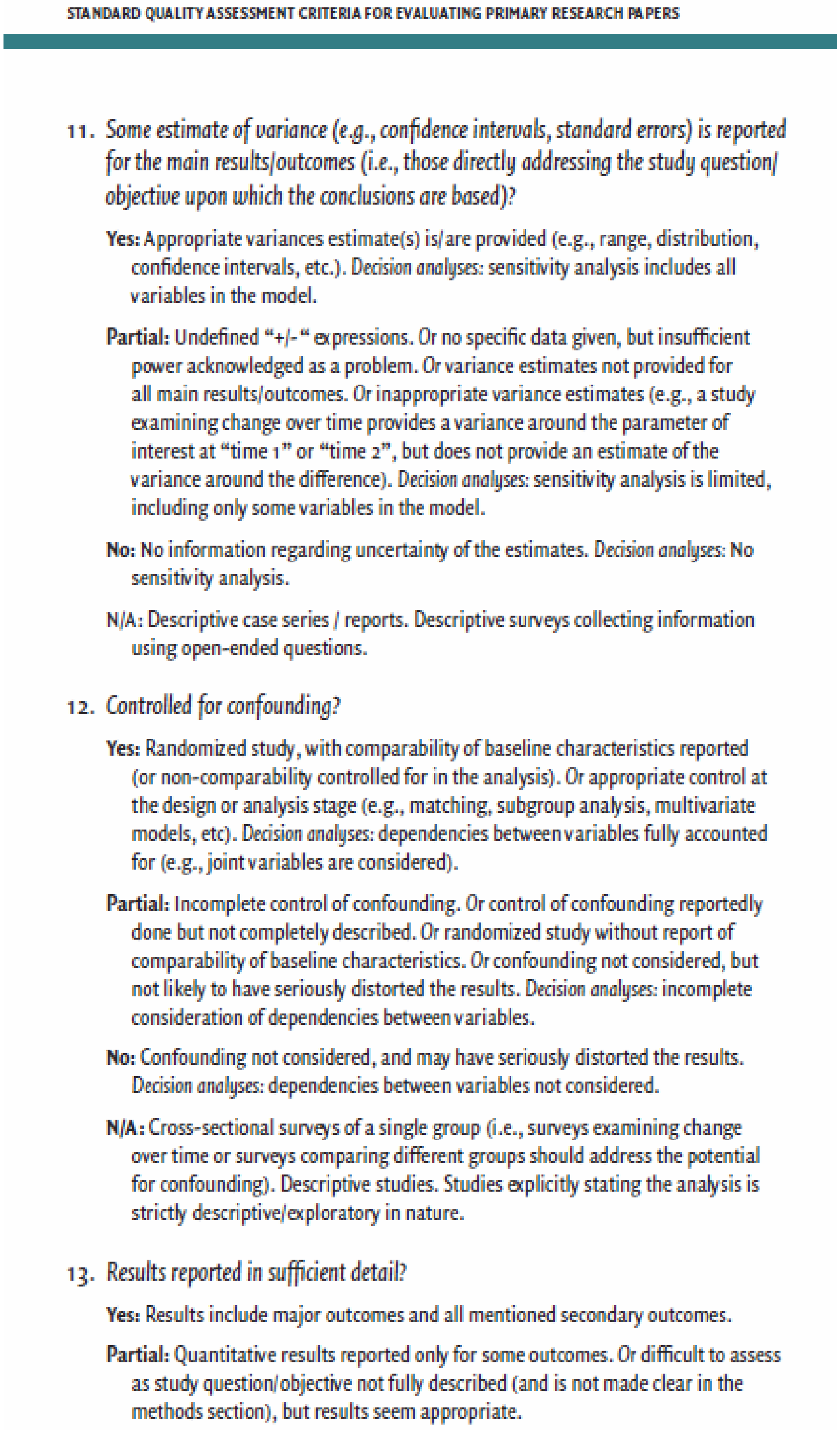
10. *Analysis described and appropriate?*

Yes: Analytic methods are described (e.g. "chi square"/ "t-tests"/"Kaplan-Meier with log rank tests", etc.) and appropriate.

Partial: Analytic methods are not reported and have to be guessed at, but are probably appropriate. Or minor flaws or some tests appropriate, some not (e.g., parametric tests used, but unsure whether appropriate; control group exists but is not used for statistical analysis). Or multiple testing problems not addressed.

No: Analysis methods not described and cannot be determined. Or obviously inappropriate analysis methods (e.g., chi-square tests for continuous data, SE given where normality is highly unlikely, etc.). Or a study with a descriptive goal / objective is over-analyzed.

N/A: Descriptive case series / reports.



11. *Some estimate of variance (e.g., confidence intervals, standard errors) is reported for the main results/outcomes (i.e., those directly addressing the study question/objective upon which the conclusions are based)?*

    Yes: Appropriate variances estimate(s) is/are provided (e.g., range, distribution, confidence intervals, etc.). *Decision analyses:* sensitivity analysis includes all variables in the model.

    Partial: Undefined "+/-" expressions. Or no specific data given, but insufficient power acknowledged as a problem. Or variance estimates not provided for all main results/outcomes. Or inappropriate variance estimates (e.g., a study examining change over time provides a variance around the parameter of interest at "time 1" or "time 2", but does not provide an estimate of the variance around the difference). *Decision analyses:* sensitivity analysis is limited, including only some variables in the model.

    No: No information regarding uncertainty of the estimates. *Decision analyses:* No sensitivity analysis.

    N/A: Descriptive case series / reports. Descriptive surveys collecting information using open-ended questions.

12. *Controlled for confounding?*

    Yes: Randomized study, with comparability of baseline characteristics reported (or non-comparability controlled for in the analysis). Or appropriate control at the design or analysis stage (e.g., matching, subgroup analysis, multivariate models, etc). *Decision analyses:* dependencies between variables fully accounted for (e.g., joint variables are considered).

    Partial: Incomplete control of confounding. Or control of confounding reportedly done but not completely described. Or randomized study without report of comparability of baseline characteristics. Or confounding not considered, but not likely to have seriously distorted the results. *Decision analyses:* incomplete consideration of dependencies between variables.

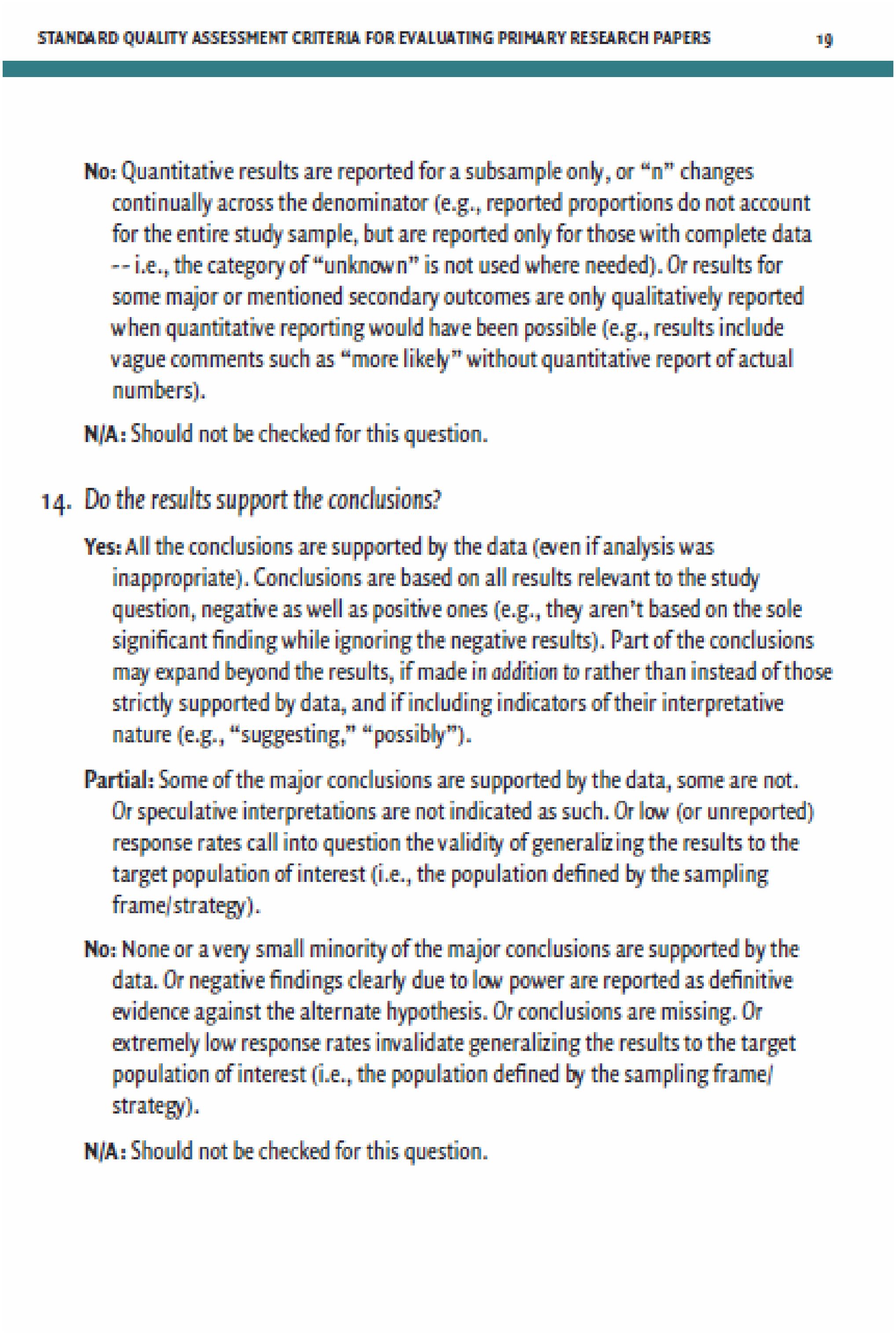
    No: Confounding not considered, and may have seriously distorted the results. *Decision analyses:* dependencies between variables not considered.

    N/A: Cross-sectional surveys of a single group (i.e., surveys examining change over time or surveys comparing different groups should address the potential for confounding). Descriptive studies. Studies explicitly stating the analysis is strictly descriptive/exploratory in nature.

13. *Results reported in sufficient detail?*

    Yes: Results include major outcomes and all mentioned secondary outcomes.

    Partial: Quantitative results reported only for some outcomes. Or difficult to assess as study question/objective not fully described (and is not made clear in the methods section), but results seem appropriate.



STANDARD QUALITY ASSESSMENT CRITERIA FOR EVALUATING PRIMARY RESEARCH PAPERS 19

No: Quantitative results are reported for a subsample only, or "n" changes continually across the denominator (e.g., reported proportions do not account for the entire study sample, but are reported only for those with complete data -- i.e., the category of "unknown" is not used where needed). Or results for some major or mentioned secondary outcomes are only qualitatively reported when quantitative reporting would have been possible (e.g., results include vague comments such as "more likely" without quantitative report of actual numbers).

N/A: Should not be checked for this question.

14. *Do the results support the conclusions?*

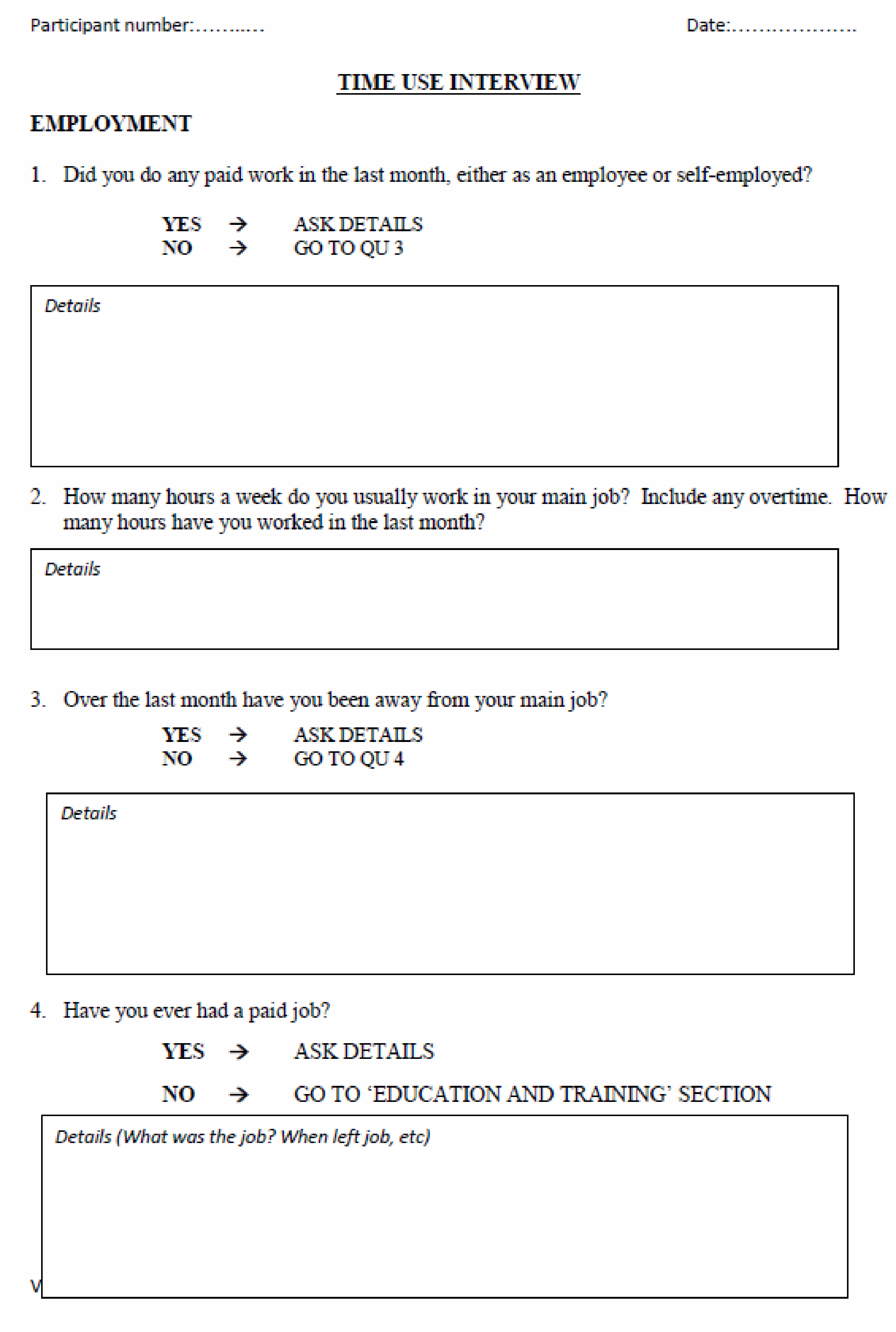
Yes: All the conclusions are supported by the data (even if analysis was inappropriate). Conclusions are based on all results relevant to the study question, negative as well as positive ones (e.g., they aren't based on the sole significant finding while ignoring the negative results). Part of the conclusions may expand beyond the results, if made in *addition to* rather than instead of those strictly supported by data, and if including indicators of their interpretative nature (e.g., "suggesting," "possibly").

Partial: Some of the major conclusions are supported by the data, some are not. Or speculative interpretations are not indicated as such. Or low (or unreported) response rates call into question the validity of generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

No: None or a very small minority of the major conclusions are supported by the data. Or negative findings clearly due to low power are reported as definitive evidence against the alternate hypothesis. Or conclusions are missing. Or extremely low response rates invalidate generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

N/A: Should not be checked for this question.

Appendix C - Time Use Survey



Participant number:………..

Date:……………….

TIME USE INTERVIEW

EMPLOYMENT

1. Did you do any paid work in the last month, either as an employee or self-employed?

YES → ASK DETAILS
NO → GO TO QU 3

Details

2. How many hours a week do you usually work in your main job? Include any overtime. How many hours have you worked in the last month?

Details

3. Over the last month have you been away from your main job?

YES → ASK DETAILS
NO → GO TO QU 4

Details

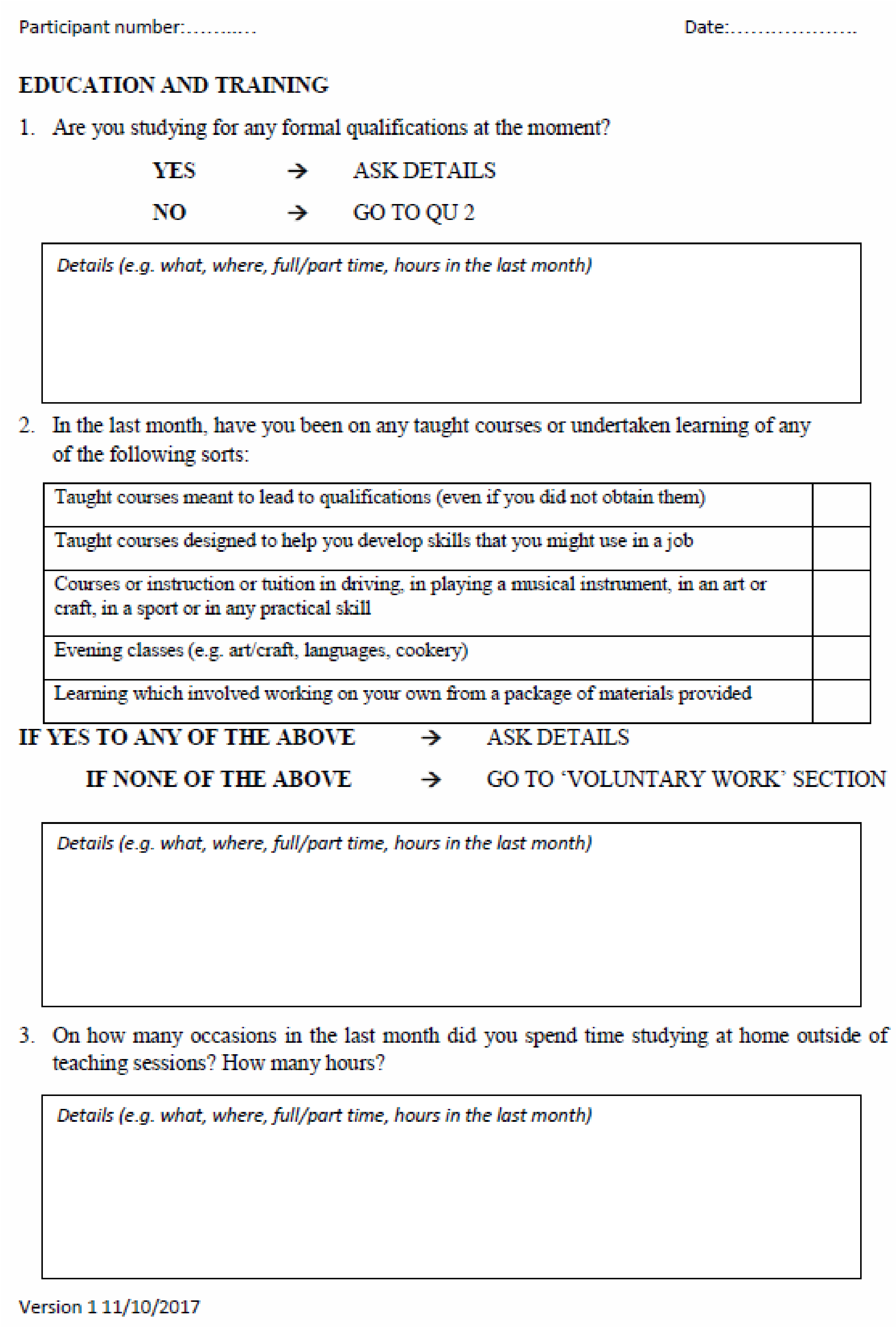
4. Have you ever had a paid job?

YES → ASK DETAILS

NO → GO TO 'EDUCATION AND TRAINING' SECTION

Details (What was the job? When left job, etc)

V



Participant number:……..… Date:………………..

