

Exploring psychological interventions and packages of care received by young people with mental health difficulties: A systematic review and longitudinal study

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Original Date of Submission: 8th May 2023

(final submission following corrections: 23rd November 2023)

Word Count: 23535

Candidate Registration Number: 3058204

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Abstract

Background

Worsening youth mental health is an increasing concern worldwide, prompting efforts to find efficacious interventions and care packages to support rapidly increasing prevalence rates of mental health difficulties. The systematic review investigated the efficacy of online mindfulness-based interventions (MBIs) for anxiety in young people. The empirical project explored variations in packages of care received by young people accessing mental health services. Both papers sought to inform discussions around helpful models of care for young people and explore possible ways forward for youth mental health care.

Method

The systematic review meta-analysed 14 peer-reviewed studies of online MBIs for youth with self-reported symptoms of anxiety. The empirical study was a secondary analysis of an existing dataset, exploring the mental health care received by 222 young people with clinically severe and complex mental health difficulties and social disability.

Results

The systematic review showed small effects in the direction of the reduction of anxiety symptomology following a course of online MBI. The empirical study showed that young people with more severe difficulties at baseline received more complex care, but that outcomes were comparable across different care packages.

Conclusions

Findings from both the systematic review and empirical project provide tentative support for the need for flexible, transdiagnostic approaches to youth mental health care. Findings from the systematic review suggest online MBIs may be an affordable, accessible and scalable option for milder presentations of anxiety in young people in the absence of an alternative intervention. The empirical project highlights that young people with more complex presentations require more care

but that a specific model does not necessarily translate into better functional outcomes. Both papers highlight the need for youth mental health care to be considered along a continuum, with support provided based on individual stage of development and impairment.

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CHAPTER ONE

Introduction To Thesis Portfolio

Introduction To Thesis Portfolio

This chapter provides an overview of some of the key theories and concepts discussed throughout the thesis portfolio.

Youth

‘Youth’ is best understood as a period of transition from the dependence of childhood to adulthood’s independence and the United Nations (UN) defines this period as falling between the ages of 15 and 24 (UN, 1981). Today, there are 1.2 billion young people who fall within this age range, accounting for 16 per cent of the global population. By 2030, this number is projected to have grown by 7%, to nearly 1.3 billion. It is now realised that several major morphological and functional changes occur in the human brain during this period (Giedd et al., 1999) and that young people experience rapid physical, cognitive and psychosocial growth, affecting how they feel, think, make decisions, and interact with the world around them (World Health Organisation; WHO, 2022). Young people's journey to maturity is thus accompanied by increased levels of instability and risk (Gibson, 2021). This journey consists of several key phases, with the period from puberty to mature adulthood characterised by dramatic external changes in biological maturity, mirrored by less visible changes in brain structure and function, in psychological development and in social and vocational progress (Worthman & Trang, 2018). The challenge of evolving a sense of self, of individuating from one's family of origin and establishing a life and family of one's own is daunting, and stress, frustration, risk and loss are ambient within the ecosystem of growth (McGorry et al., 2022).

Youth mental health

Adolescence and the transition to adulthood is a dynamic and developmentally sensitive period. Difficulties with mental health during this life stage disrupts a range of milestones, including identity and relationship formation, educational and vocational attainment, financial independence, and achieving autonomy (McGorry et al., 2022). Mental health problems are extremely common in

young people, with more than 50% impacted by the age of 25 (Copeland et al., 2011; Caspi et al., 2020; Gibb et al., 2010) and accounting for 45% of the overall global burden of disease in those aged 10-24 years (Gore et al., 2011). Nationally, youth mental health has worsened since 2017, with one in six young people being diagnosed with a mental health problem in 2020 compared to one in nine in 2017 (Vizard et al., 2020). Youth mental health and mental health care generally, was not given the 'parity of esteem' with physical health until relatively recently (Health and Social Care Act, 2012). As a result, youth mental health services remain underfunded and underdeveloped and even in developed nations, child and adolescent mental health services (CAMHS) are sparse or invisible, except in a very small number of countries (Signorini et al., 2017).

To address this issue, the NHS Long Term Plan (NHS LTP; 2019), has stipulated that by the financial year 2023 to 2024, an additional 345,000 children and young people aged 0 to 25 will be able to access support via NHS-funded mental health services and education-based mental health support teams (MHSTs). Over the coming decade the goal, subject to resources, is to ensure that 100% of children and young people who need specialist care can access it (NHS, 2019). The COVID-19 pandemic has had a noticeable impact on mental health since this plan was adopted, with estimates putting the rise in both anxiety and depressive disorders at more than 25% during the first year of the pandemic (WHO, 2022). Research from the Centre of Mental Health also shows that, in England, 1.5 million children and young people under 18 will need new or additional mental health support as a direct consequence of the pandemic (O'Shea, 2020). In light of this, a recent House of Commons Health and Social Care Select Committee (HSC) report put forward recommendations to address the growing mental health care needs of young people. It emphasised that children and young people's mental health is an all-society issue and that the problems can only be addressed by Government departments, local government and the health system acting together to promote good mental health and prevent new crises emerging (HSC, 2021).