EDUCATION AND TRAINING

1. Are you studying for any formal qualifications at the moment?

YES → ASK DETAILS

NO → GO TO QU 2

Details (e.g. what, where, full/part time, hours in the last month)

2. In the last month, have you been on any taught courses or undertaken learning of any of the following sorts:

Taught courses meant to lead to qualifications (even if you did not obtain them)	
Taught courses designed to help you develop skills that you might use in a job	
Courses or instruction or tuition in driving, in playing a musical instrument, in an art or craft, in a sport or in any practical skill	
Evening classes (e.g. art/craft, languages, cookery)	
Learning which involved working on your own from a package of materials provided	

IF YES TO ANY OF THE ABOVE → ASK DETAILS

IF NONE OF THE ABOVE → GO TO 'VOLUNTARY WORK' SECTION

Details (e.g. what, where, full/part time, hours in the last month)

3. On how many occasions in the last month did you spend time studying at home outside of teaching sessions? How many hours?

Details (e.g. what, where, full/part time, hours in the last month)

Version 1 11/10/2017

Participant number:………..… Date:…………………

VOLUNTARY WORK

Have you done any voluntary work through a group or on behalf of an organisation at any time during the last month? Have you done any unpaid work for anybody else e.g. running errands for elderly relatives?

YES → ASK DETAILS

NO → GO TO 'LEISURE ACTIVITIES'

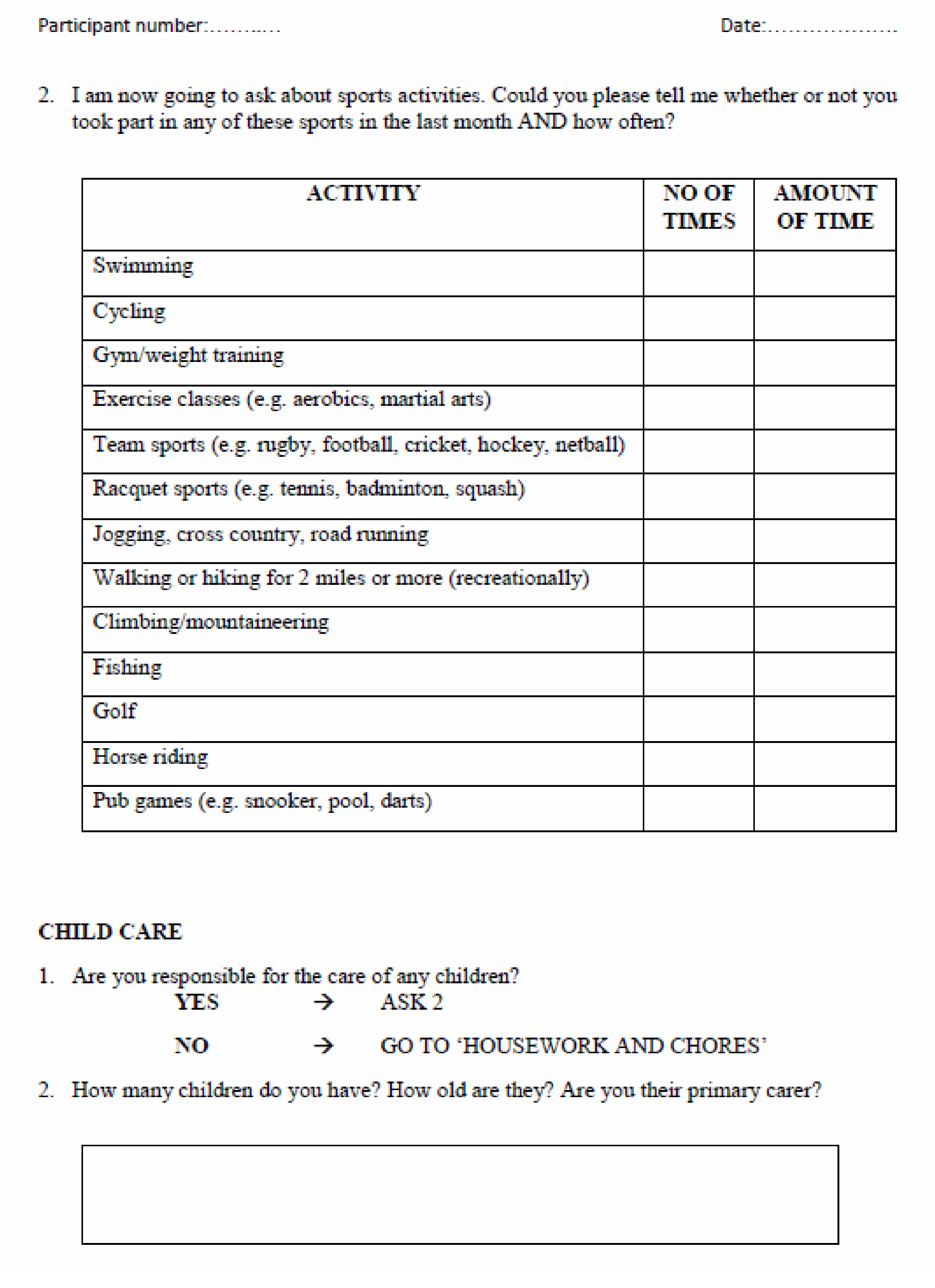
Details of voluntary work

How many times in the past month?

LEISURE AND SPORT ACTIVITIES

1. I am now going to ask some questions about things that some people do in their spare time. For each activity that I mention could you please tell me whether of not you have done this in the last month, AND how often?

ACTIVITY	NO OF TIMES	AMOUNT OF TIME
Been to cinema		
Been to an event as a spectator (e.g. sports event, theatre, live music performance)		
Been to a museum, art gallery or heritage site		
Been to a library		
Been out to eat or drink at a café, restaurant, pub or wine bar		
Been to a shopping centre, or mall, apart from regular shopping for food and household items		
Been to some other place of entertainment (e.g. dance, club, bingo, casino)		
Been on any other outdoor trips (including going to places of natural beauty, picnics, going for a drive or going to the beach)		
Been involved in any community based activities (e.g. Scouts, going to church)		



Participant number:……..…   Date:……………….

2. I am now going to ask about sports activities. Could you please tell me whether or not you took part in any of these sports in the last month AND how often?

ACTIVITY	NO OF TIMES	AMOUNT OF TIME
Swimming		
Cycling		
Gym/weight training		
Exercise classes (e.g. aerobics, martial arts)		
Team sports (e.g. rugby, football, cricket, hockey, netball)		
Racquet sports (e.g. tennis, badminton, squash)		
Jogging, cross country, road running		
Walking or hiking for 2 miles or more (recreationally)		
Climbing/mountaineering		
Fishing		
Golf		
Horse riding		
Pub games (e.g. snooker, pool, darts)		

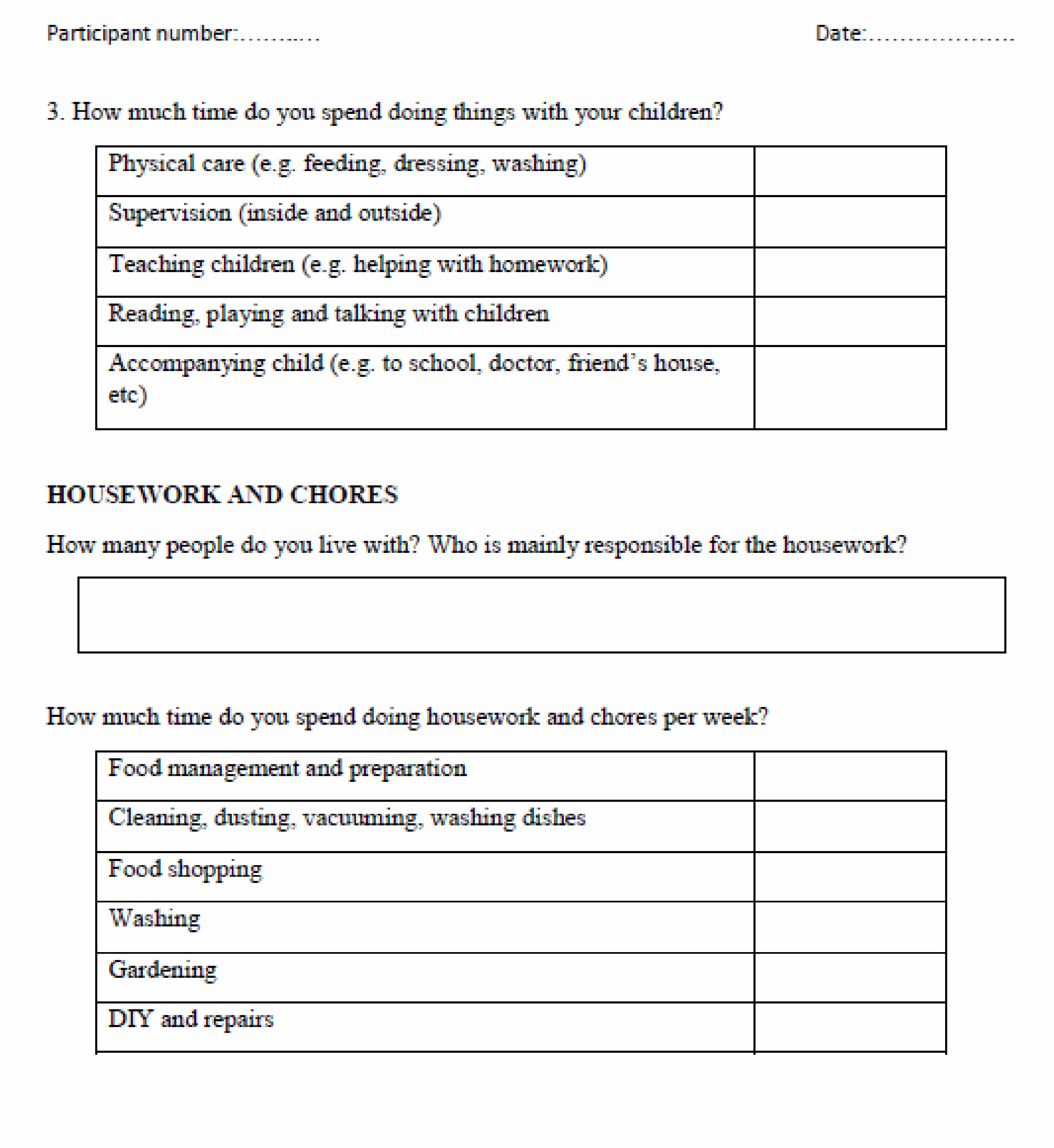
CHILD CARE

1. Are you responsible for the care of any children?

YES → ASK 2

NO → GO TO 'HOUSEWORK AND CHORES'

2. How many children do you have? How old are they? Are you their primary carer?



Participant number:……..…   Date:……………….

3. How much time do you spend doing things with your children?

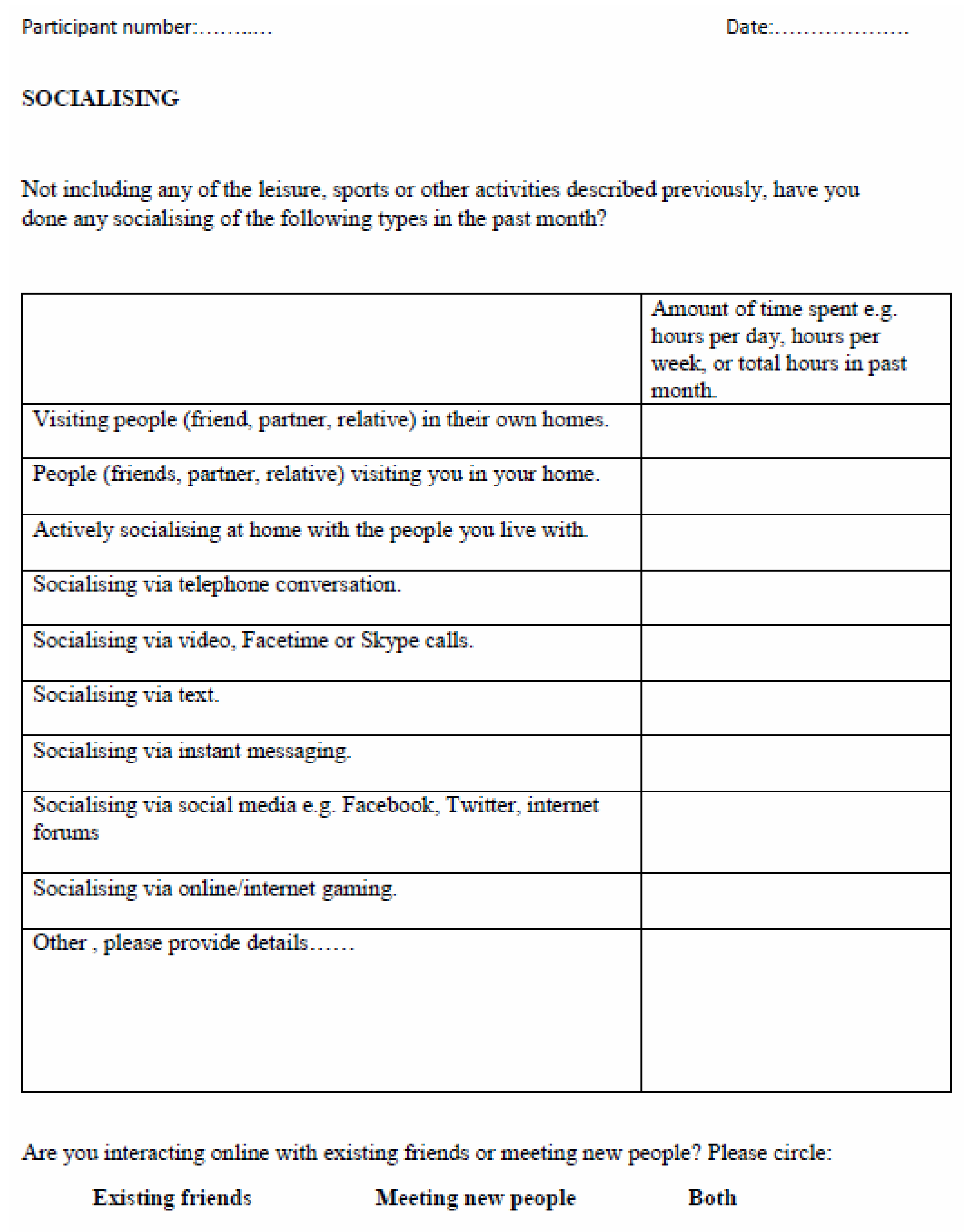
Physical care (e.g. feeding, dressing, washing)	
Supervision (inside and outside)	
Teaching children (e.g. helping with homework)	
Reading, playing and talking with children	
Accompanying child (e.g. to school, doctor, friend's house, etc)	

HOUSEWORK AND CHORES

How many people do you live with? Who is mainly responsible for the housework?

How much time do you spend doing housework and chores per week?

Food management and preparation	
Cleaning, dusting, vacuuming, washing dishes	
Food shopping	
Washing	
Gardening	
DIY and repairs	



Participant number:……..… Date:……………….

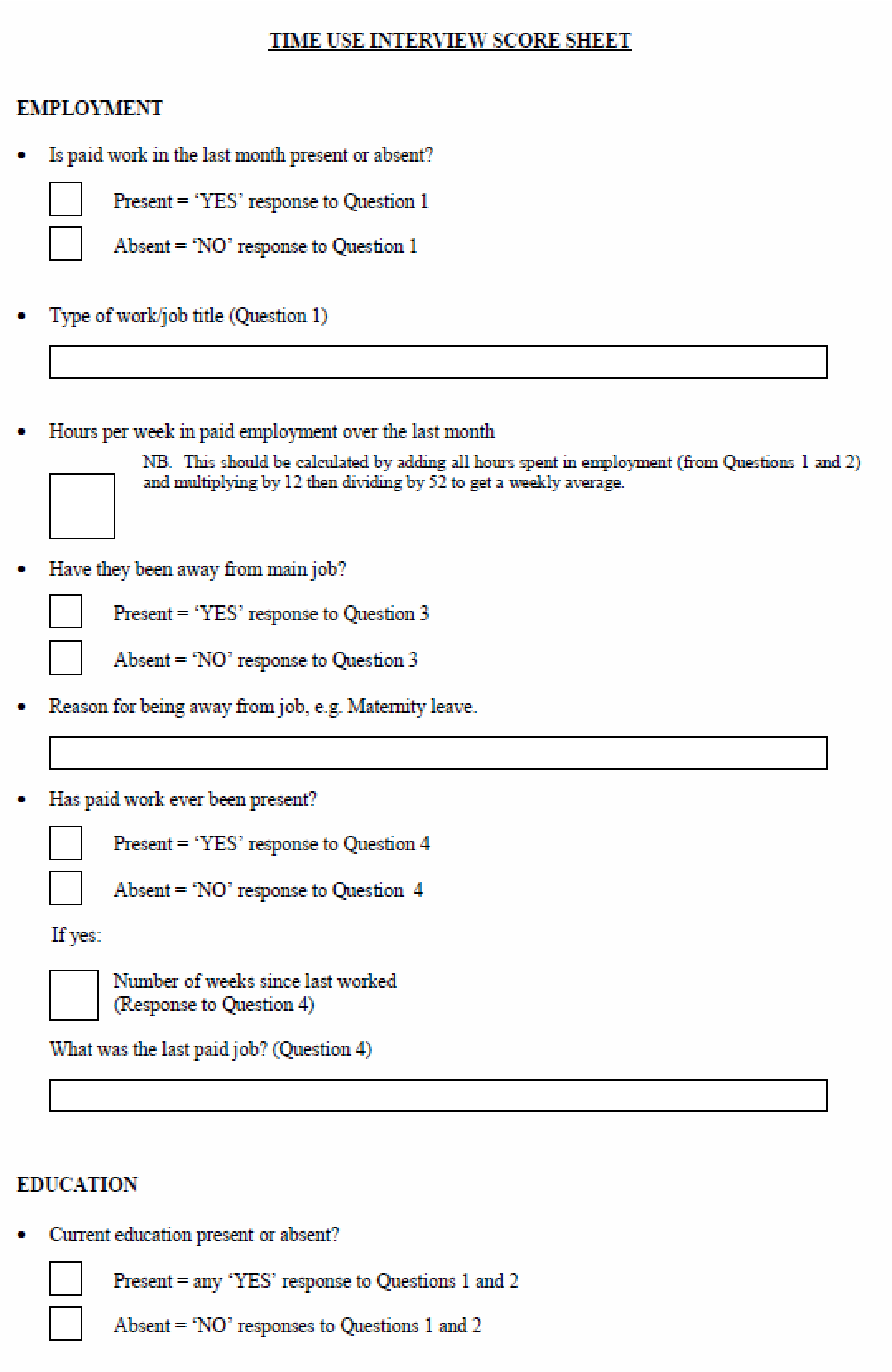
SOCIALISING

Not including any of the leisure, sports or other activities described previously, have you done any socialising of the following types in the past month?

	Amount of time spent e.g. hours per day, hours per week, or total hours in past month.
Visiting people (friend, partner, relative) in their own homes.	
People (friends, partner, relative) visiting you in your home.	
Actively socialising at home with the people you live with.	
Socialising via telephone conversation.	
Socialising via video, Facetime or Skype calls.	
Socialising via text.	
Socialising via instant messaging.	
Socialising via social media e.g. Facebook, Twitter, internet forums	
Socialising via online/internet gaming.	
Other , please provide details……	

Are you interacting online with existing friends or meeting new people? Please circle:

Existing friends **Meeting new people** **Both**



TIME USE INTERVIEW SCORE SHEET

EMPLOYMENT

- Is paid work in the last month present or absent?

☐ Present = 'YES' response to Question 1

☐ Absent = 'NO' response to Question 1

- Type of work/job title (Question 1)

- Hours per week in paid employment over the last month

NB. This should be calculated by adding all hours spent in employment (from Questions 1 and 2) and multiplying by 12 then dividing by 52 to get a weekly average.

☐

- Have they been away from main job?

☐ Present = 'YES' response to Question 3

☐ Absent = 'NO' response to Question 3

- Reason for being away from job, e.g. Maternity leave.

- Has paid work ever been present?

☐ Present = 'YES' response to Question 4

☐ Absent = 'NO' response to Question 4

If yes:

☐ Number of weeks since last worked
(Response to Question 4)

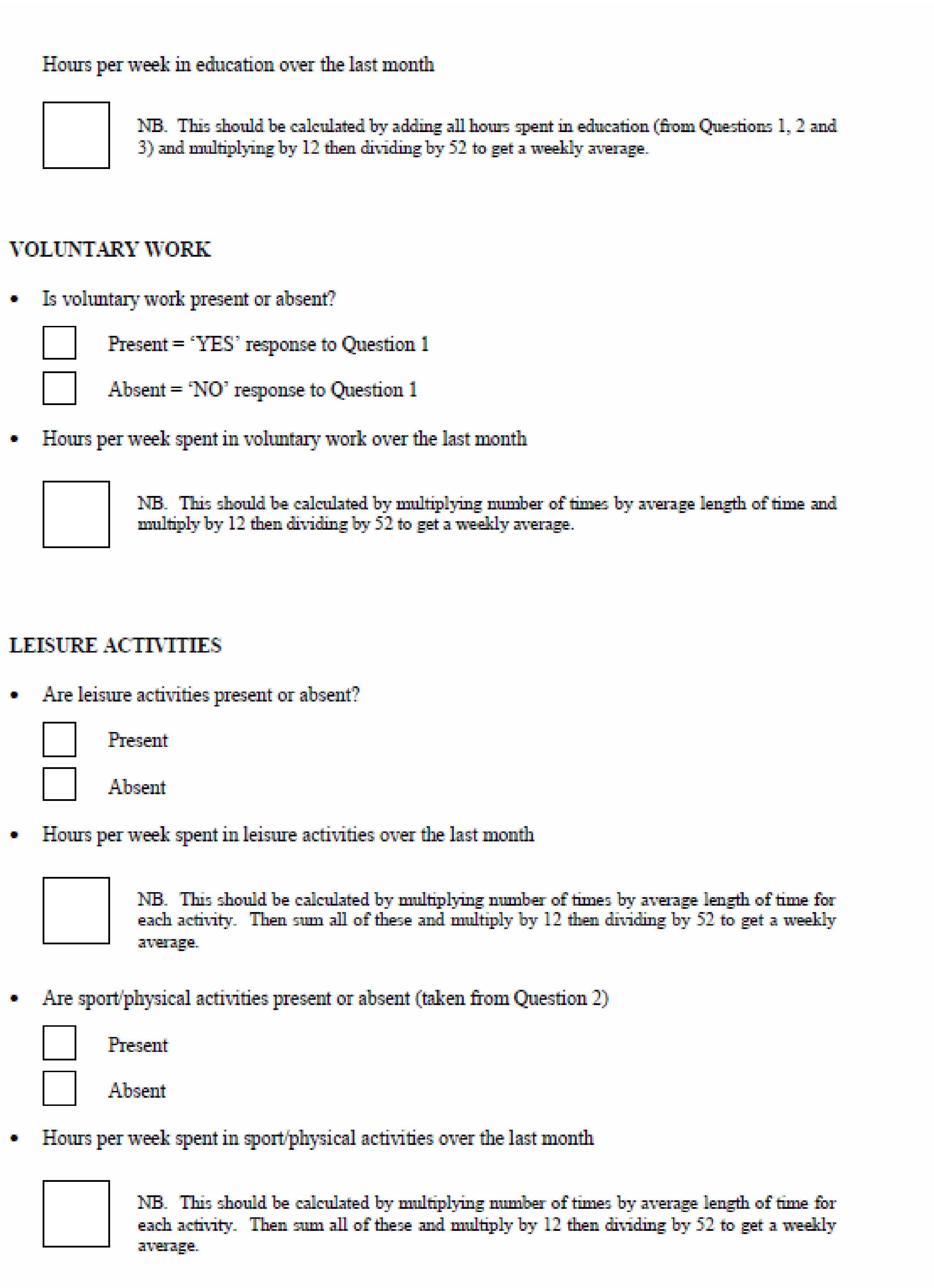
What was the last paid job? (Question 4)

EDUCATION

- Current education present or absent?

☐ Present = any 'YES' response to Questions 1 and 2

☐ Absent = 'NO' responses to Questions 1 and 2



Hours per week in education over the last month

☐ NB. This should be calculated by adding all hours spent in education (from Questions 1, 2 and 3) and multiplying by 12 then dividing by 52 to get a weekly average.

VOLUNTARY WORK

- Is voluntary work present or absent?

  ☐ Present = 'YES' response to Question 1

  ☐ Absent = 'NO' response to Question 1

- Hours per week spent in voluntary work over the last month

  ☐ NB. This should be calculated by multiplying number of times by average length of time and multiply by 12 then dividing by 52 to get a weekly average.

LEISURE ACTIVITIES

- Are leisure activities present or absent?

  ☐ Present

  ☐ Absent

- Hours per week spent in leisure activities over the last month

  ☐ NB. This should be calculated by multiplying number of times by average length of time for each activity. Then sum all of these and multiply by 12 then dividing by 52 to get a weekly average.

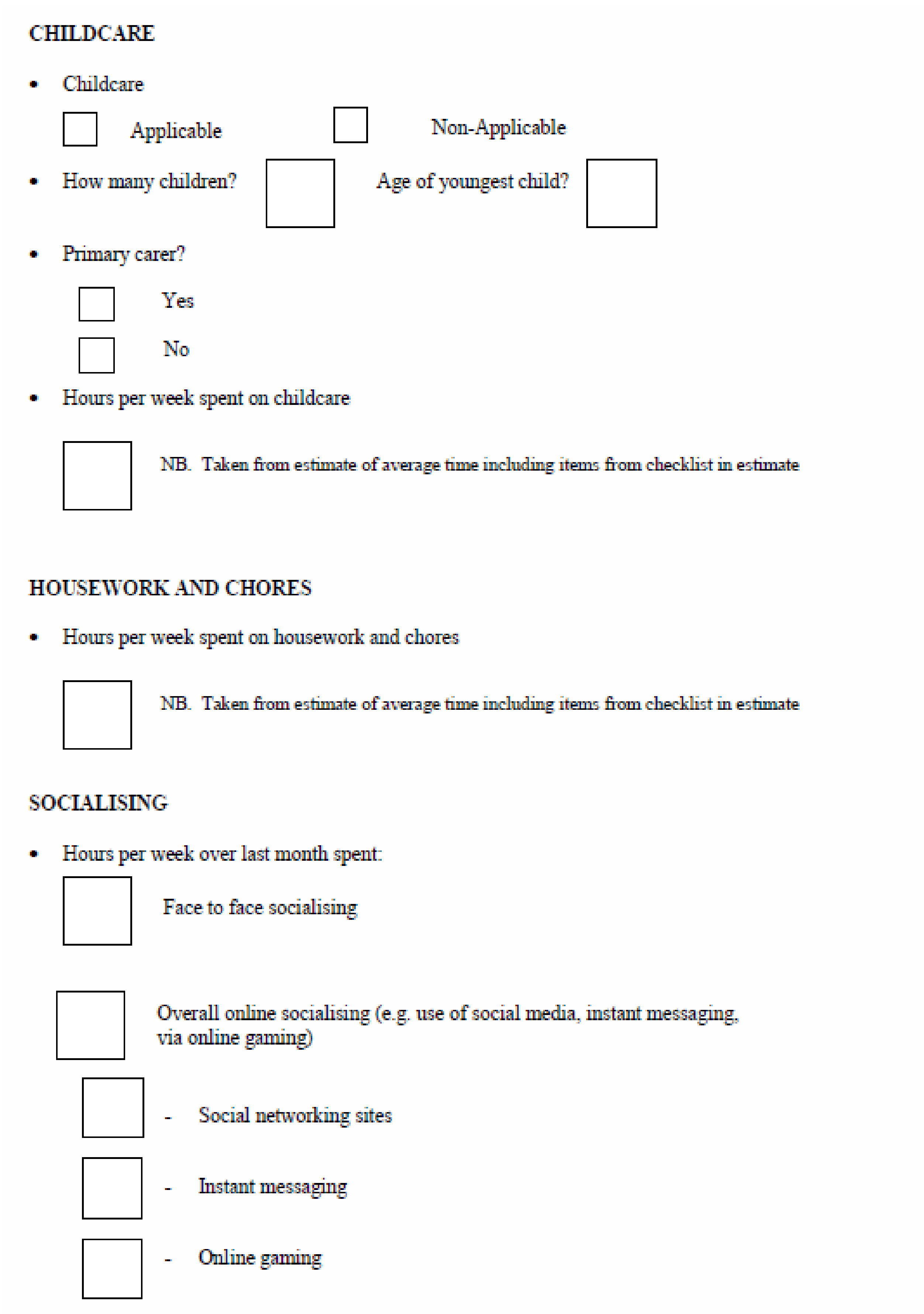
- Are sport/physical activities present or absent (taken from Question 2)

  ☐ Present

  ☐ Absent

- Hours per week spent in sport/physical activities over the last month

  ☐ NB. This should be calculated by multiplying number of times by average length of time for each activity. Then sum all of these and multiply by 12 then dividing by 52 to get a weekly average.



CHILDCARE

- Childcare

☐ Applicable ☐ Non-Applicable

- How many children? ☐ Age of youngest child? ☐
- Primary carer?

☐ Yes

☐ No

- Hours per week spent on childcare

☐ NB. Taken from estimate of average time including items from checklist in estimate

HOUSEWORK AND CHORES

- Hours per week spent on housework and chores

☐ NB. Taken from estimate of average time including items from checklist in estimate

SOCIALISING

- Hours per week over last month spent:

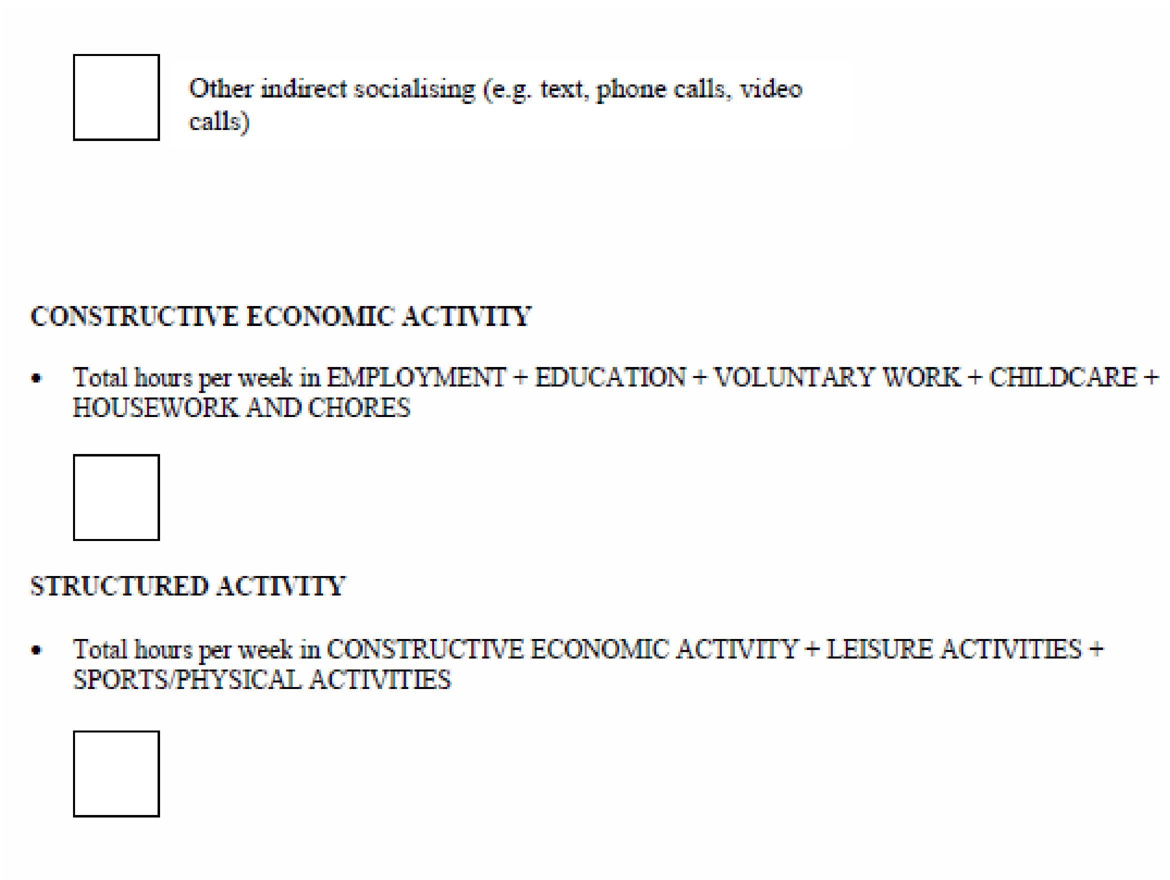
☐ Face to face socialising

☐ Overall online socialising (e.g. use of social media, instant messaging, via online gaming)

☐ - Social networking sites

☐ - Instant messaging

☐ - Online gaming



☐ Other indirect socialising (e.g. text, phone calls, video calls)

CONSTRUCTIVE ECONOMIC ACTIVITY

- Total hours per week in EMPLOYMENT + EDUCATION + VOLUNTARY WORK + CHILDCARE + HOUSEWORK AND CHORES

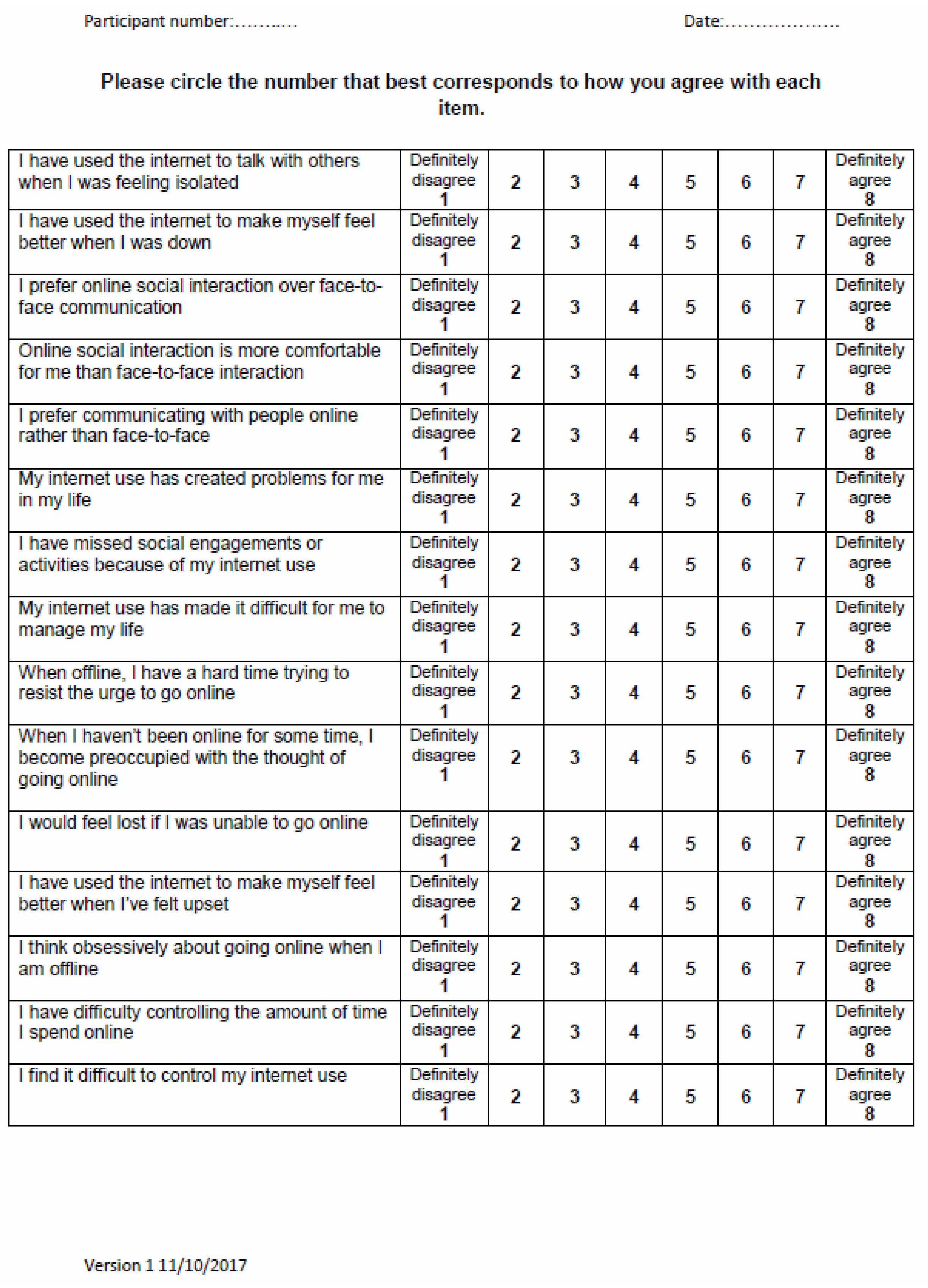
☐

STRUCTURED ACTIVITY

- Total hours per week in CONSTRUCTIVE ECONOMIC ACTIVITY + LEISURE ACTIVITIES + SPORTS/PHYSICAL ACTIVITIES

☐

Appendix D – Generalised Problematic Internet Use Scale 2



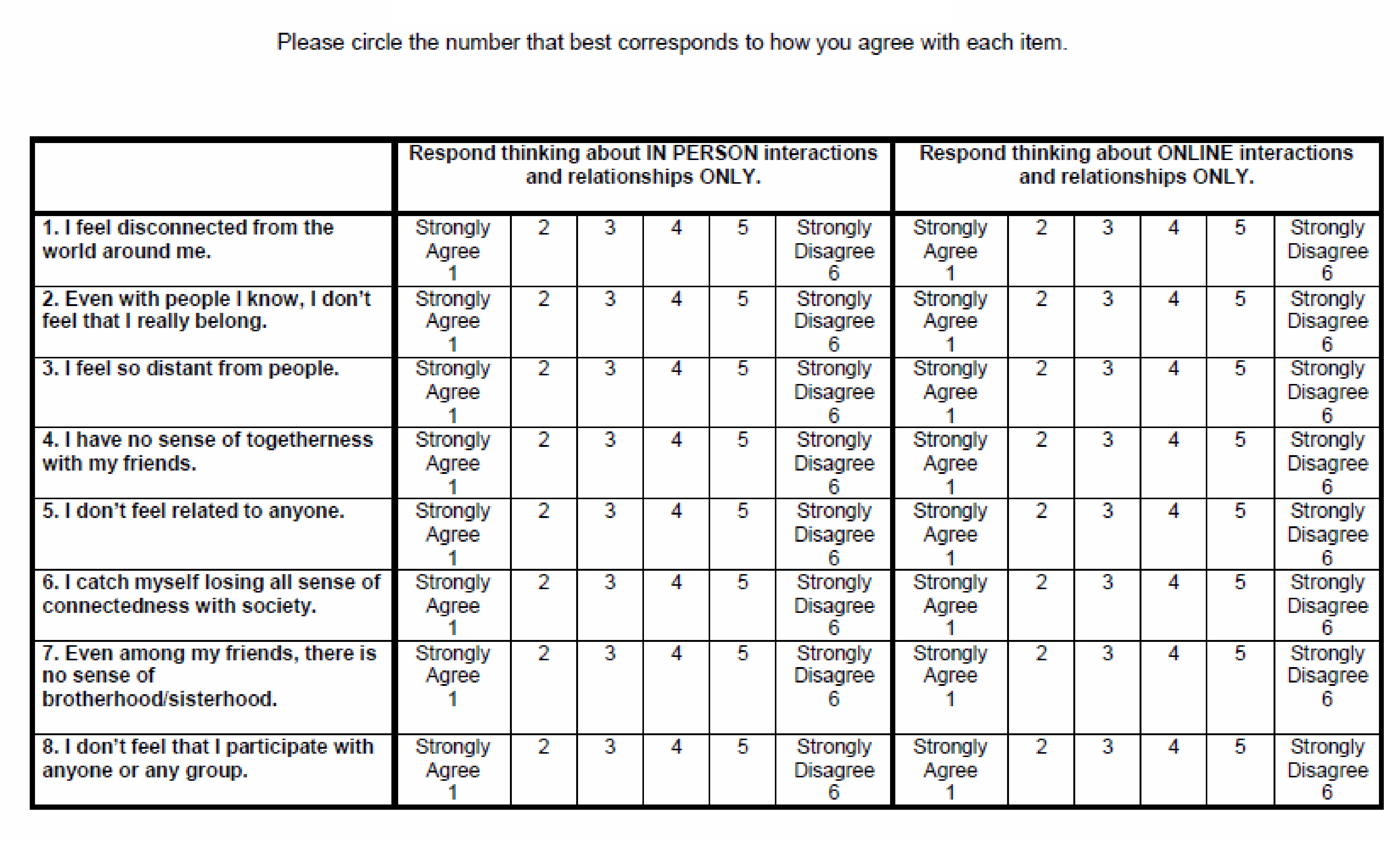
Participant number:………..… Date:……………….