Developing integrated frameworks for youth mental health is no easy task. Although there is widespread agreement that current classification systems in psychiatry are insufficient for

identifying illness and timely intervention (Cuthbert, 2014; Carpenter & van Os, 2011), this is a particular problem for young people. For example, throughout the course of the youth age span (12-25), the evolution of syndromes may involve shifts across diagnostic boundaries (Shah et al., 2020). Thus, there are increasing calls to adopt a broad “transdiagnostic” approach – one that views the individual as located along a multidimensional and evolving continuum of illness – rather than a traditional narrow view based on the historical concept of risk for development of a single and categorically discrete adult-type “disorder” (McGorry & Nelson, 2019; Lahey et al., 2014).

Aims

The overall aim of this portfolio is to shine a spotlight on a particularly important aspect of youth mental health, that of what interventions or packages of care may be of benefit to young people and to investigate whether these need to be considered in the context of an “illness continuum” along which young people shift back and forth. Various models of mental health continuum exist, with Keyes (2002) operationalising this as two points consisting of ‘languishing’ or poor emotional health and functioning at one end, and ‘flourishing’, or good emotional health and optimal functioning at the other. Efforts to translate clinical staging models used elsewhere in medicine to mental health have aimed to locate individuals at points along this continuum based on a combination of symptoms, neurocognition, and functioning (McGorry et al., 2010; Hickie et al., 2013). The systematic review and empirical paper will focus on two different points along this continuum. The systematic review will investigate whether the increasingly researched and promoted area of mindfulness translates into an effective online intervention for milder presentations of anxiety, one of the most commonly reported mental health difficulties in young people (Bear et al., 2020). As such, the review aims to concentrate on young people who fall midway along the continuum and who may be deemed at risk of developing more severe mental health problems. The empirical focus will be more on clinical populations and investigate what components of mental health care is of benefit to young people who are at the more extreme end of the continuum and who present with more severe and socially debilitating mental health difficulties.

CHAPTER TWO

Systematic Review

This paper has been prepared for submission to the Mindfulness journal. Please see Appendix A for the journal's guidance to authors.

Are online mindfulness-based interventions effective in reducing anxiety for young people? A
Systematic Review and Meta Analysis

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Declarations of interest: The authors declare that they have no conflict of interest

Word count: 8744

Key words: youth mental health, online, mindfulness, anxiety

Abstract

Objective

Little is known about the use of online mindfulness-based interventions (MBIs) for young people with anxiety. This review aimed to investigate the effectiveness of online MBIs for self-reported signs of anxiety in young people.

Methods

A systematic review of peer-reviewed literature of controlled intervention studies was conducted in PsycINFO, Scopus, Embase and MEDLINE databases. The effect size was calculated using Hedge's g . The Cochran Q statistic and the I² index were used for the study of heterogeneity. An analysis was conducted using the random effects model.

Results

495 papers were identified, of which 14 were finally selected. Overall, findings from the meta analysis demonstrated small but statistically significant effects at post-treatment ($g = -0.23$, CI95% [-0.42, -0.05]) and follow-up ($g = -0.21$, CI95% [-0.32, -0.10]). However, there existed substantial heterogeneity across studies for post treatment effects and overall effects diminished and were not statistically significant when passive controls were removed.

Conclusions

Findings suggest tentative but promising outcomes for the use of online MBIs for mostly non-clinical samples of young people with milder presentations of anxiety compared to a waitlist. Future research could explore longer term effects of online MBIs and their use with clinical samples as well comparison with more active controls.

Introduction

Anxiety and youth

Young people experience substantial physical, emotional and social changes, making many of them vulnerable to mental health problems. Globally, it is estimated that 1 in 7 (14%) of 10-19 year-olds experience a mental health problem (World Health Organisation; WHO, 2021). As in adults, anxiety is one of the most prevalent diagnosed psychiatric conditions in youth worldwide (Bear et al., 2020) with estimations of 3.6% of 10-14 year-olds and 4.6% of 15-19 year-olds experiencing an anxiety disorder (WHO, 2021). Other studies have supported this by finding that anxiety disorders tend to be the most prevalent group of disorders among young adults (Moffitt et al., 2010; Kessler et al., 2009). In the UK, figures from 2018 indicated that over 30% of women and 14% of men aged 18-24 were diagnosed with or had symptoms of anxiety, increasing from just over 8% and 4% respectively in 2008 (Slee et al., 2021). The impact of anxiety on other mental health problems is also of concern, with studies finding that anxiety disorders in young people strongly predicted later instances of major depressive disorder (MDD) as well as suicide (Gustavson et al., 2018; Windfuhr et al., 2008) and increased risk of poorer adult functioning (Copeland et al., 2014; Van Schalkwyk & Silverman, 2019).