Please circle the number that best corresponds to how you agree with each item.

I have used the internet to talk with others when I was feeling isolated	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I have used the internet to make myself feel better when I was down	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I prefer online social interaction over face-to-face communication	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
Online social interaction is more comfortable for me than face-to-face interaction	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I prefer communicating with people online rather than face-to-face	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
My internet use has created problems for me in my life	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I have missed social engagements or activities because of my internet use	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
My internet use has made it difficult for me to manage my life	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
When offline, I have a hard time trying to resist the urge to go online	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
When I haven't been online for some time, I become preoccupied with the thought of going online	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I would feel lost if I was unable to go online	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I have used the internet to make myself feel better when I've felt upset	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I think obsessively about going online when I am offline	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I have difficulty controlling the amount of time I spend online	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8
I find it difficult to control my internet use	Definitely disagree 1	2	3	4	5	6	7	Definitely agree 8

Version 1 11/10/2017

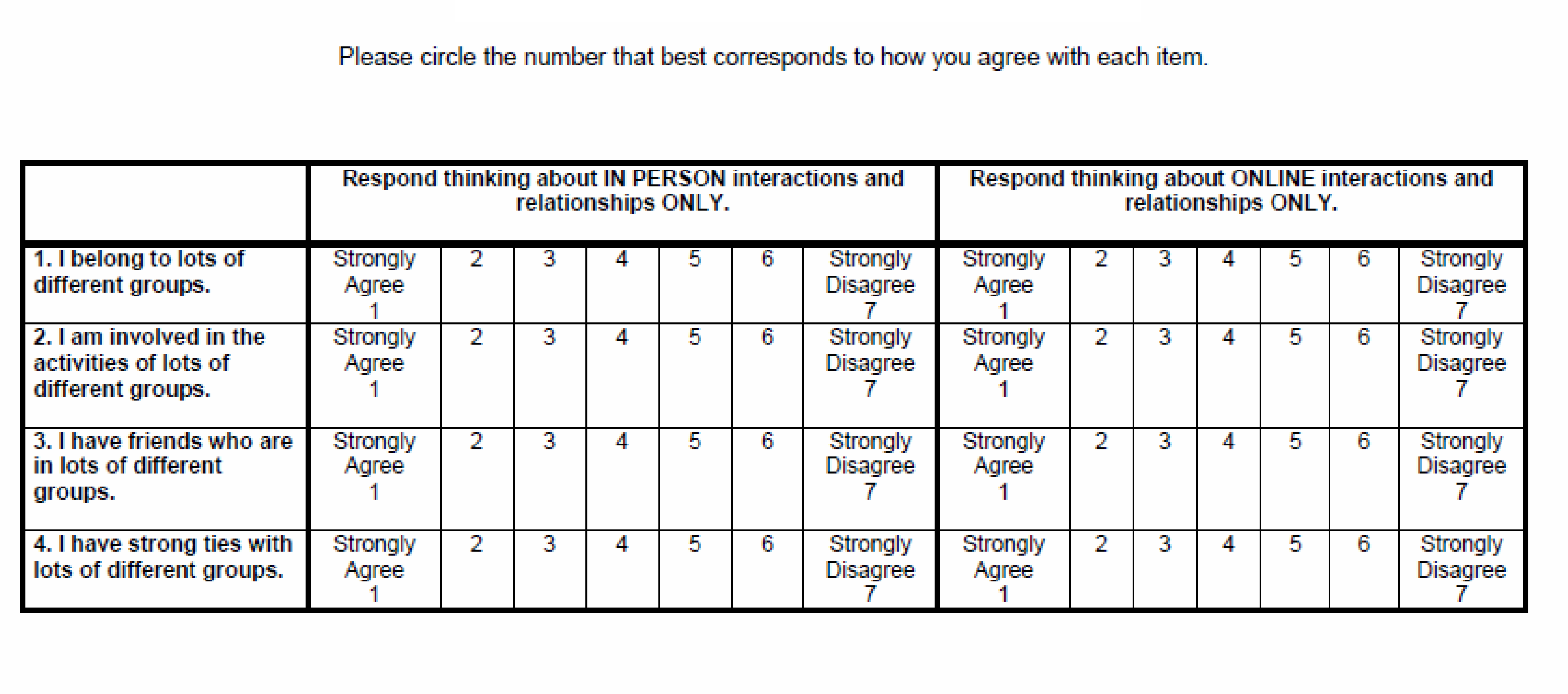
Appendix E – Modified Social Connectedness Scale



Please circle the number that best corresponds to how you agree with each item.

	Respond thinking about IN PERSON interactions and relationships ONLY.						Respond thinking about ONLINE interactions and relationships ONLY.					
1. I feel disconnected from the world around me.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
2. Even with people I know, I don't feel that I really belong.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
3. I feel so distant from people.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
4. I have no sense of togetherness with my friends.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
5. I don't feel related to anyone.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
6. I catch myself losing all sense of connectedness with society.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
7. Even among my friends, there is no sense of brotherhood/sisterhood.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6
8. I don't feel that I participate with anyone or any group.	Strongly Agree 1	2	3	4	5	Strongly Disagree 6	Strongly Agree 1	2	3	4	5	Strongly Disagree 6

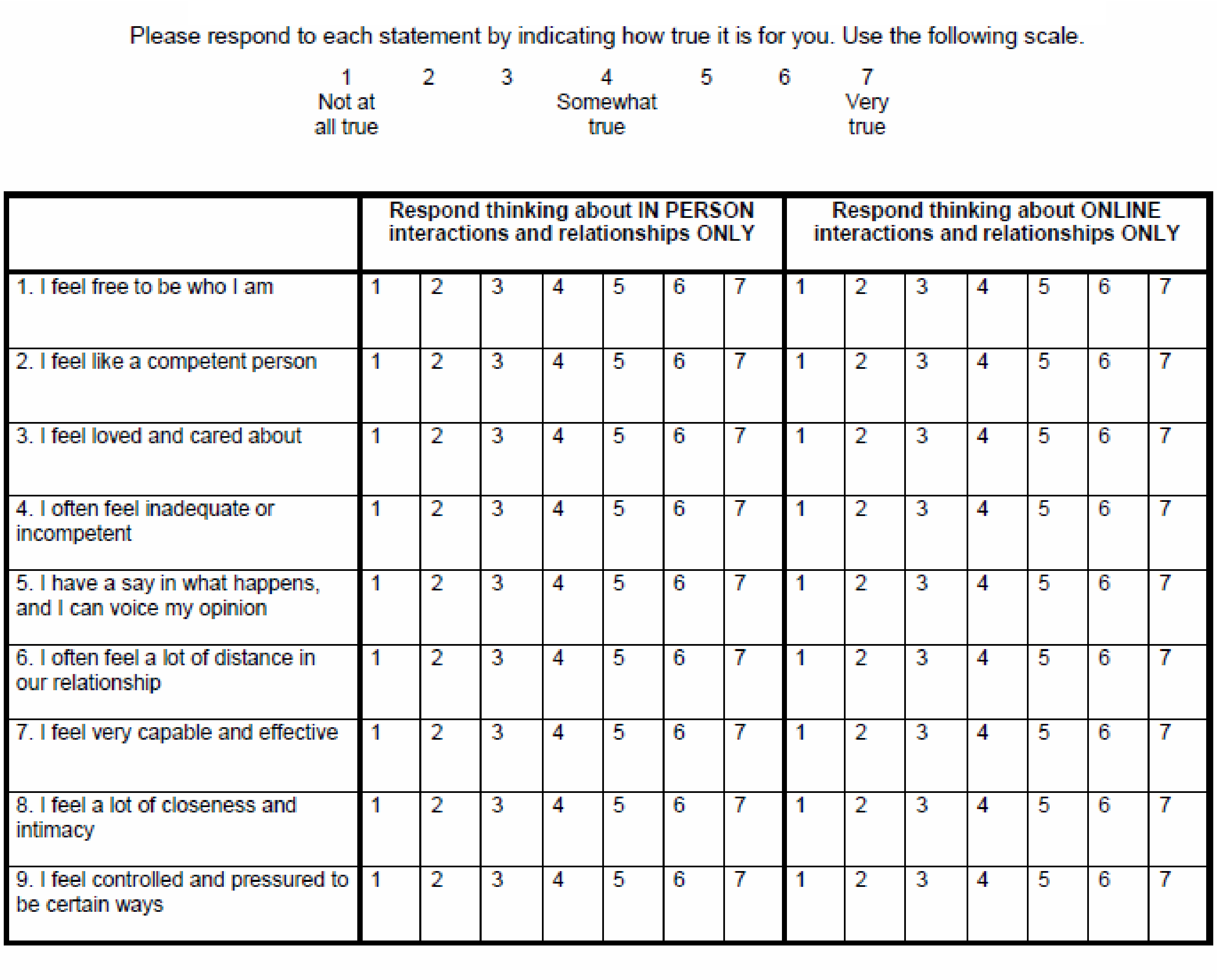
Appendix F – Modified Multiple Group Memberships Scale



Please circle the number that best corresponds to how you agree with each item.

	Respond thinking about IN PERSON interactions and relationships ONLY.							Respond thinking about ONLINE interactions and relationships ONLY.						
1. I belong to lots of different groups.	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7
2. I am involved in the activities of lots of different groups.	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7
3. I have friends who are in lots of different groups.	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7
4. I have strong ties with lots of different groups.	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7	Strongly Agree 1	2	3	4	5	6	Strongly Disagree 7

Appendix G – Modified Basic Needs Satisfaction Scale – Relationships Version

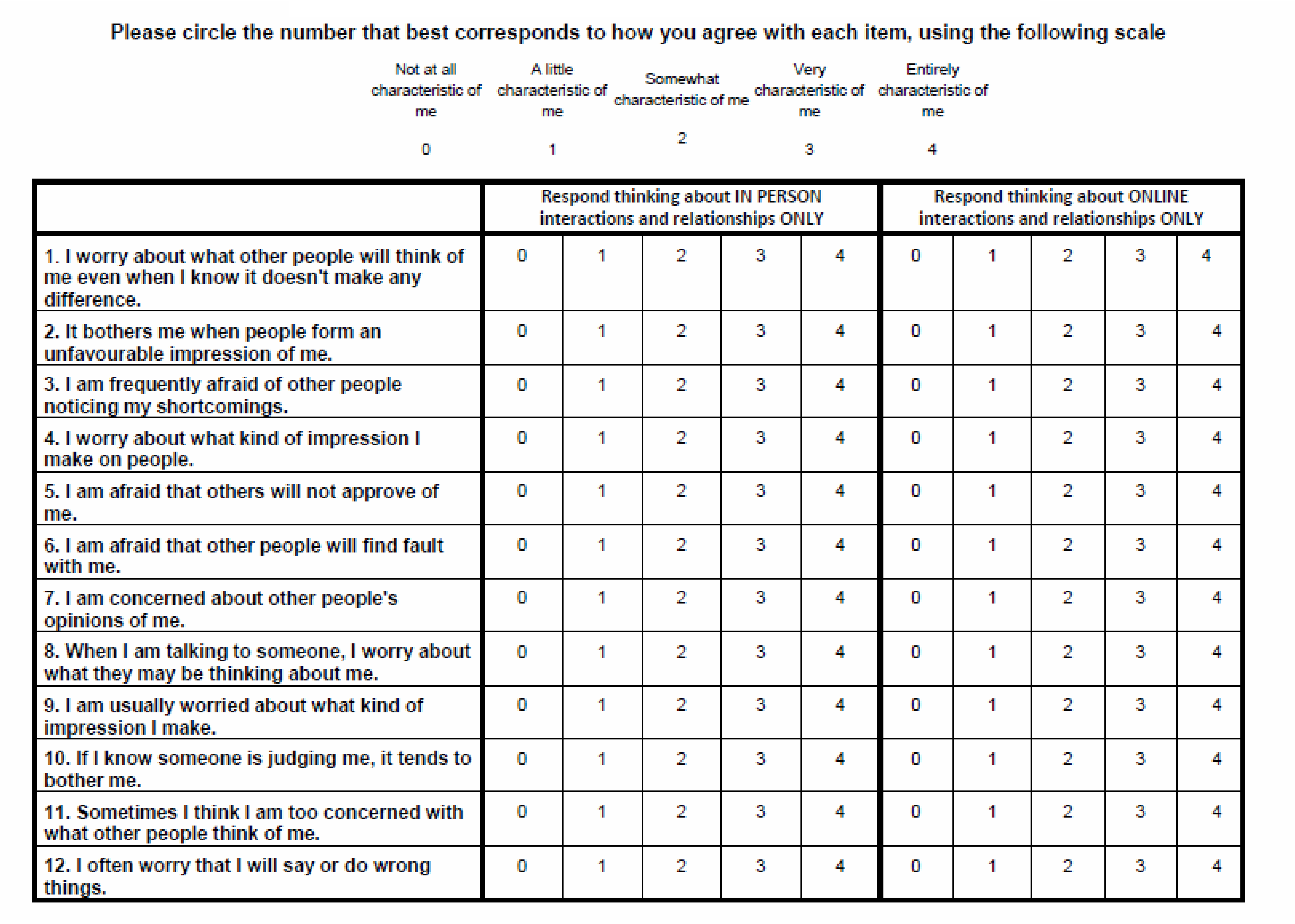


Please respond to each statement by indicating how true it is for you. Use the following scale.

1	2	3	4	5	6	7
Not at all true			Somewhat true			Very true

	Respond thinking about IN PERSON interactions and relationships ONLY							Respond thinking about ONLINE interactions and relationships ONLY						
1. I feel free to be who I am	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. I feel like a competent person	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. I feel loved and cared about	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. I often feel inadequate or incompetent	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. I have a say in what happens, and I can voice my opinion	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. I often feel a lot of distance in our relationship	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. I feel very capable and effective	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. I feel a lot of closeness and intimacy	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9. I feel controlled and pressured to be certain ways	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Appendix H – Modified Brief Fears of Negative Evaluation Scale -II

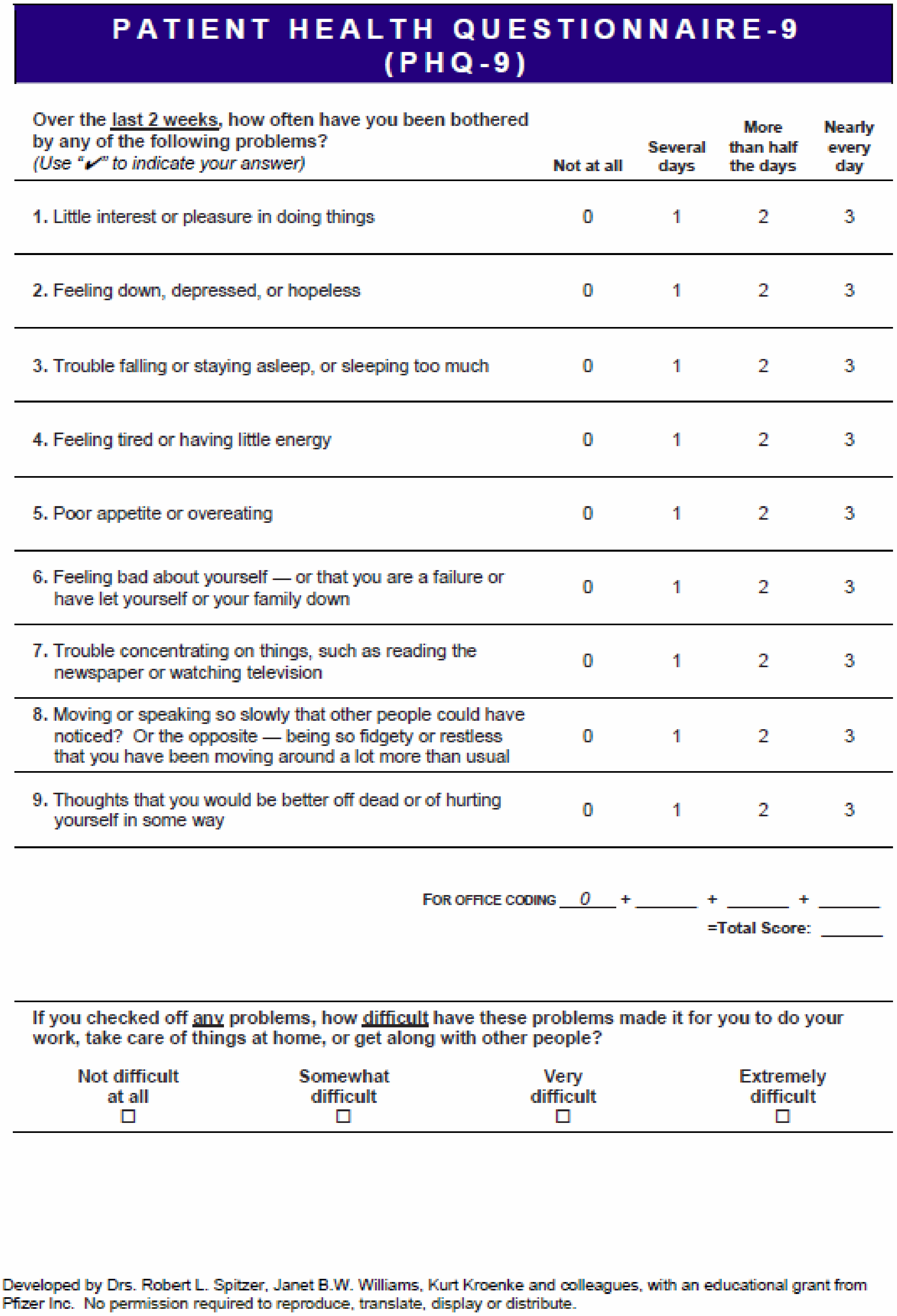


Please circle the number that best corresponds to how you agree with each item, using the following scale

Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
0	1	2	3	4

	Respond thinking about IN PERSON interactions and relationships ONLY					Respond thinking about ONLINE interactions and relationships ONLY				
1. I worry about what other people will think of me even when I know it doesn't make any difference.	0	1	2	3	4	0	1	2	3	4
2. It bothers me when people form an unfavourable impression of me.	0	1	2	3	4	0	1	2	3	4
3. I am frequently afraid of other people noticing my shortcomings.	0	1	2	3	4	0	1	2	3	4
4. I worry about what kind of impression I make on people.	0	1	2	3	4	0	1	2	3	4
5. I am afraid that others will not approve of me.	0	1	2	3	4	0	1	2	3	4
6. I am afraid that other people will find fault with me.	0	1	2	3	4	0	1	2	3	4
7. I am concerned about other people's opinions of me.	0	1	2	3	4	0	1	2	3	4
8. When I am talking to someone, I worry about what they may be thinking about me.	0	1	2	3	4	0	1	2	3	4
9. I am usually worried about what kind of impression I make.	0	1	2	3	4	0	1	2	3	4
10. If I know someone is judging me, it tends to bother me.	0	1	2	3	4	0	1	2	3	4
11. Sometimes I think I am too concerned with what other people think of me.	0	1	2	3	4	0	1	2	3	4
12. I often worry that I will say or do wrong things.	0	1	2	3	4	0	1	2	3	4

Appendix I – Public Health Questionnaire-9 (PHQ-9)



PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✓" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING __0__ + ______ + ______ + ______

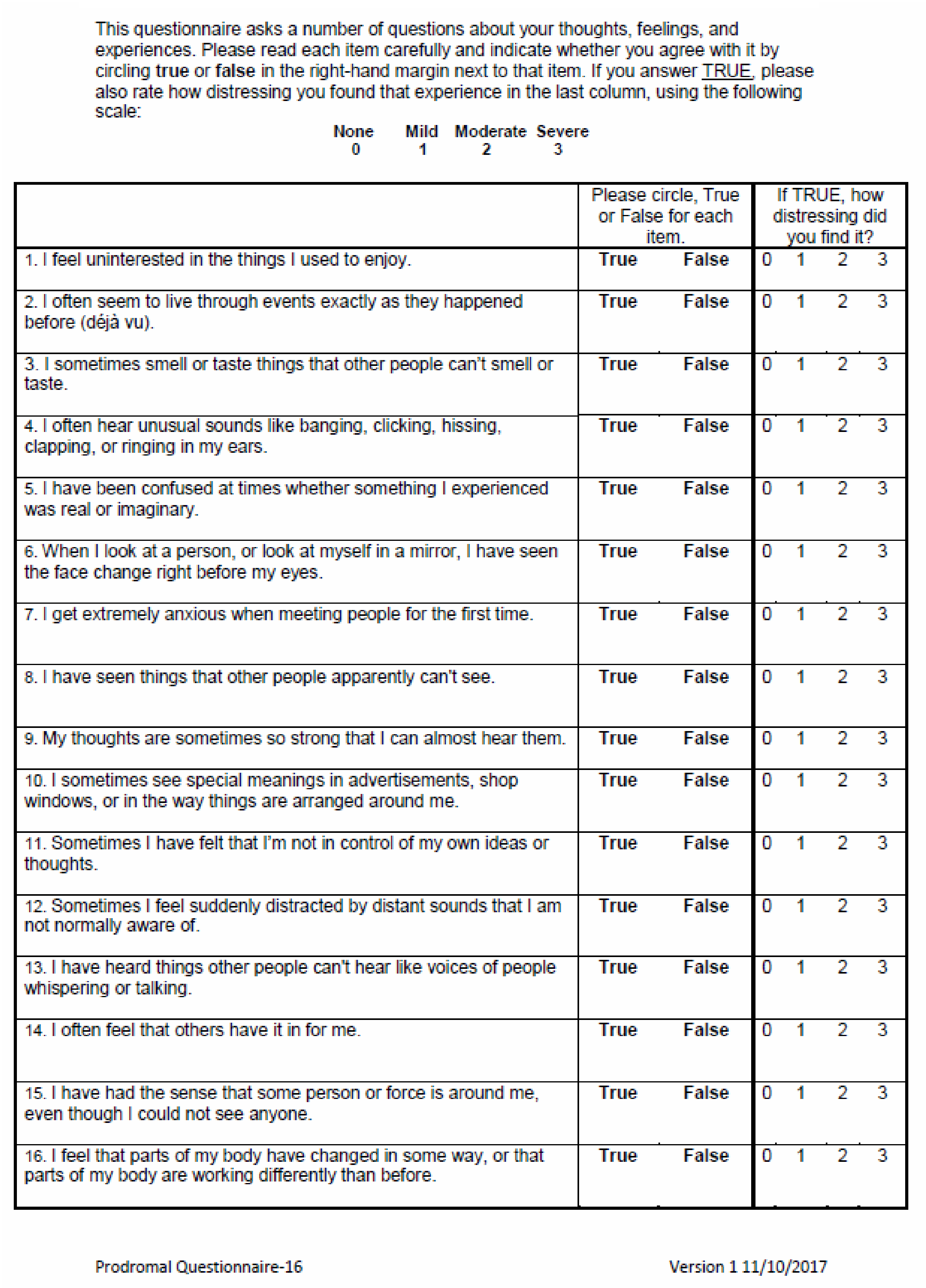
=Total Score: ______

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Appendix J – Prodromal Questionnaire-16 (PQ-16)



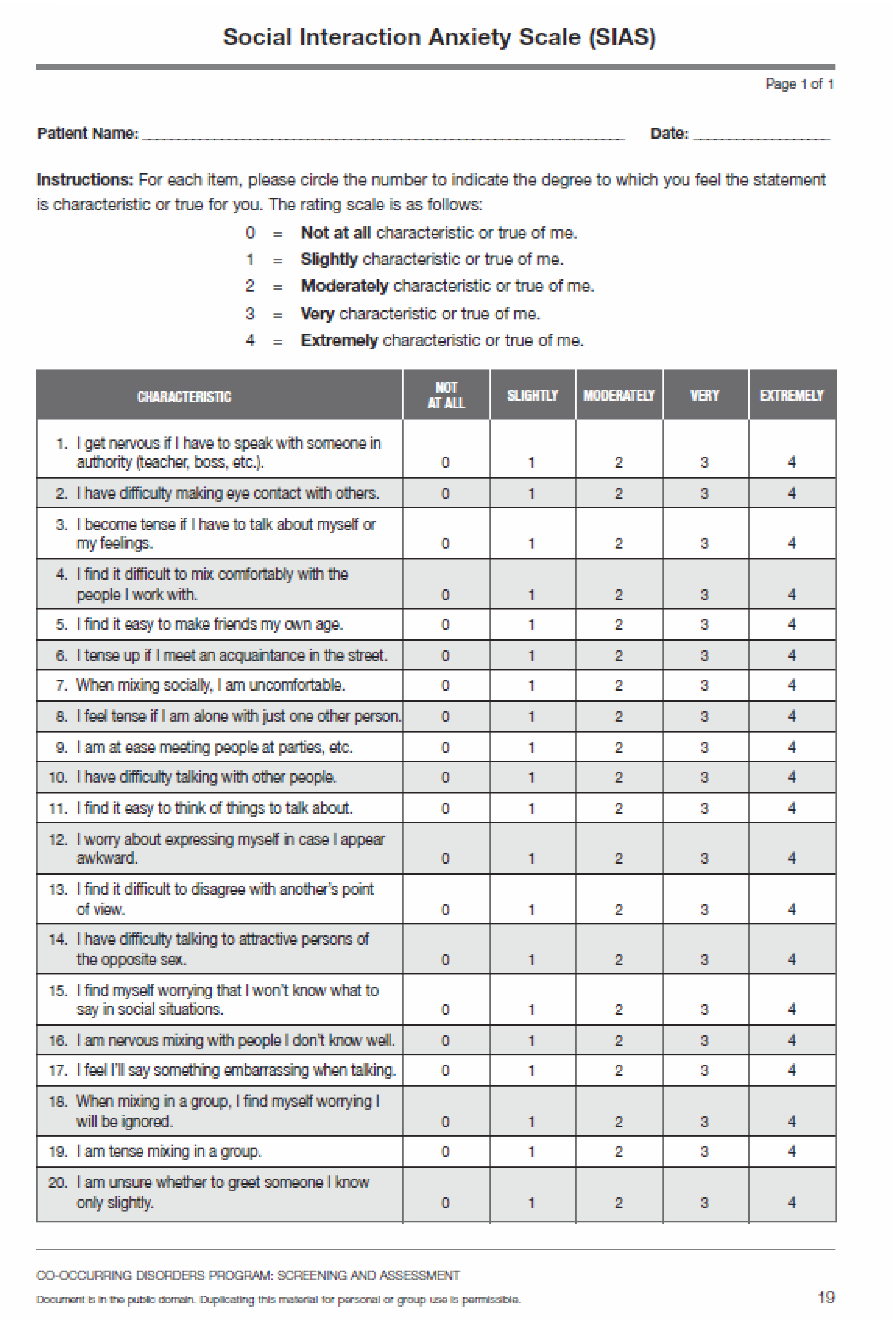
This questionnaire asks a number of questions about your thoughts, feelings, and experiences. Please read each item carefully and indicate whether you agree with it by circling **true** or **false** in the right-hand margin next to that item. If you answer TRUE, please also rate how distressing you found that experience in the last column, using the following scale:

None	Mild	Moderate	Severe
0	1	2	3

	Please circle, True or False for each item.		If TRUE, how distressing did you find it?			
1. I feel uninterested in the things I used to enjoy.	**True**	**False**	0	1	2	3
2. I often seem to live through events exactly as they happened before (déjà vu).	**True**	**False**	0	1	2	3
3. I sometimes smell or taste things that other people can't smell or taste.	**True**	**False**	0	1	2	3
4. I often hear unusual sounds like banging, clicking, hissing, clapping, or ringing in my ears.	**True**	**False**	0	1	2	3
5. I have been confused at times whether something I experienced was real or imaginary.	**True**	**False**	0	1	2	3
6. When I look at a person, or look at myself in a mirror, I have seen the face change right before my eyes.	**True**	**False**	0	1	2	3
7. I get extremely anxious when meeting people for the first time.	**True**	**False**	0	1	2	3
8. I have seen things that other people apparently can't see.	**True**	**False**	0	1	2	3
9. My thoughts are sometimes so strong that I can almost hear them.	**True**	**False**	0	1	2	3
10. I sometimes see special meanings in advertisements, shop windows, or in the way things are arranged around me.	**True**	**False**	0	1	2	3
11. Sometimes I have felt that I'm not in control of my own ideas or thoughts.	**True**	**False**	0	1	2	3
12. Sometimes I feel suddenly distracted by distant sounds that I am not normally aware of.	**True**	**False**	0	1	2	3
13. I have heard things other people can't hear like voices of people whispering or talking.	**True**	**False**	0	1	2	3
14. I often feel that others have it in for me.	**True**	**False**	0	1	2	3
15. I have had the sense that some person or force is around me, even though I could not see anyone.	**True**	**False**	0	1	2	3
16. I feel that parts of my body have changed in some way, or that parts of my body are working differently than before.	**True**	**False**	0	1	2	3

Prodromal Questionnaire-16 Version 1 11/10/2017

Appendix K – Social Interaction Anxiety Scale (SIAS)



Social Interaction Anxiety Scale (SIAS)

Page 1 of 1

Patient Name: ____________________ **Date:** __________

Instructions: For each item, please circle the number to indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

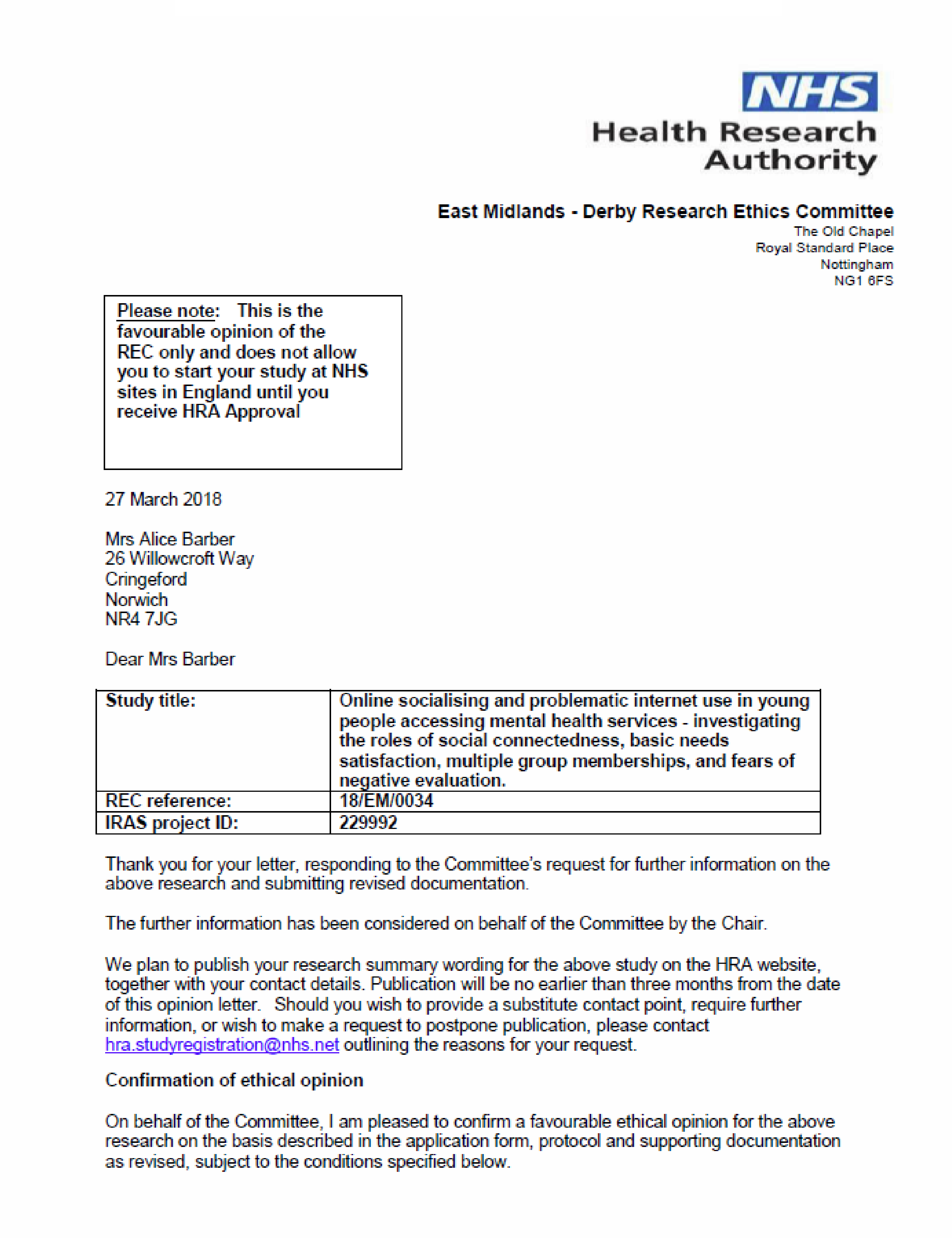
0 = **Not at all** characteristic or true of me.
1 = **Slightly** characteristic or true of me.
2 = **Moderately** characteristic or true of me.
3 = **Very** characteristic or true of me.
4 = **Extremely** characteristic or true of me.

CHARACTERISTIC	NOT AT ALL	SLIGHTLY	MODERATELY	VERY	EXTREMELY
1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.).	0	1	2	3	4
2. I have difficulty making eye contact with others.	0	1	2	3	4
3. I become tense if I have to talk about myself or my feelings.	0	1	2	3	4
4. I find it difficult to mix comfortably with the people I work with.	0	1	2	3	4
5. I find it easy to make friends my own age.	0	1	2	3	4
6. I tense up if I meet an acquaintance in the street.	0	1	2	3	4
7. When mixing socially, I am uncomfortable.	0	1	2	3	4
8. I feel tense if I am alone with just one other person.	0	1	2	3	4
9. I am at ease meeting people at parties, etc.	0	1	2	3	4
10. I have difficulty talking with other people.	0	1	2	3	4
11. I find it easy to think of things to talk about.	0	1	2	3	4
12. I worry about expressing myself in case I appear awkward.	0	1	2	3	4
13. I find it difficult to disagree with another's point of view.	0	1	2	3	4
14. I have difficulty talking to attractive persons of the opposite sex.	0	1	2	3	4
15. I find myself worrying that I won't know what to say in social situations.	0	1	2	3	4
16. I am nervous mixing with people I don't know well.	0	1	2	3	4
17. I feel I'll say something embarrassing when talking.	0	1	2	3	4
18. When mixing in a group, I find myself worrying I will be ignored.	0	1	2	3	4
19. I am tense mixing in a group.	0	1	2	3	4
20. I am unsure whether to greet someone I know only slightly.	0	1	2	3	4

CO-OCCURRING DISORDERS PROGRAM: SCREENING AND ASSESSMENT

19

Appendix L – Research Ethics Committee Approval Letter



NHS
Health Research
Authority

East Midlands - Derby Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

27 March 2018

Mrs Alice Barber
26 Willowcroft Way
Cringeford
Norwich
NR4 7JG

Dear Mrs Barber

Study title:	**Online socialising and problematic internet use in young people accessing mental health services - investigating the roles of social connectedness, basic needs satisfaction, multiple group memberships, and fears of negative evaluation.**
REC reference:	18/EM/0034
IRAS project ID:	229992

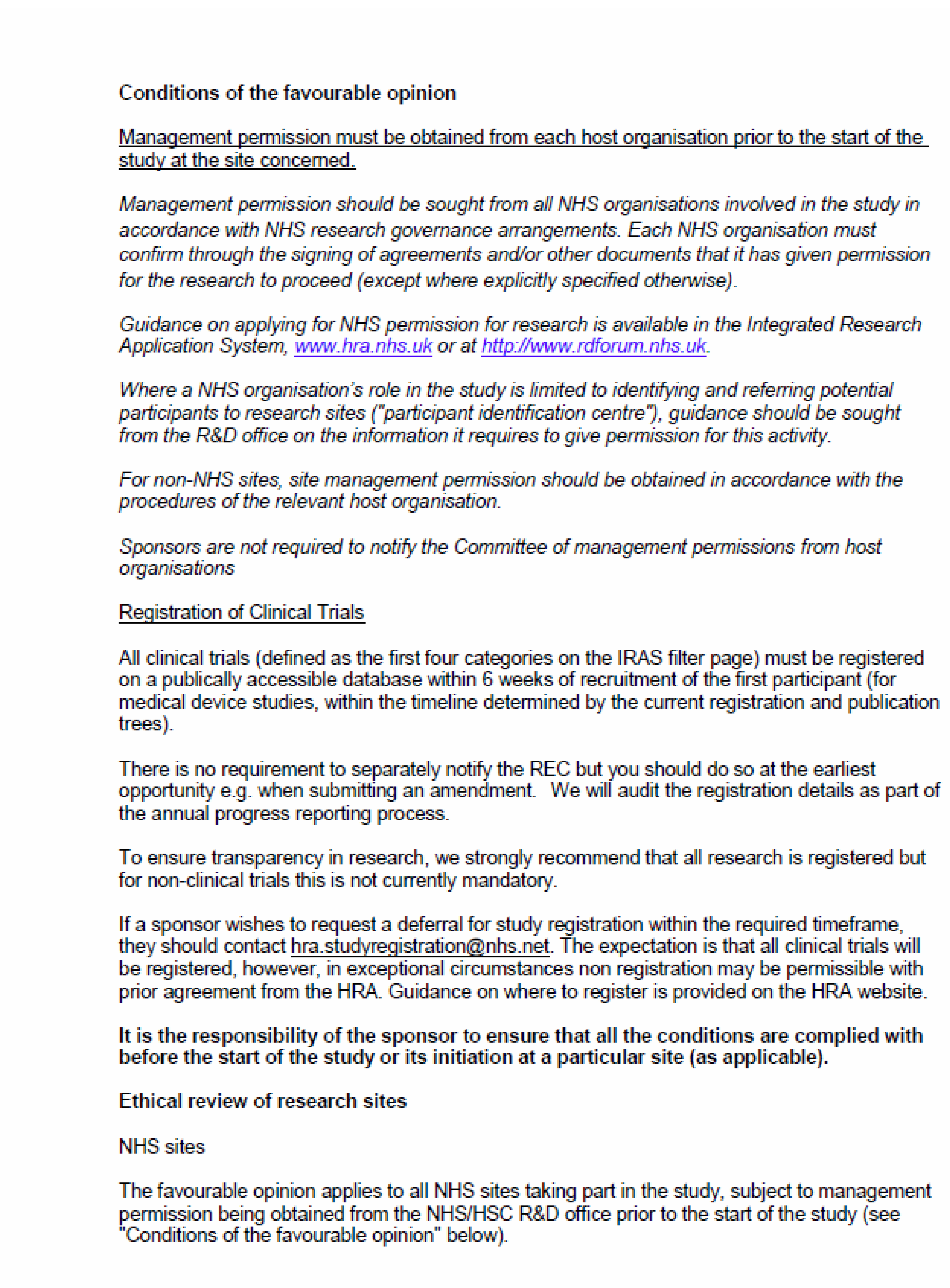
Thank you for your letter, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.