Mindfulness

Defining mindfulness is a widely discussed topic in scholarly circles (Chiesa, 2018). One working definition of mindfulness is a process of openly attending, with awareness, to one's present moment experience (Kabat-Zinn, 2003). This process of awareness of present moment experience contrasts with much of our daily life experience, in which we often find ourselves unintentionally letting our minds wander (Killingsworth & Gilbert, 2010), running on automatic pilot (Bargh & Chartrand, 1999) or suppressing unwanted experiences (Kang et al., 2013). Rooted in Buddhism, mindfulness as a practice to alleviate mental health difficulties has gained widespread attention in recent years, with a growing body of research supporting the psychological benefits of the method

including its use in increased subjective well-being, reduced emotional reactivity, improved regulation of behaviour, the management of chronic pain, reduced depression relapse rates in at-risk individuals, improved substance abuse outcomes as well as reductions in symptoms of anxiety, stress, insomnia, addiction, psychosis, hypertension, weight control and cancer-related symptoms (Keng et al., 2011; Creswell, 2017; Goldberg et al., 2018; Zhang et al., 2021).

Mindfulness and Anxiety

Some studies have emphasised that paying attention to the present moment prevents rumination and enables individuals to create distance between themselves and their thoughts (Blanke et al., 2020). It has been proposed that mindfulness practice fosters a de-centred, and non-reactive perspective that enables individuals to disengage from automatic, maladaptive response patterns (Shapiro et al., 2006). Therefore, for individuals with anxiety, the increased self-awareness may help by reducing the fearful and emotional reactions typically triggered by anxiety symptoms (Baer, 2003). Additionally, mindfulness practice is thought to be beneficial for anxiety by enhancing attentional self-regulation, which can help shift the attention away from anxiety-inducing thoughts (Semple & Lee, 2011), and by fostering greater tolerance of unpleasant internal states, which may help to reduce avoidance strategies (Bishop et al., 2004) that otherwise work to maintain anxiety.

Mindfulness Based-Interventions (MBIs)

Many researchers agree that the meditation practices taught during mindfulness courses cultivate awareness and acceptance, which lower levels of anxiety, depression and stress (Greeson, 2008). Specific interventions that contain mindfulness as a core component have been developed, the foremost of these being mindfulness-based stress reduction (MBSR), developed by Jon Kabat-Zinn in 1979 (Kabat-Zinn, 2003) and mindfulness-based cognitive therapy (MBCT) developed by Segal, Teasdale and Williams and based on MBSR (2002). MBSR was originally developed to treat chronic pain but has since been adapted to treat a variety of mental health problems, including anxiety (Virgili, 2015). A recent review and meta-analysis found that MBSR was significantly superior to other control conditions in reducing anxiety symptoms in young people (Zhou et al., 2020). MBCT

was originally developed as a relapse prevention for people with recurrent depression but has similarly shown beneficial effects for reducing anxiety (Hoffman et al., 2010; Khoury et al., 2013; Frostadottir & Dorjee, 2019). MBIs more generally have seen growing empirical support for their use in the treatment of mental health problems, including anxiety and depression (Hofmann & Gomez, 2017; Dawson et al., 2020).

For the purposes of the current study, the term MBI will refer to interventions that specifically applied some form of mindfulness as a core intervention component. This means that “mindfulness-informed” interventions, such as dialectical behaviour therapy (DBT; Linehan, 1993) and acceptance and commitment therapy (ACT; Hayes et al., 1999) where mindfulness is a key, but not primary, component, will not be included in the search strategy. Thus, the current review aligns with earlier reviews that have characterised MBIs as interventions that include the cultivation of a present moment focus through the engagement in sustained meditation practice, as defined in Crane and colleagues (2017) and implemented in Dunning et al. (2019) and Goldberg et al. (2022).

Online Interventions

Not least due to advancing technologies, interventions delivered online or virtually have increased in popularity in recent years. This has been accelerated due to the COVID-19 pandemic, which prompted a shift to digital platforms for businesses, education providers and health systems, including mental health. Several studies have demonstrated the benefits of continuing to provide mental health services virtually (Dores et al., 2020; Chew et al., 2020; Wind et al., 2020). Indeed, online interventions have a number of advantages over face-to-face interventions. They are easily accessible, without long waiting lists; are available 24/7 to people in their own environment, saving traveling time and enabling people to work at their own pace; they permit users to remain anonymous without needing to adopt a ‘patient’ role; do not necessarily require involvement of a trained therapist; and are less costly (Andersson & Titov, 2014; Cuijpers et al., 2009). There is also substantial popular interest, with apps promoting mindfulness-based meditations among the most popular in the wellbeing market (Taylor et al., 2021).

In terms of the effectiveness of online interventions in the treatment of mental health difficulties, recent meta-analyses of the benefits of smartphone based mental health interventions have shown promising results for the treatment of depression (Firth et al., 2017a) and anxiety in adults (Firth et al., 2017b). Regarding their effectiveness for younger populations, several randomised controlled trials (RCT) have also provided support for web-based interventions for anxiety (Pennant et al., 2015; Podina et al., 2016; Rooksby et al., 2015). Further, a more recent systematic review, which explored a variety of online modalities that were used to manage youth mental health problems, found that 64% of the online interventions reviewed were effective in managing depression, anxiety, psychological stress level, insomnia and psychological distress and improving mental health well-being, life satisfaction, sleep quality, and quality of life among youth (Zhou et al., 2021).

Existing Systematic Reviews

There has been an explosion of literature in recent years suggesting that practices that rely on promoting mindfulness are feasible, acceptable, and may benefit a variety of populations, including youth (Baer, 2014; Zoogman et al., 2015). In terms of reviews, findings indicate MBIs to be of benefit as measured by self-reported measures of psychological health and wellbeing (Querstret et al., 2020; Goldberg et al., 2022) and in particular for child and adolescent populations, with reductions in psychological symptoms and improvements in executive function and socioemotional skills observed (Porter et al., 2022). In terms of anxiety in young people more specifically, a recent systematic review and meta-analysis by Borquist-Conlon et al. (2019) found that MBIs demonstrated positive and significant effects on anxiety for young people between the ages of 5 and 18 in five studies (Hedge's $g = 0.62$). Dunning and colleagues (2019) found a small significant effect on 'anxiety and stress' based on a larger number of RCTs (Cohen's $d = 0.16$) including 9 studies with active controls ($d = 0.18$.) as did Odgers and colleagues (2020) who found a small beneficial effect of MBIs on anxiety post treatment (Cohen's $d = 0.26$). Regarding online MBIs, a large recent systematic

review of 97 RCTs including 17,464 adult participants demonstrated a significant small effect for anxiety at pre to post ($g=0.26$) and at follow-up analysis ($g=0.23$) (Sommers-Spijkerman et al., 2021).

Rationale for the current review

Several gaps are evident in the reviews mentioned above. First, most reviews are focused on adult populations or, where youth is the focus, have tended towards the younger end of the age spectrum, with most only including participants up to 18 years of age. It has been shown that the peak age of onset for most mental health problems occurs in adolescence and early adulthood (Kessler et al., 2005), with the prevalence increasing with age. Therefore, the current review aimed to include participants with a mean age of up to 25. Second, although existing systematic reviews have demonstrated the effectiveness of MBIs (Lin et al., 2019), MBIs for youth (Borquist-Conlon et al., 2019), online interventions for youth (Zhou et al., 2021) and online interventions for adult populations (Spijkerman et al., 2016; Sevilla-Llewellyn-Jones et al., 2018) as well as the effectiveness of online MBIs for depression (Reangsing et al., 2022), to our knowledge there has not been a systematic review dedicated to the review of online MBIs and their effectiveness for the reduction of anxiety for young people. This is the focus of the current review.

Review question

Are online MBIs effective in reducing anxiety for young people?

Method

Search Strategy

Multiple electronic databases were searched using the following search terms: adolescen* OR "young people" OR teen* OR "young adult*" OR student or "young person*" AND mindfulness AND online OR app OR digital OR virtual OR web AND "mental health" OR wellbeing OR well-being OR depression OR anxiety with no limiters. The last search date was 30/01/2023 and there was no imposed start date. The databases PsycINFO, Scopus, Embase and MEDLINE were searched. After

duplicates were removed, these search terms resulted in 495 papers considered for review. To maintain a minimal level of scientific rigour, only studies that were published in peer-reviewed journals in English or that have an English language abstract were included. The International Prospective Register of Systematic Reviews (PROSPERO) was searched to ensure no similar reviews were either in progress or had been published. This review was registered with ID Number CRD42023402107.

Selection of Studies

The first author screened all titles and abstracts of the 495 papers, resulting in 62 citations being retained. Full text papers of any titles and abstracts that were considered relevant by the first author were obtained where possible. The relevance of each study was assessed according to the inclusion criteria stated in Table 2.1. Studies that did not meet the criteria were excluded, resulting in 14 papers included in the final review (see PRISMA diagram in Figure 2.1 for more details). In terms of outcomes, ‘stress’ was not considered to be the same as ‘anxiety’, as the former is caused by an external trigger and the latter is defined by persistent, excessive worries that don’t go away even in the absence of a stressor (American Psychological Association; APA, 2019). An outcome measure was considered ‘validated’ if there was evidence of good psychometric properties, such as internal consistency, test-retest reliability, criterion validity, construct validity, concurrent validity and convergent validity.