Conditions of the favourable opinion

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

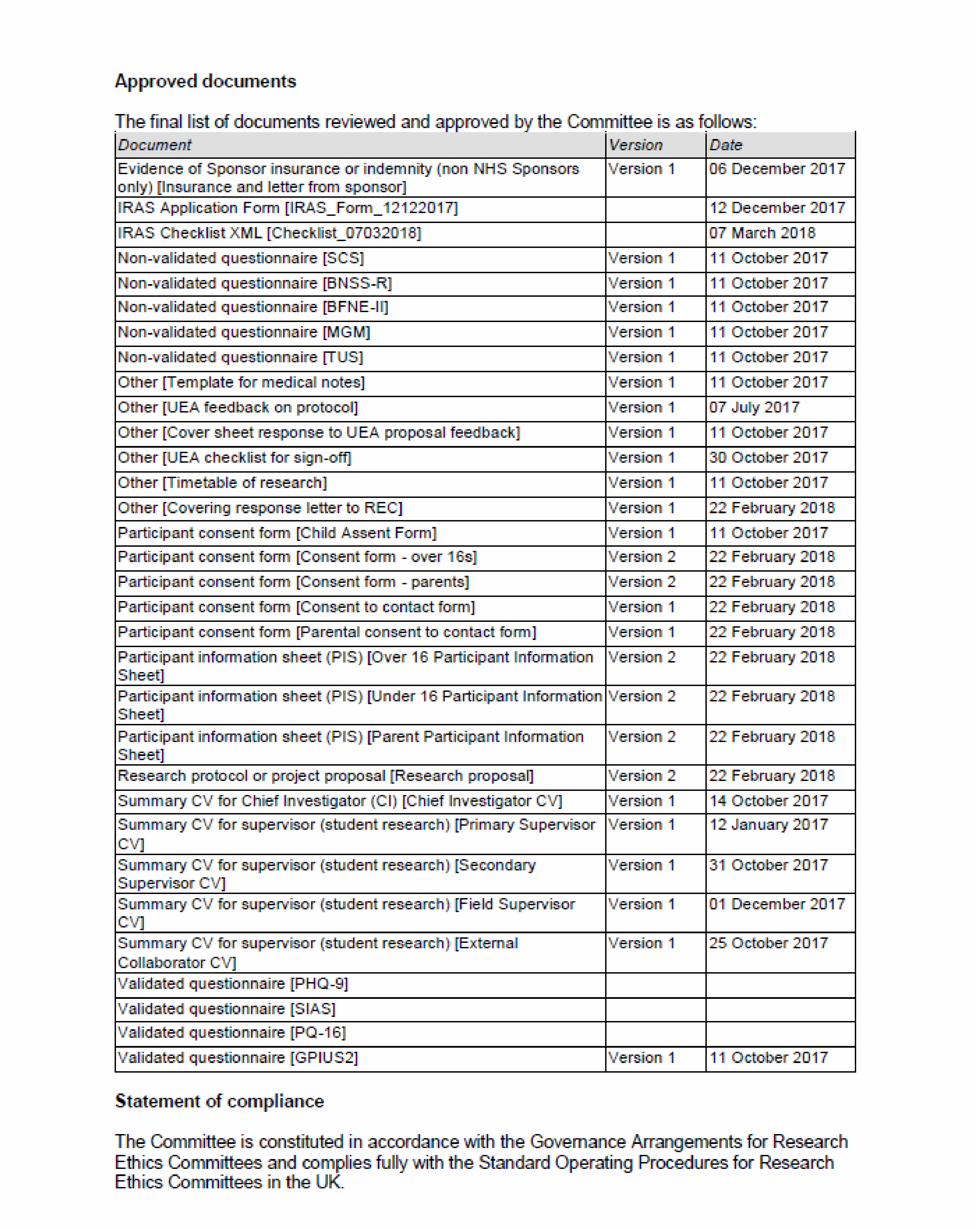
If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).



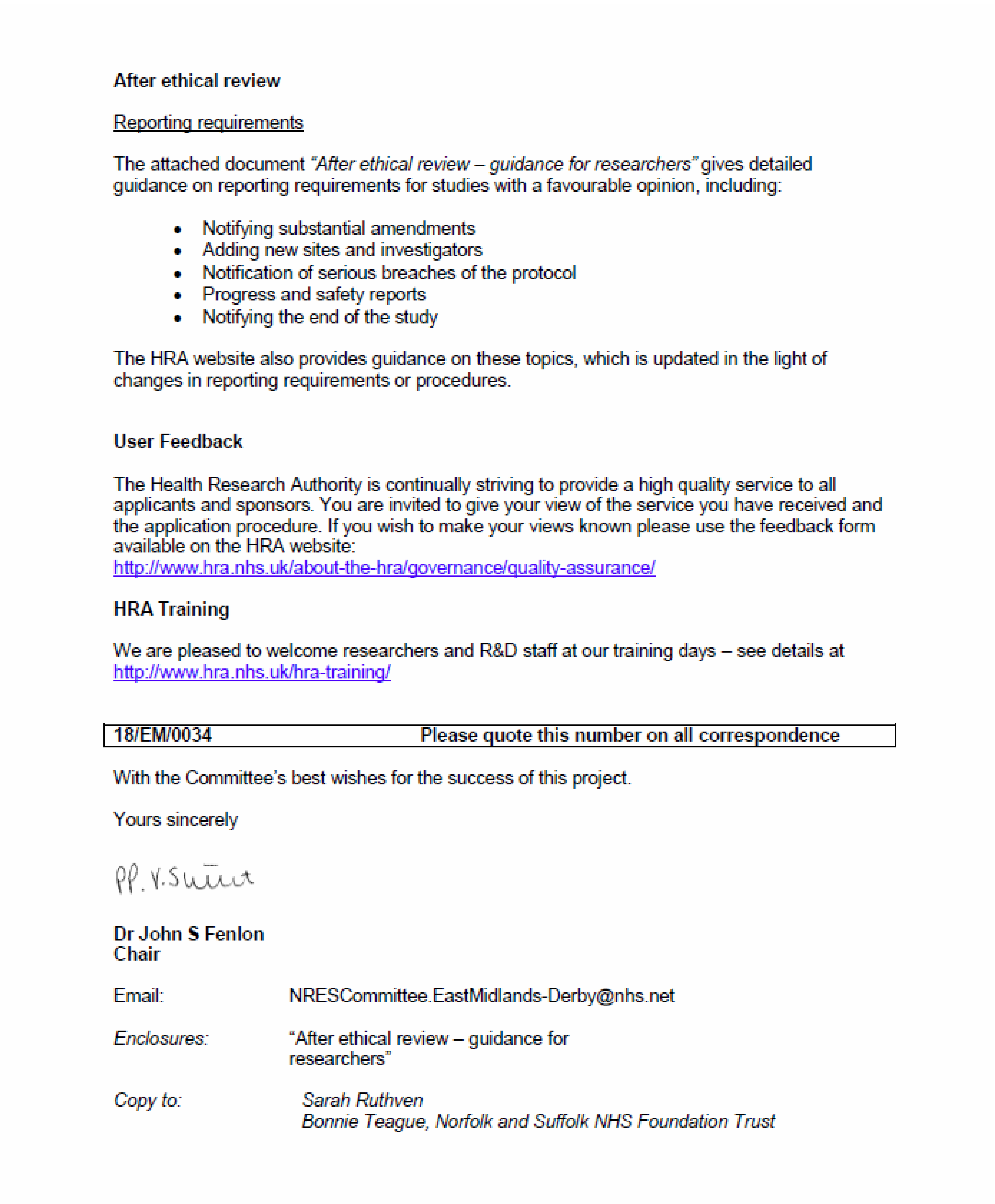
Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Insurance and letter from sponsor]	Version 1	06 December 2017
IRAS Application Form [IRAS_Form_12122017]		12 December 2017
IRAS Checklist XML [Checklist_07032018]		07 March 2018
Non-validated questionnaire [SCS]	Version 1	11 October 2017
Non-validated questionnaire [BNSS-R]	Version 1	11 October 2017
Non-validated questionnaire [BFNE-II]	Version 1	11 October 2017
Non-validated questionnaire [MGM]	Version 1	11 October 2017
Non-validated questionnaire [TUS]	Version 1	11 October 2017
Other [Template for medical notes]	Version 1	11 October 2017
Other [UEA feedback on protocol]	Version 1	07 July 2017
Other [Cover sheet response to UEA proposal feedback]	Version 1	11 October 2017
Other [UEA checklist for sign-off]	Version 1	30 October 2017
Other [Timetable of research]	Version 1	11 October 2017
Other [Covering response letter to REC]	Version 1	22 February 2018
Participant consent form [Child Assent Form]	Version 1	11 October 2017
Participant consent form [Consent form - over 16s]	Version 2	22 February 2018
Participant consent form [Consent form - parents]	Version 2	22 February 2018
Participant consent form [Consent to contact form]	Version 1	22 February 2018
Participant consent form [Parental consent to contact form]	Version 1	22 February 2018
Participant information sheet (PIS) [Over 16 Participant Information Sheet]	Version 2	22 February 2018
Participant information sheet (PIS) [Under 16 Participant Information Sheet]	Version 2	22 February 2018
Participant information sheet (PIS) [Parent Participant Information Sheet]	Version 2	22 February 2018
Research protocol or project proposal [Research proposal]	Version 2	22 February 2018
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	Version 1	14 October 2017
Summary CV for supervisor (student research) [Primary Supervisor CV]	Version 1	12 January 2017
Summary CV for supervisor (student research) [Secondary Supervisor CV]	Version 1	31 October 2017
Summary CV for supervisor (student research) [Field Supervisor CV]	Version 1	01 December 2017
Summary CV for supervisor (student research) [External Collaborator CV]	Version 1	25 October 2017
Validated questionnaire [PHQ-9]		
Validated questionnaire [SIAS]		
Validated questionnaire [PQ-16]		
Validated questionnaire [GPIUS2]	Version 1	11 October 2017

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.



After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

18/EM/0034	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

pp. V.Smith

Dr John S Fenlon
Chair

Email: NRESCommittee.EastMidlands-Derby@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Sarah Ruthven*
Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust

Appendix M - Health Research Authority Approval Letter

NHS
Health Research Authority

Mrs Alice Barber
26 Willowcroft Way
Cringeford
Norwich
NR4 7JG

Email: hra.approval@nhs.net

04 April 2018

Dear Mrs Barber

Letter of HRA Approval

Study title:	**Online socialising and problematic internet use in young people accessing mental health services - investigating the roles of social connectedness, basic needs satisfaction, multiple group memberships, and fears of negative evaluation.**
IRAS project ID:	**229992**
REC reference:	**18/EM/0034**
Sponsor	**University of East Anglia**

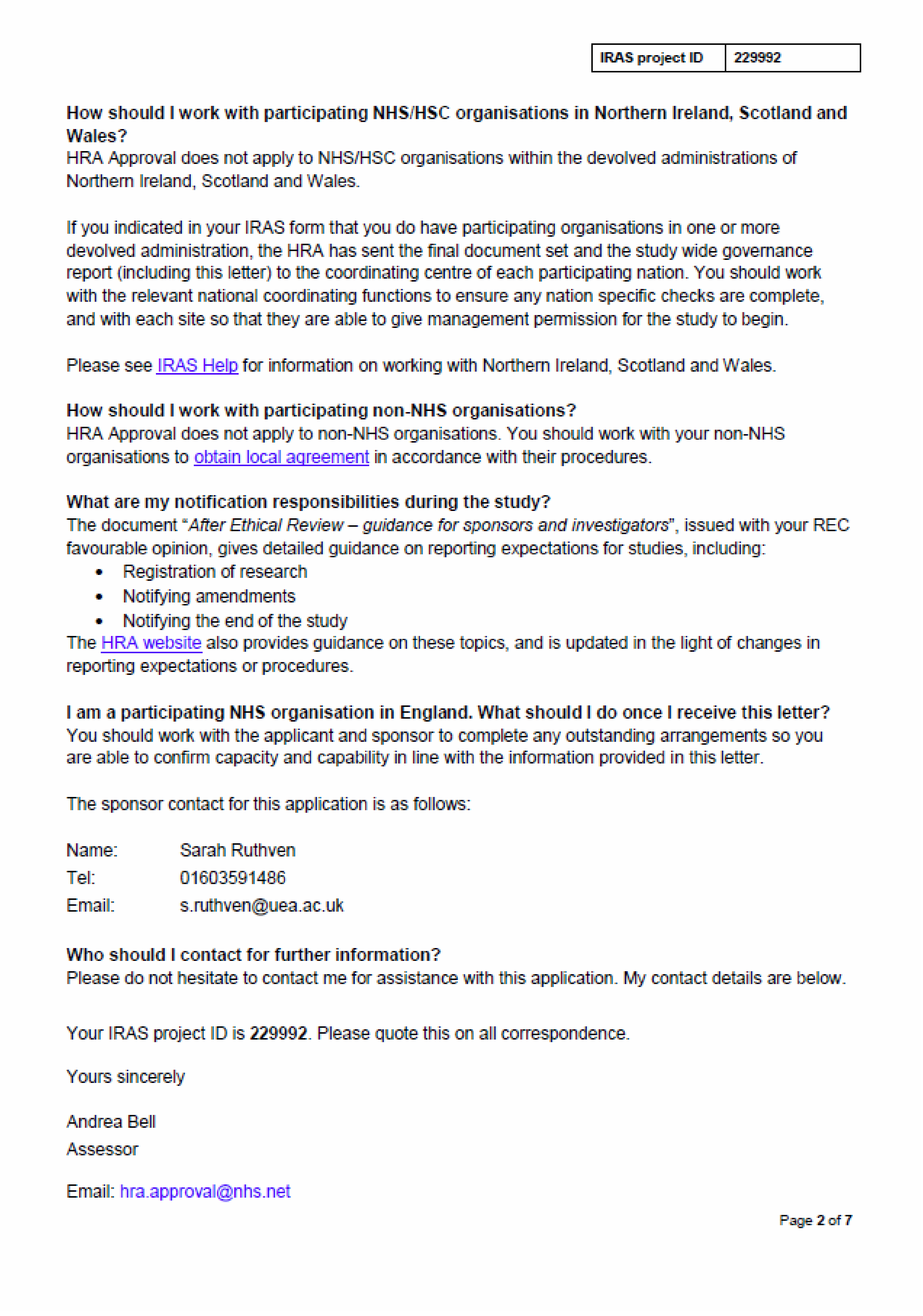
I am pleased to confirm that HRA Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further from the HRA.

How should I continue to work with participating NHS organisations in England?
You should now provide a copy of this letter to all participating NHS organisations in England, as well as any documentation that has been updated as a result of the assessment.

Following the arranging of capacity and capability, participating NHS organisations should **formally confirm** their capacity and capability to undertake the study. How this will be confirmed is detailed in the "*summary of HRA assessment*" section towards the end of this letter.

You should provide, if you have not already done so, detailed instructions to each organisation as to how you will notify them that research activities may commence at site following their confirmation of capacity and capability (e.g. provision by you of a 'green light' email, formal notification following a site initiation visit, activities may commence immediately following confirmation by participating organisation, etc.).

It is important that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details of the research management function for each organisation can be accessed here.



How should I work with participating NHS/HSC organisations in Northern Ireland, Scotland and Wales?
HRA Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland, Scotland and Wales.

If you indicated in your IRAS form that you do have participating organisations in one or more devolved administration, the HRA has sent the final document set and the study wide governance report (including this letter) to the coordinating centre of each participating nation. You should work with the relevant national coordinating functions to ensure any nation specific checks are complete, and with each site so that they are able to give management permission for the study to begin.

Please see IRAS Help for information on working with Northern Ireland, Scotland and Wales.

How should I work with participating non-NHS organisations?
HRA Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?
The document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

I am a participating NHS organisation in England. What should I do once I receive this letter?
You should work with the applicant and sponsor to complete any outstanding arrangements so you are able to confirm capacity and capability in line with the information provided in this letter.

The sponsor contact for this application is as follows:

Name:	Sarah Ruthven
Tel:	01603591486
Email:	s.ruthven@uea.ac.uk

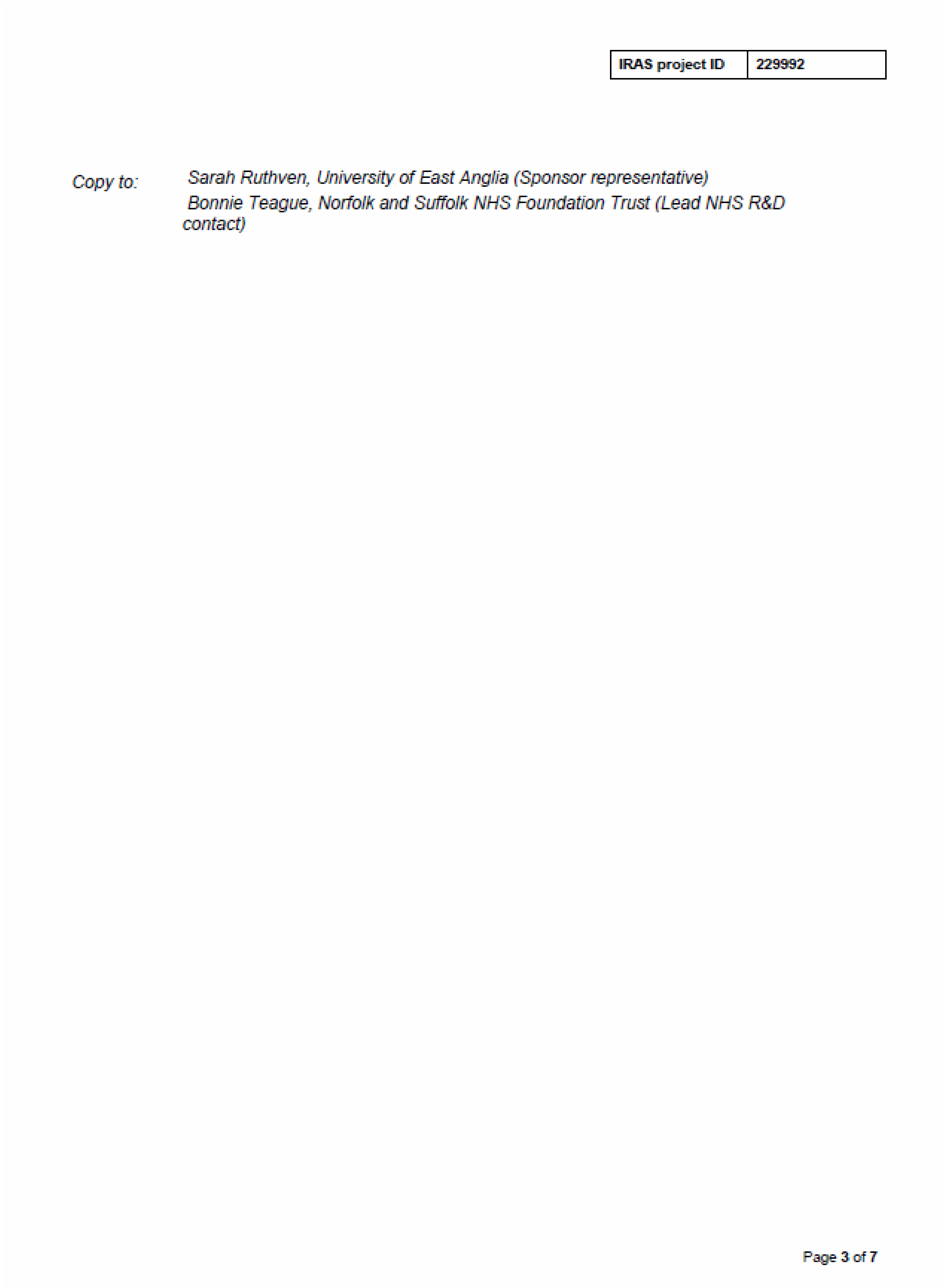
Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **229992**. Please quote this on all correspondence.

Yours sincerely

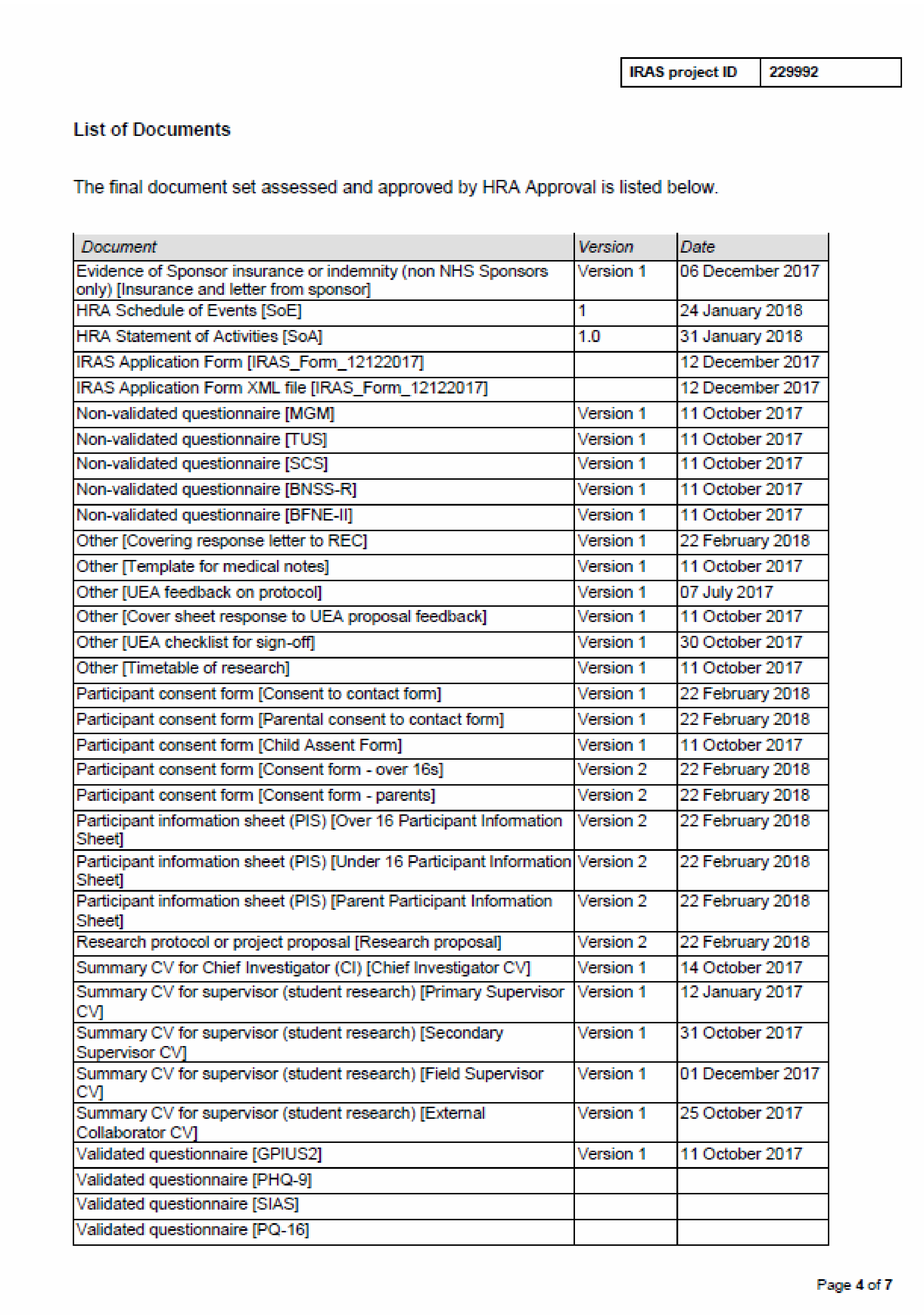
Andrea Bell
Assessor

Email: hra.approval@nhs.net



IRAS project ID	**229992**

Copy to: *Sarah Ruthven, University of East Anglia (Sponsor representative)*
Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust (Lead NHS R&D contact)



IRAS project ID	**229992**

List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Insurance and letter from sponsor]	Version 1	06 December 2017
HRA Schedule of Events [SoE]	1	24 January 2018
HRA Statement of Activities [SoA]	1.0	31 January 2018
IRAS Application Form [IRAS_Form_12122017]		12 December 2017
IRAS Application Form XML file [IRAS_Form_12122017]		12 December 2017
Non-validated questionnaire [MGM]	Version 1	11 October 2017
Non-validated questionnaire [TUS]	Version 1	11 October 2017
Non-validated questionnaire [SCS]	Version 1	11 October 2017
Non-validated questionnaire [BNSS-R]	Version 1	11 October 2017
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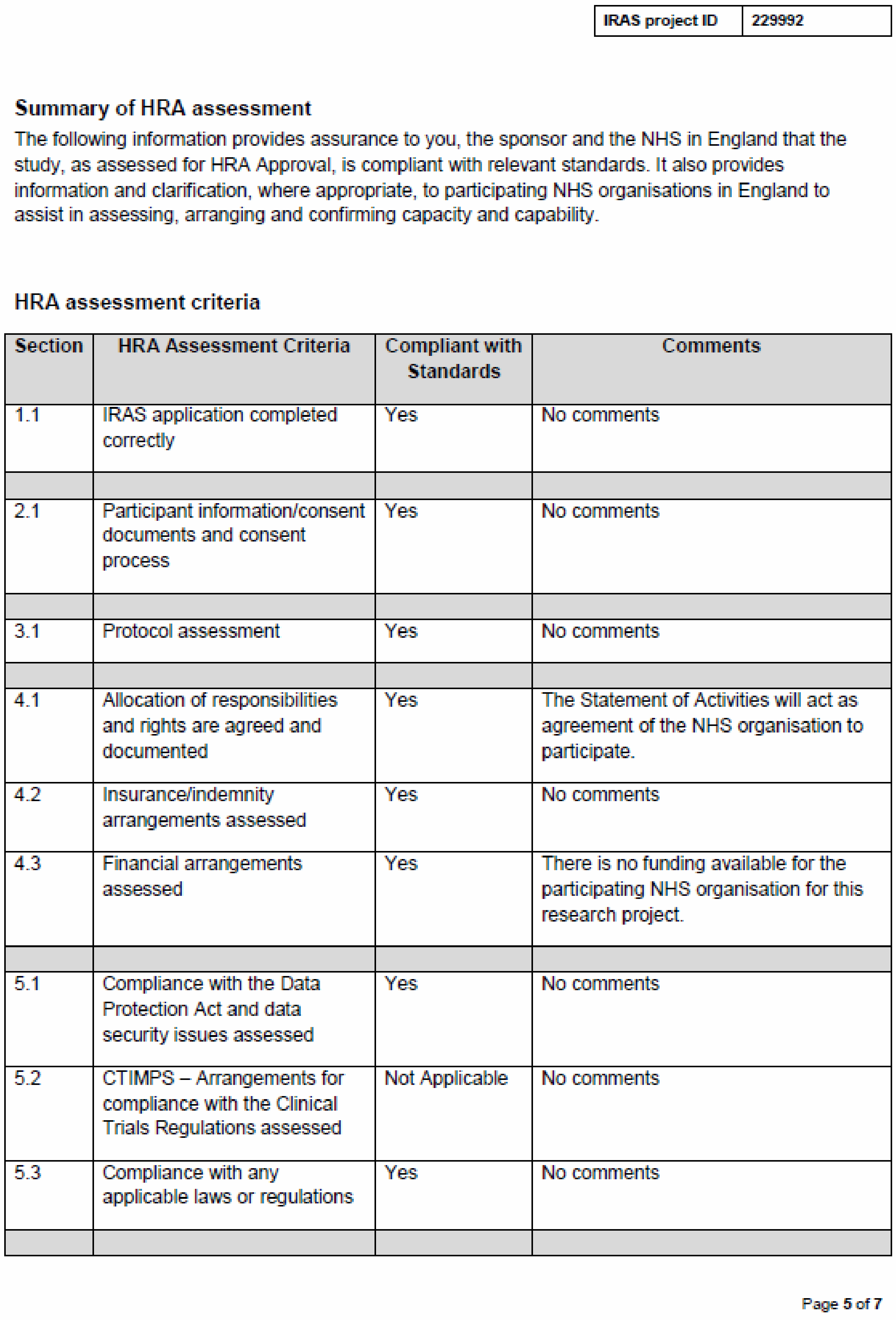


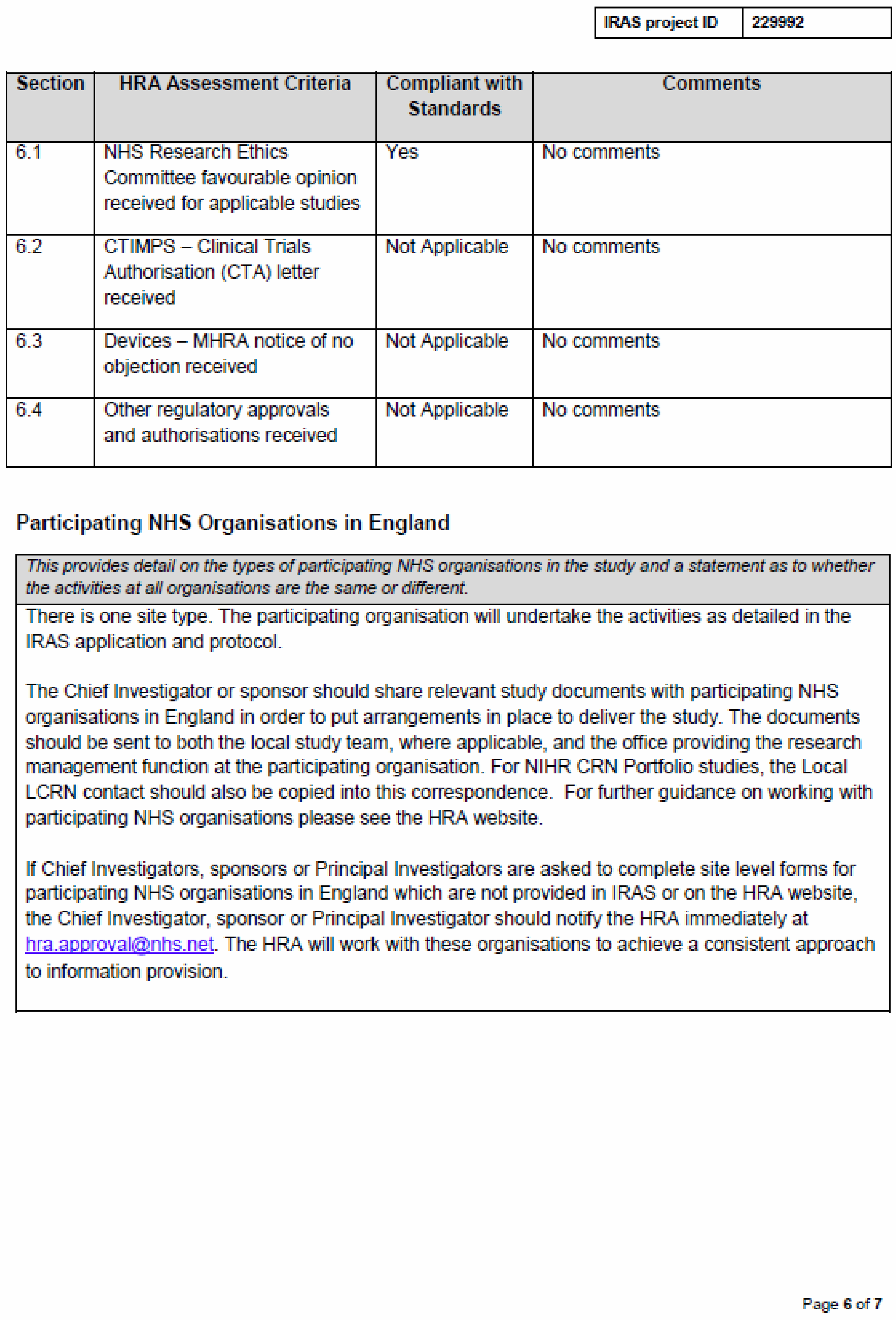
IRAS project ID	229992

Summary of HRA assessment

The following information provides assurance to you, the sponsor and the NHS in England that the study, as assessed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing, arranging and confirming capacity and capability.

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities will act as agreement of the NHS organisation to participate.
4.2	Insurance/indemnity arrangements assessed	Yes	No comments
4.3	Financial arrangements assessed	Yes	There is no funding available for the participating NHS organisation for this research project.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments



Section	HRA Assessment Criteria	Compliant with Standards	Comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Yes	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

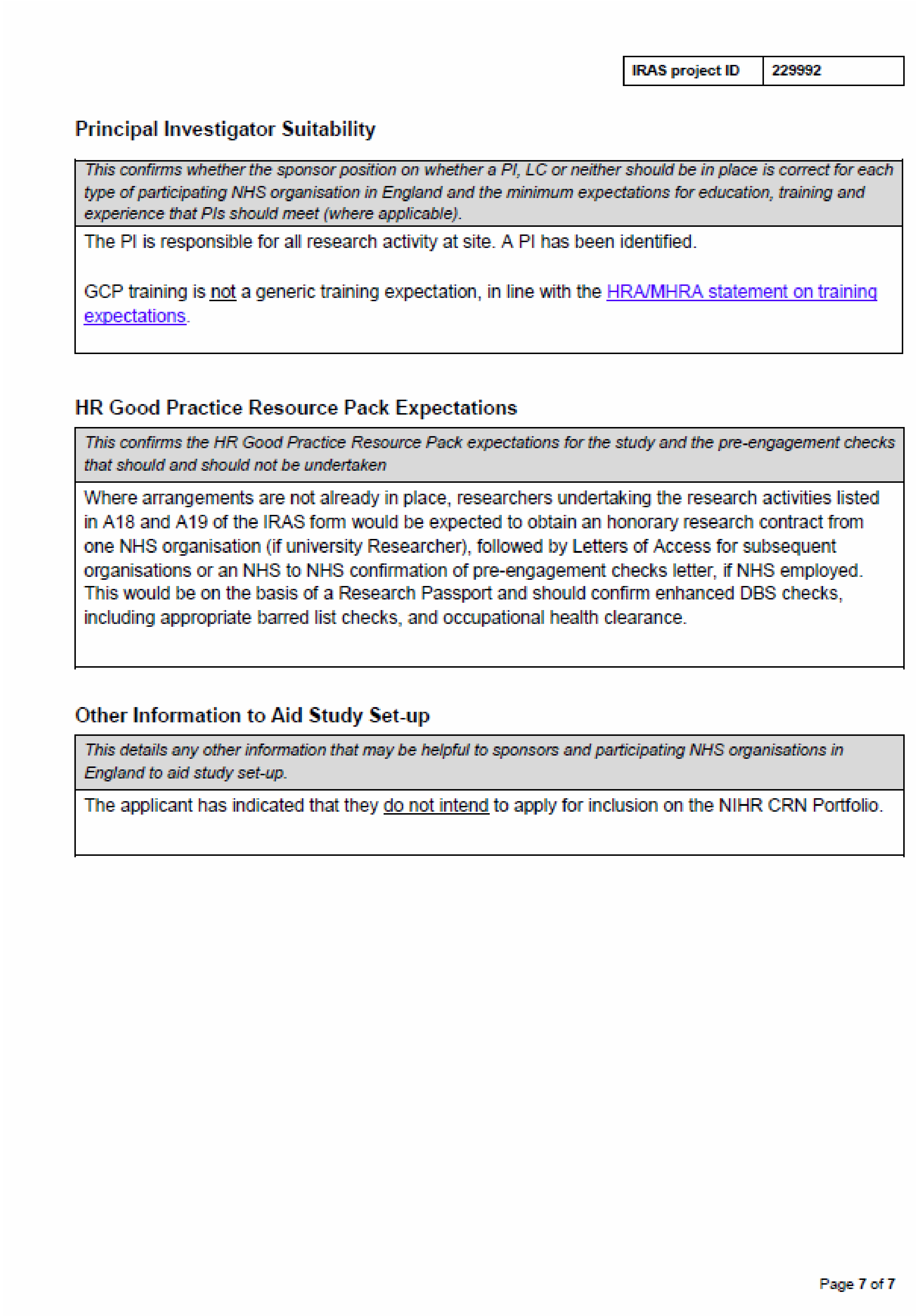
Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.

There is one site type. The participating organisation will undertake the activities as detailed in the IRAS application and protocol.

The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.

If Chief Investigators, sponsors or Principal Investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the Chief Investigator, sponsor or Principal Investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.



IRAS project ID	**229992**

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).

The PI is responsible for all research activity at site. A PI has been identified.

GCP training is not a generic training expectation, in line with the HRA/MHRA statement on training expectations.

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken

Where arrangements are not already in place, researchers undertaking the research activities listed in A18 and A19 of the IRAS form would be expected to obtain an honorary research contract from one NHS organisation (if university Researcher), followed by Letters of Access for subsequent organisations or an NHS to NHS confirmation of pre-engagement checks letter, if NHS employed. This would be on the basis of a Research Passport and should confirm enhanced DBS checks, including appropriate barred list checks, and occupational health clearance.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.

The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix N – Letter of Access

Norfolk and Suffolk NHS
NHS Foundation Trust
Research and Development
The Knowledge Centre
Hellesdon Hospital
Drayton High Road
Norwich
NR6 5BE

Telephone 01603 421255
E mail: RDofficemailbox@nsft.nhs.uk

Ms Alice Barber
Department of Clinical Psychology
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

17th April 2018

Dear Ms Barber,

Re: NSFT Letter of Access for research - RD #18 229992 Online Socialising in Young People Accessing Mental Health Services

As an existing NHS employee you do not require an additional honorary research contract with this NHS organisation. We are satisfied that such checks as are necessary have been carried out by your employer and that the research activities that you will undertake in this NHS organisation are commensurate with the activities you undertake for your employer. This letter confirms your right of access to conduct research through Norfolk and Suffolk NHS Foundation Trust for the purpose and on the terms and conditions set out below. This right of access commences on 17th April 2018 and ends on 30th September 2019, unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

You are considered to be a legal visitor to Norfolk and Suffolk NHS Foundation Trust premises. You are not entitled to any form of payment or access to other benefits provided by this organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

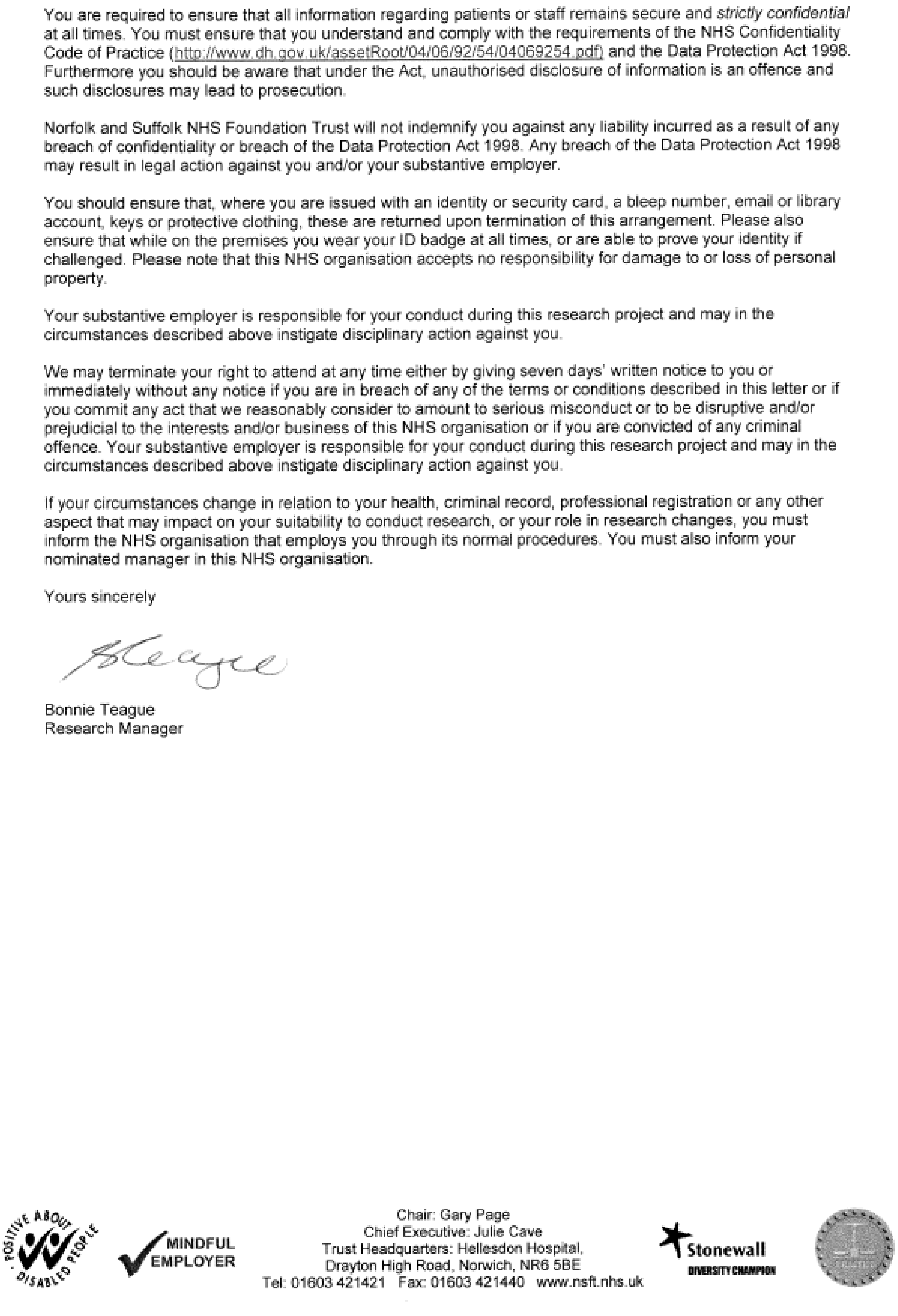
While undertaking research through Norfolk and Suffolk NHS Foundation Trust, you will remain accountable to your employer Cambridge and Peterborough NHS Foundation Trust but you are required to follow the reasonable instructions of your nominated manager Bonnie Teague, Research Manager, in this NHS organisation or those given on her behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with Norfolk and Suffolk NHS Foundation Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with Norfolk and Suffolk NHS Foundation Trust in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on Norfolk and Suffolk NHS Foundation Trust premises. Although you are not a contract holder, you must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of a contract holder and you must act appropriately, responsibly and professionally at all times.