Table 2.1

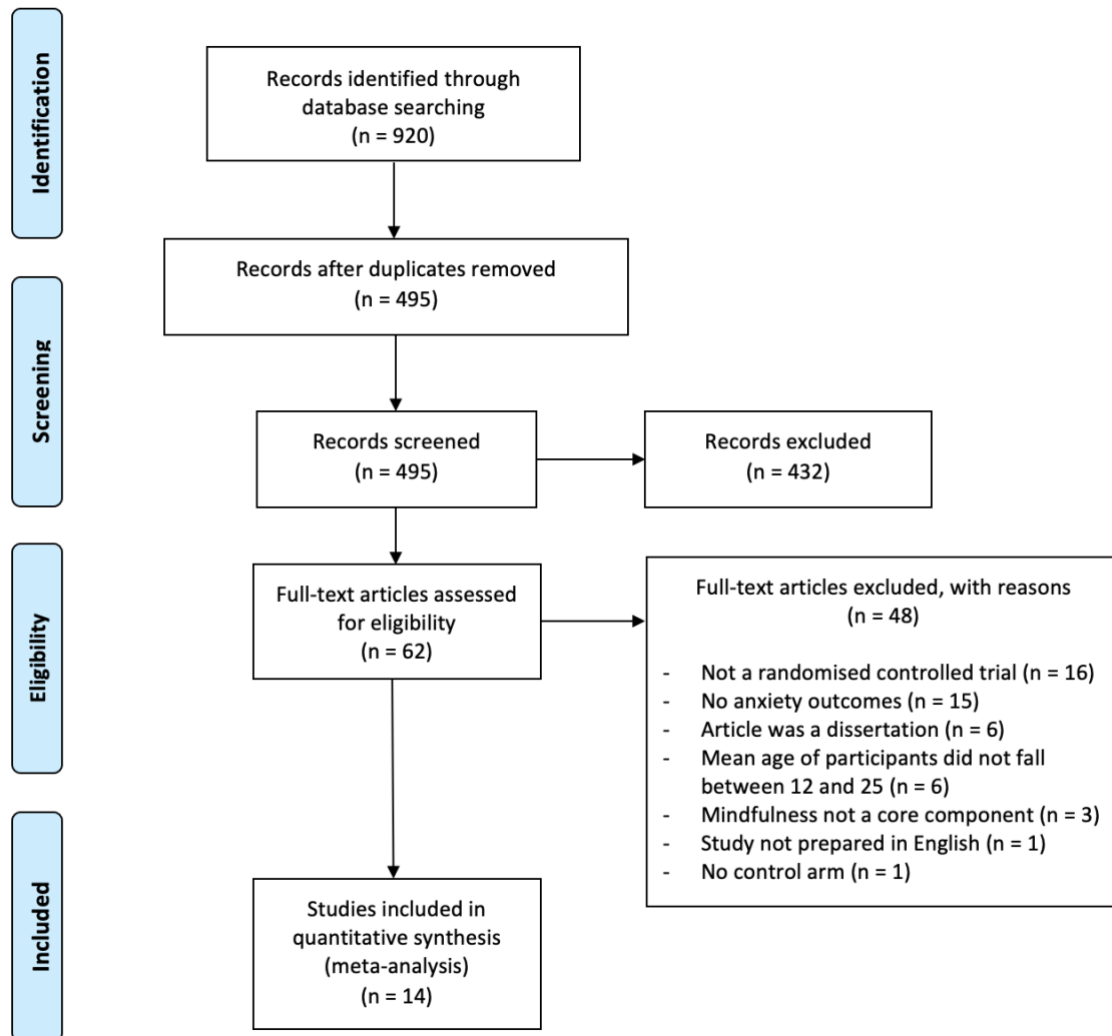
Inclusion Criteria

Population(s)	Clinical and non-clinical populations with participants between the ages of 12 and 25 years
Intervention(s)	Mindfulness-based interventions (interventions where mindfulness is the primary component)
Comparators	Controlled studies only (waitlist, no treatment, usual treatment, active control)
Outcomes	Any validated measure of anxiety as either primary or secondary outcome
Study Design	Randomised control trials (studies where participants are randomly assigned to either an experimental condition and at least one comparison or control condition)

Setting	The majority of the intervention (i.e. more than 50%) needs to have been delivered online, either on the internet or through a smartphone application
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Figure 2.1

PRISMA flow diagram (Moher et al., 2009)



Data Extraction

The variables and categories to be included were decided after the complete reading of the articles by the first author. A database was developed using Microsoft Excel software and Table 2.2 shows the variables and categories used. Data was extracted on two separate occasions by the first author to minimise the risk of error and completed prior to quality assessment to reduce the risk of reporting bias.

Table 2.2*Data Extraction Summary.*

Type	Variable	Category	
Context	Country of the samples		
Sample	Source of the sample	Clinical Non-clinical	
Method	Age	Average	
	Gender	Female percentage	
	Sample size	Number of subjects	
	Drop-out	Average	
	Measure	Tools used	
	Follow-up	No follow-up Number of weeks/months	
Intervention	Anxiety	Principal measure Secondary measure	
		Experimental group intervention(s) type	Internet-based mindfulness program Mindfulness-based app Mindfulness-based program with virtual reality (VR)
		Control group intervention	Active Waitlist Placebo Treatment as usual (TAU)
Setting	Program name	As stated	
	Intervention duration	No. of weeks/days	
	Session duration	No. of minutes	
	Session frequency	As stated	
	Home practice	Yes	
		No	
		Not Specified	
	System of encouraged home practice	Yes No Not Specified	
Compensation	Not Specified Yes No		

Risk of bias assessment

The National Institute for Health and Care Excellence (NICE) methodology checklist for randomised control trials was used to assess study quality and is shown in Appendix B. The NICE checklist is one of the recommended tools to be used for systematic reviews and meta-analyses (Zeng et al., 2015) and assesses four key areas of potential bias: a) selection; b) performance; c)

attrition and d) detection. Each study was assessed to ascertain whether any of these biases exist that could lead to an overestimation or underestimation of the true intervention effect. A second reviewer (HR, trainee clinical psychologist) known to the researcher, but not one of the authors, independently reviewed seven (50%) of the included studies to aid robustness of assessment.

Statistical analysis

A meta-analysis was conducted as part of the current review. As all of the studies were RCTs and a majority ($n = 13$, 92.9%) used non-clinical community student samples of roughly the same age (22.1), a waitlist control as a comparator ($n = 9$, 64.3%), an intervention arm of the same length ($n = 8$, 57.1%) and all included validated measures of anxiety symptomology, a meta-analysis was deemed an appropriate analysis to undertake. A meta-analysis allows results from individual intervention studies to be combined to give an overall measure of the effect of one intervention compared with another (Glass, 1976). The use of a meta-analysis for the current review enabled the researcher to detect smaller differences than would an analysis of a single RCT. In addition, any effect sizes detected would be more precise because the variability between participants is reduced as their number increases (Boland et al., 2017). A random effects model was used based on the assumption that although it varied from study to study, the true effect was centred on an overall average effect. Analysis of the data was done using the R meta package (v4.17-0; Balduzzi et al., 2019). As outcome data was continuous and used varying measurement tools, the effect size was synthesized using Hedge's g of standardized mean difference (SMD) with 95% confidence intervals (CIs). Hedge's g was selected given the sample of studies was below 20 and has been shown to be preferable to Cohen's d for this reason (Durlak, 2009; Ellis, 2010). Forest plots were generated for both post-treatment effects and, where there was data available, follow up effects. For the study of heterogeneity, the Cochran Q statistic and the I^2 index were used. Finally, a funnel plot was used to explore the presence of publication bias.

Results

Study and sample characteristics

A total of 14 studies met inclusion criteria for the current review. Studies were published between 2015 and 2022, with 10 (71.4%) conducted from 2020 onwards. Key characteristics of the included studies are shown in Table 2.3. All studies were RCTs and over half (n = 9, 64.3%), used a waitlist control. All but one of the studies included participants from non-clinical samples and total sample sizes ranged from 764 to 1349, with a mean sample size of 247. Approximately 72.7% of participants across studies were female. The average age of participants across the studies where this was reported was 22.1 (range 15-55) and the majority of participants where ethnicity was reported (n = 6, 42.9%) were 'white' (57.1%).

Table 2.3

Key study characteristics.