Positive about disabled people
MINDFUL EMPLOYER
Chair: Gary Page
Chief Executive: Julie Cave
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk
Stonewall
DIVERSITY CHAMPION



You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

Norfolk and Suffolk NHS Foundation Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

If your circumstances change in relation to your health, criminal record, professional registration or any other aspect that may impact on your suitability to conduct research, or your role in research changes, you must inform the NHS organisation that employs you through its normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely

Bonnie Teague
Research Manager

Chair: Gary Page
Chief Executive: Julie Cave
Trust Headquarters: Hellesdon Hospital,
Drayton High Road, Norwich, NR6 5BE
Tel: 01603 421421 Fax: 01603 421440 www.nsft.nhs.uk

Appendix O – Participant Information Sheet (Over 16's)

Information Sheet for Research

Study Title: *Online Socialising in Young People Accessing Mental Health Services.*

IRAS ID: *229992*

My name is Alice Barber and I am a Trainee Clinical Psychologist based at the University of East Anglia (UEA). I am writing to invite you to take part in a research project, which is looking at the online socialising of young people accessing mental health services. This information sheet is to help you decide whether you would like to participate. Please take time to read it carefully, and feel free to contact me if you require any further information.

My research supervisors are Dr Jo Hodgekins and Dr Sian Coker.

What is the purpose of the study?

Research has shown that online socialising can be beneficial to young people, by helping them to feel connected with others. But it can also show disadvantages, by taking young people away from face to face socialising and increasing feelings of loneliness. Research has also found that some people feel unable to control the amount of time they spend online, and this can cause them distress or problems in their day to day life. It has been suggested that these possible risks and benefits may be seen more strongly in people with mental health difficulties, but this has not yet been investigated. It is hoped that with studies like these, we can increase our understanding about the risks and benefits of online socialising, which may help us to better support young people with mental health problems in the future.

Why have I been invited to take part?

You have been asked to take part because you are currently receiving support from the Youth Service. We will be asking 35 people from the Youth Service to take part. To take part, you will be asked to read and sign a consent form to show that you understand what the study involves and would like to take part.

What would the study involve?

If you are interested in hearing more about the study, a member of staff from the Youth Service will pass on your details, with your permission, and you will be contacted by telephone to discuss the study further and to offer a time to meet.

In a face to face appointment, you would have the chance to ask any questions you may have, and you would be asked to sign a consent form if you were still interested in taking part. It is important that you are aware that your choice to take part in this study is completely voluntary, so you can say no at any point and you can also change your mind.

If you agreed to take part and signed the consent form, you would be asked some questions about your online socialising and how you spend your time. You would also be asked to complete a number of short questionnaires, with questions about your internet use, relationships and socialising, and your mental health. Once you have completed the questionnaires, you would be offered a £5 Amazon voucher to thank you for your time. This would all take place in one face to face appointment, lasting approximately one and a half hours, although you can choose to break it up into shorter appointments if you preferred. After this, your involvement in the study would be finished.

Will this research impact on the care I receive from the Youth Service or the NHS?

Taking part in this study is completely voluntary. If you choose not to take part in the study, this will have no impact on the care that you receive from the Youth Service or from the NHS at any point in the future. If you decide to take part but change your mind, you can withdraw from the study, without needing to give a reason, at any time up until the point of data analysis, and this will not affect your care from the Youth Service in any way.

If you do decide to take part in the study, your care from the Youth Service will continue as usual, and there will be no impact on the future care that you receive from the Youth Service or the NHS.

What are the possible disadvantages or risks of taking part?

It is hoped that there will be no disadvantages for you taking part in the study, apart from giving up some of your time. There is a possible risk that you would find some of the questionnaires upsetting, as they include questions about your mental health; however, we would do our best to make the appointment as supportive as possible.

What are the possible benefits of taking part?

There will be no direct benefits to you for taking part in the study, but you will receive a £5 Amazon voucher as a token of gratitude. While the research may not directly benefit you, it is hoped that it will be helpful in informing our understanding of online socialising and mental health.

Will information be kept confidential?

All information will be stored securely, with non-electronic information stored in a locked filing cabinet at the UEA, and electronic information stored in password protected files. Your information will be stored anonymously using a participant identification number, rather than your personal details (e.g. your name), and will be kept for 10 years, in line with UEA policy.

All information will be kept private, except if you tell us information that causes us concern about your safety or the safety of others, including regarding your online interactions. In this instance, we would need to pass that information to a relevant professional, although we would aim to discuss this with you before doing so.

You will be asked to give your consent for sharing relevant information from the study with your care coordinator in the Youth Service, as this may be helpful for the care that you receive from them. The primary researcher will have access to your medical notes so that your completed consent form and relevant research information can be shared with your care team.

The information gathered in this study may be used to support other future research into the mental wellbeing of young people. Any information shared for this purpose will be entirely anonymous, so there will be no record of your personal data (e.g. your name or date of birth). Any future research will need to be reviewed and approved by an ethics committee.

This research has been reviewed and approved by the Derby NHS Research Ethics Committee.

Relevant contact details

Thank you for taking the time to read this information sheet, I hope you will be interested to take part. If you have any questions, I would be very happy to discuss the project with you and can be contacted at: a.barber@uea.ac.uk, or if you would like to speak to one of my supervisors, please email: j.hodgekins@uea.ac.uk

If you are unhappy about the way you have been treated or wish to make a complaint, please contact Professor Ken Laidlaw (Course Director, Doctoral Programme in Clinical Psychology, UEA) by telephone: 01603 593600 or email: K.Laidlaw@uea.ac.uk.

Appendix P – Participant Information Sheet (Parent Version)

Information Sheet for Parents

Study Title: *Online Socialising in Young People Accessing Mental Health Services.*

IRAS ID: *229992*

My name is Alice Barber and I am a Trainee Clinical Psychologist based at the University of East Anglia (UEA). I am writing to invite your child to take part in a research project, which is looking at the online socialising of young people accessing mental health services. This information sheet is to help you and your child decide whether they would like to participate. Please take time to read it carefully, and feel free to contact me if you require any further information.

My research supervisors are Dr Jo Hodgekins and Dr Sian Coker.

What is the purpose of the study?

Research has shown that online socialising can be beneficial to young people, by helping them to feel connected with others. But it can also show disadvantages, by taking young people away from face to face socialising and increasing feelings of loneliness. Research has also found that some people feel unable to control the amount of time they spend online, and this can cause them distress or problems in their day to day life. It has been suggested that these possible risks and benefits may be seen more strongly in people with mental health difficulties, but this has not yet been investigated. It is hoped that with studies like these, we can increase our understanding about the risks and benefits of online socialising, which may help us to better support young people with mental health problems in the future.

Why has my child been invited to take part?

Your child has been invited to take part because they are currently receiving support from the Youth Service. We will be asking 35 young people from the Youth Service to take part. To take part, you and your child will be asked to read and sign a consent form to show that you understand what the study involves and are happy for your child to take part.

What would the study involve?

If you are interested in hearing more about the study, a member of staff from the Youth Service will pass on your details, with your permission, and you will be contacted by telephone to discuss the study further and to offer an appointment to meet with you and your child.

In a face to face appointment, you would have the chance to ask any questions you may have, and you would both be asked to sign a consent form if you were still interested in taking part. It is important that you and your child are aware that the choice to take part in this study is completely voluntary, so you can say no at any point and you can also change your mind.

If you agreed for your child to take part and both signed the consent form, your child would be asked some questions about their online socialising and how they spend their time. They would also be asked to complete a number of questionnaires, with questions about their internet use, relationships and socialising, and their mental health. Once they have completed the questionnaires, they would be offered a £5 Amazon voucher to thank them for their time. This would all take place in one face to face appointment, lasting approximately one and a half hours, although they can choose to break it up into shorter appointments if preferred. After this, their involvement in the study would be finished.

Will this research impact on the care my child receives from the Youth Service or the NHS?

Taking part in this study is completely voluntary. If your child chooses not to take part in the study, this will have no impact on the care that they receive from the Youth Service or from the NHS at any point in the future. If they decide to take part but change their mind, they can withdraw from the study, without needing to give a reason, at any time until the point of data analysis, and this will not affect their care from the Youth Service in any way.

If you do decide for your child to take part in the study, their care from the Youth Service will continue as usual, and there will be no impact on the future care that they receive from the Youth Service or the NHS.

What are the possible disadvantages or risks of taking part?

It is hoped that there will be no disadvantages for your child taking part in the study, apart from giving up approximately one hour of their time. There is a possible risk that they will find some of the questionnaires upsetting, as they include questions about their mental health; however, we would do our best to make the appointment as supportive as possible.

What are the possible benefits of taking part?

There will be no direct benefits to your child for taking part in the study, but they will receive a £5 Amazon voucher as a token of gratitude. While the research may not directly benefit them, it is hoped that it will be helpful in informing our understanding of online socialising and mental health.

Will information be kept confidential?

All information will be stored securely, with non-electronic information stored in a locked filing cabinet at the UEA, and electronic information stored in password protected files. Their information will be stored using a participant identification number, rather than their personal details (e.g. their name), and will be kept for 10 years, in line with UEA policy.

All information will be kept private, unless your child discloses information that causes us concern about their safety or the safety of others, including regarding their online interactions. In this instance, we would need to pass that information to a relevant professional, although we would aim to discuss this with you and your child before doing so.

You will both be asked to give your consent for sharing relevant information from the study with your child's care coordinator in the Youth Service, as this may be helpful for the care that your child receives from them. The primary researcher will have access to your child's medical notes, so that the completed consent form and relevant research information can be shared with their care team.

The information gathered in this study may be used to support other future research into the mental wellbeing of young people. Any information shared for this purpose will be entirely anonymous, so there will be no record of your child's personal data (e.g. name or date of birth). Any future research will be reviewed and approved by an ethics committee.

This research has been reviewed and approved by the Derby NHS Research Ethics Committee.

Relevant contact details

Thank you for taking the time to read this information sheet, I hope you and your child will be interested in taking part. If you have any questions, I would be very happy to discuss the project with you and I can be contacted at: a.barber@uea.ac.uk, or you can speak to one of my supervisors, please email: j.hodgekins@uea.ac.uk

If you are unhappy about the way you or your child have been treated or wish to make a complaint, please contact Professor Ken Laidlaw (Course Director, Doctoral Programme in Clinical Psychology, UEA) by telephone: 01603 593600 or email: K.Laidlaw@uea.ac.uk

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Appendix Q – Participant Information Sheet (Child Version)

Information Sheet for Research
For Young People

Study title
Online socialising in young people accessing mental health services.

1. Invitation

We would like you to help us with our research study. Please read this information carefully and talk to your mum, dad, or guardian about the study. Ask us if there is anything that is not clear or if you want to know more. Take time to decide if you want to take part. It is up to you if you want to do this. If you don’t then that’s fine, you’ll be looked after at the Youth Service just the same.

2. Why are we doing this research?

We know that young people often spend time socialising online and we want to know more about the possible benefits, but also the possible risks of this. We already know about some of the benefits and risks in young people in general, but we know very little about this in young people with mental health problems. We hope that with studies like this we can increase our understanding about online socialising, which may help us to better support young people with mental health problems.

3. Why have I been asked to take part?

You have been chosen because you are receiving support from the Youth Service. We are asking 35 young people from the Youth Service to take part.

4. Do I have to take part?

No! It is entirely up to you. If you do decide to take part:

- You will be asked to sign a form to say that you agree to take part (an assent form)

- You will be given this information sheet and a copy of your signed assent form to keep.

You are free to stop taking part at any time during the research, up until the point of data analysis, without giving a reason. If you decide to stop, this will not affect the care you receive from the Youth Service or from the NHS in general.

✓ ✗

5. What will happen to me if I take part?

We would meet with you face to face in an appointment that would take about one and a half hours of your time. We would ask you some questions about how you spend your time and your online socialising. We would also ask you to complete some short questionnaires, asking questions about your internet use, your relationships and socialising, and your mental health.

In exchange for your time and effort we will be offering all participants a £5 Amazon voucher after completing the questionnaires.

6. Is there anything else to be worried about if I take part?

There is a possible risk that you could find some of the questionnaires upsetting, as they include questions about your mental health, but we would do our best to make the appointment as supportive as possible.

If we find out something that we think is important about your safety, or the safety of others, or that may be relevant to your care, we will need to pass this information on. We may talk to your parents/guardian and pass the information to your care team in the Youth Service or another relevant professional, but we will try to discuss this with you first.

The information gathered in this study may be used in other future research into young people's mental health, but none of your personal data (e.g. your name or date of birth) will be used. Any future research will be reviewed and approved by an ethics committee.

This research has been reviewed and approved by the Derby NHS Research Ethics Committee.

7. Will the study help me?

No, not directly. But the information we get will be helpful in increasing our understanding of online socialising and mental health.

8. Contact for further information

If you have any questions, I would be very happy to talk to you and I can be contacted at: a.barber@uea.ac.uk, or you can ask a member of staff from the Youth Service to get me to call you.

University of East Anglia

Appendix R – Consent Form (Over 16's)

CONSENT FORM

Title of Project: Online Socialising in Young People Accessing Mental Health Services

Name of Researcher: Alice Barber, Trainee Clinical Psychologist
IRAS ID: 2299922

Participant Identification Number:.........

Please initial box

1. I confirm that I have read the information sheet dated 22/02/2018 (version 2) for the above study. I have had the opportunity to consider the information, ask questions, and have had any questions answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time (until data analysis begins), without giving any reason, and without my medical care or legal rights being affected. ☐

3. I understand that relevant sections of my medical notes and data collected during the study, may be looked at by responsible individuals, from the University of East Anglia or from regulatory authorities, where it is relevant to my taking part in research. I give permission for these individuals to have access to my records. ☐

4. I understand that relevant data and information collected during the study may be shared with clinicians involved in my care in the Youth Service, where it is relevant to my treatment. I give my permission for this data to be shared. ☐

5. I understand that information will be shared with other professionals if there is concern about my safety or the safety of others. ☐

6. I understand that the information collected about me may be used to support other research in the future, and may be shared anonymously with other researchers. ☐

7. I agree to take part in the above study. ☐

________________________	______________	________________________
Name of Participant	Date	Signature
________________________	______________	________________________
Name of Person Taking Consent	Date	Signature

When completed: 1 for participant, 1 for researcher site file, 1 to be kept in medical notes.

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Appendix S – Consent Form (Parent Version)

PARENTAL CONSENT FORM

Title of Project: Online Socialising in Young People Accessing Mental Health Services

Name of Researcher: Alice Barber, Trainee Clinical Psychologist

IRAS ID: 2299 Participant Identification Number:..........

Please initial box

1. I confirm that I have read the information sheet dated 22/02/2018 (version 2) for the above study. I have had the opportunity to consider the information, ask questions, and have had any questions answered satisfactorily. ☐
2. I understand that my child's participation is voluntary and that they are free to withdraw at any time until the point of data analysis, without giving any reason, and without their medical care or legal rights being affected. ☐
3. I understand that relevant sections of my child's medical notes and data collected during the study, may be looked at by responsible individuals, from the University of East Anglia or from regulatory authorities, where it is relevant to their taking part in research. I give permission for these individuals to have access to my child's records. ☐
4. I understand that relevant data and information collected during the study may be shared with clinicians involved in my child's care in the Youth Service, where it is relevant to their treatment, and I give my permission for this data to be shared. ☐
5. I understand that information will be shared with other professionals if there is concern about my child's safety or the safety of others. ☐
6. I understand that the information collected about my child may be used to support other research in the future, and may be shared anonymously with other researchers. ☐
7. I give my consent for my child to take part in the above study. ☐

____

Name of Child

____________________	____________	____________________
Name of Parent/Guardian	Date	Signature
____________________	____________	____________________
Name of Person Taking Consent	Date	Signature

When completed: 1 for participant, 1 for researcher site file, 1 to be kept in medical records.

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Appendix T – Assent Form

ASSENT FORM

Title of Project: Online Socialising in Young People Accessing Mental Health Services

Name of Researcher: Alice Barber, Trainee Clinical Psychologist

IRAS ID: 229992

Participant Identification Number:............

1. I understand that my parents/guardians have given permission for me to take part in a research study about online socialising.

2. I understand that taking part will involve answering some questions and filling out questionnaires about my socialising and my mental health.

3. I understand that it is voluntary and that I can stop at any time and this won't affect my care from the Youth Service.

4. I understand that information about me will be shared with my team in the Youth Service if it could be helpful for my care.

5. I understand that information will be shared with my parents and other professionals if there is concern about my safety or the safety of others.

6. I agree to take part in the above study.

____________________	__________	____________________
Name of Participant	Date	Signature
____________________	__________	____________________
Name of Person Taking Assent	Date	Signature

When completed: 1 for participant, 1 for researcher site file, 1 to be kept in medical records.

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Appendix U – Consent to Contact Form

Consent to Contact Form

Study Title: *Online Socialising in Young People Accessing Mental Health Services*

Researcher: *Alice Barber*

IRAS ID: *229992*

Please initial box if you agree

I confirm I am potentially interested in taking part in the above study and give consent for the researcher to contact me using the following details to discuss further. ☐

Name: ____________________________________

Preferred method of contact (please tick):

☐ Tel. Number: ____________________________

☐ Email: ____________________________

____________________________________ ____________________________

Signature Date

University of East Anglia

Appendix V – Parental Consent to Contact Form

Parental Consent to Contact Form

Study Title: *Online Socialising in Young People Accessing Mental Health Services*

Researcher: *Alice Barber*

IRAS ID: *229992*

Please initial box if you agree

I confirm I am potentially interested in my child taking part in the above study and give consent for the researcher to make contact using the following details to discuss further. ☐

Name of parent/guardian: ______________________________

Name of child: ______________________________

Preferred method of contact (please tick):

☐ Tel. Number: ______________________________

☐ Email: ______________________________

______________________________ ______________________________

Signature Date