Study Author (year)	Country	Control	Sample N, (% female)	Ethnicity white N (%)	Attrition rate (post %)	Mean age (range)	Population	Intervention	Anxiety measure (primary or secondary)	F/Up
Ahmad et al. (2020)	Canada	WLC	113 (75.2) Full: 39 (74) Part: 39 (71) WLC: 35 (80)	42 (37.2) Full: 13 (33) Part: 12 (34) WLC: 17 (44)	4 Full: 5 Partial: 3 WLC: 3	24.8 (NR) Full: 24.9 (NR) Part: 24.1 (NR) WLC: 25.4 (NR)	Non-clinical students	Internet-based mindfulness program	BAI (primary)	N/A
Dai et al. (2022)	China	WLC	108 (79.6) Int: 52 (76.9) WLC: 56 (82.1)	NR (NR)	10 Int: 13 WLC: 6.7	19.16 (NR) Int: 19.31 (NR) WLC: 19.02 (NR)	Non-clinical students	Internet-based mindfulness program	DASS-21 (primary)	N/A
Devillers-Reolon et al. (2022)	France	TAU	76 (46) Int: 38 (31.6) TAU: 38 (60.5)	NR (NR)	20 Int: 16.7 TAU: 20	NR (NR) Int: 22.43 (NR) Cont: 21.83 (NR)	Non-clinical students	Internet-based mindfulness program	DASS-21 (primary)	N/A
El Morr et al. (2020)	Canada	WLC	159 (78.6) Int: 79 (70.9) WLC: 80 (86.3)	32 (20.1) Int: 17 (21.5) WLC: 15 (18.8)	6.33 Int: 15 WLC: 0	22.55 (18-55) Int: 22.8 (18-54) WLC: 22.3 (18-55)	Non-clinical students	Internet-based mindfulness program	BAI (primary)	N/A
Flett et al. (2019)	New Zealand	Placeb	208 (70.2) HS: 72 (66.7) SM: 63 (71.4) Plac: 73 (72.6)	162 (77.9) HS: 59 (81.9) SM: 48 (76.2) Plac: 55 (75.3)	8.6 HS: 8.9 SM: 7.9 Cont.: 10.7	20.08 (18-49) HS: 20.19 (18-41) SM: 20.24 (18-49) Plac: 19.82 (18-25)	Non-clinical students	Mindfulness-based app	HADS (primary)	1m
Hall et al. (2018)	China	WLC	101 (69.31) M: 27 (59.26) M+txt: 24 (62.5) M+m: 25 (84) WLC: 25 (72)	NR (NR)	46.5 M: 59.3 M+txt: 37.5 M+m: 36 WLC: 52	22.30 (NR) M: 22.63 (NR) M+txt: 21.88 (NR) M+m: 22 (NR) WLC: 22.64 (NR)	Non-clinical students	Internet-based mindfulness program	DASS-21 (primary)	N/A

Study Author (year)	Country	Control	Sample N, (% female)	Ethnicity white N (%)	Attrition rate (post %)	Mean age (range)	Population	Intervention	Anxiety measure (primary or secondary)	F/Up
Lahtinen & Salmivalli (2020)	Finland	WLC	1349 (85.7) Int: 667 (NR) WLC: 682 (NR)	NR (NR)	29.7 Int: 41.5 WLC: 18.8	18 (15-24+) Int: NR (NR) WLC: NR (NR)	Non-clinical students	Internet-based mindfulness program	GAD7 (primary)	3m
Mak et al. (2015)	Hong Kong	WLC	321 (66.3) HAPA: 107 (NR) Basic: 107. (NR) WLC: 107 (NR)	NR (NR)	67 HAPA: 65 Basic: 59 WLC: 78	22.8 (NR) HAPA: NR (NR) Basic: NR (NR) WLC: NR (NR)	Non-clinical students	Internet-based mindfulness program	DASS-21 (primary)	3m
Nguyen-Feng et al. (2017)	USA	Placeb	365 (75) PC+M: 121 (NR) M: 122 (NR) Plac: 122 (NR)	NR (73) PC+M: NR (NR) M: NR (NR) Plac: NR (NR)	30.1 PC+M: 37.2 M: 33.6 Plac: 19.7	NR (18-21) PC+M: NR (NR) M: NR (NR) Plac: NR (NR)	Non-clinical students	Internet-based mindfulness program	DASS-21 (primary)	2-3wks & 4-5wks N/A
Orosa-Duarte et al. (2021)	Spain	WLC	84 (85) App: 31 (NR) IMBP: 23 (NR) WLC: 30 (NR)	NR (NR)	61.0 App: 38.9 IMBP: 49.0 WLC: 28.6	23 (NR) App: NR (NR) IMBP: NR (NR) WLC: NR (NR)	Non-clinical students	Mindfulness-based app	STAI (primary)	
Raevuori et al. (2021)	Finland	TAU	124 (72.6) Int: 63 (77.8) TAU: 61 (67.2)	NR (NR)	25.8 Int: 30.2 TAU: 21.3	25 (19-44) Int: 24.5 (19-36) TAU: 25.8 (19-44)	Clinical students	Mindfulness-based app	GAD7 (secondary)	3m & 6m
Ritvo et al. (2021)	Canada	WLC	154 (76) Int: 76 (75) WLC: 78 (76.9)	40 (26) Int: 17 (22.4) WLC: 23 (29.5)	5.2 Int: 9.2 WLC: 1.3	23.1 (NR) Int: 22.02 (NR) WLC: 24.18 (NR)	Non-clinical students	Internet-based mindfulness program	BAI (primary)	N/A
Simonsson et al. (2021)	UK	WLC	177 (64.4) Int: 88 (64.8) WLC: 89 (64)	122 (68.9) Int: 63 (71.6) WLC: 59 (66.3)	8.5 Int: 12.5 WLC: 4.5	NR (18-55+) Int: NR (18-55+) WLC: NR (18-55+)	Non-clinical students	Internet-based mindfulness program	PROMIS (secondary)	1m
Sun et al. (2020)	China	Active	114 (73.7) M: 57 (NR) S: 57 (NR)	NR (NR)	8.8 M: 8.8 S: 8.8	22.21 (NR) M: NR (NR) S: NR (NR)	Non-clinical students	Mindfulness-based app	GAD7 (primary)	2m

Description of included studies

In terms of the experimental conditions in each study, intervention characteristics are shown in Table 2.4. The majority of interventions (n = 8, 57.1%) were of eight weeks duration and used a variety of outcome tools to measure anxiety, the most common of which was the Depression, Anxiety, Stress Scale (DASS-2; Lovibond & Lovibond, 1995; n = 5, 35.7%) followed by the Generalised Anxiety Disorder Assessment (GAD7; Spitzer et al., 2006; n = 3, 21.4%) and the Beck Anxiety Inventory (BAI; Beck et al., 1988; n = 3, 21.4%). Other outcome measures used were the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983) and the Patient Reported Outcomes Measurement System (PROMIS; Irwin et al., 2010). Of the six measures used across the 14 studies, three measured symptoms within the last week (HADS, PROMIS and DASS-21), one in the last two weeks (GAD7), one in the last month (BAI) and one measured both symptoms of anxiety experienced “right now” and the propensity to experience them more “generally” (STAI). All but two studies used a measure of anxiety as one of their primary outcomes. In terms of intervention targets, twelve of the studies (85.7%) reported the reduction of anxiety symptoms as one of their main objectives, with one aiming to improve ‘mental health’ overall. Twelve studies (85.7%) also aimed to reduce symptoms of depression alongside anxiety.

Seven of the studies (50.0%) made explicit reference to evidence-based MBIs such as MBSR or MBCT in terms of the development of their interventions with the other half simply citing the use of ‘mindfulness’ as the theoretical framework. Three of the interventions also incorporated elements of cognitive behavioural therapy (CBT) into their mindfulness interventions (21.4%). Intervention format varied between studies, some making use of pre-prepared online videos (n = 6, 42.9%), live videoconferencing (n = 5, 35.7%), smartphone applications (n = 5, 35.7%), audio recordings (n = 5, 35.7%), online discussion forums (n = 5, 35.7%), online logs/journals (n = 3, 21.4%), or a combination of all or some of these. Except for two studies (14.3%) that involved two sessions of in-person content that acted as introductory sessions to the intervention, all interventions were

self-guided. The majority (n = 9, 64.3%) used some form of reminder to prompt participants to engage in the experimental condition, with most favouring email reminders. Only three of the studies (21.4%) offered any form of participation credit but this was not contingent on adherence to the intervention. All interventions involved home practice. Overall attrition rates ranged from 4% to 61%, with an average rate of 23.7%.

Table 2.4

Key intervention characteristics.

Study Author (year)	Program name	Delivery method(s)	Theoretical framework	Intervention target	Delivered by	Session duration	Session frequency	Total length	Home practice (method)	Comp.
Ahmad et al. (2020)	Mindfulness Virtual Community (MVC)	Online videos, discussion forums, videoconf.	Mindfulness	Reducing symptoms of depression, anxiety, and stress	Self-guided, videoconf. led by a MH professional	Video conf. 20 mins	3 modules released per week over 4 weeks	8 weeks	Yes (email reminders)	None
Dai et al. (2022)	Mindfulness Living With Challenge (MLWC)	Audio and video on app, 2 in person sessions	Mindfulness and MBSR/ MAP (Mindful Awareness Practice)	Reducing symptoms of depression, anxiety, stress and improving mindfulness level and perceived social support	Research team for in-person sessions and self-guided	2 days a week, 30–40 min	6 sessions (2 lessons per session)	6 weeks	Yes (weekly push notifications)	None
Devillers-Reolon et al. (2022)	Mindfulness meditation (MM)	Online (audio)	MBSR/Vipassana	Improve mental health and attentional ability	Self-guided	10 or 20 mins	Daily	17 days	Yes (email reminders)	None

Study Author (year)	Program name	Delivery method(s)	Theoretical framework	Intervention target	Delivered by	Session duration	Session frequency	Total length	Home practice (method)	Comp.
El Morr et al. (2020)	Mindfulness Virtual Community (MVC)	Online Videos, discussion forums, videoconf.	Mindfulness/CBT	Reducing symptoms of depression, anxiety, and stress	Self-guided, videoconf. led by a MH professional	Video conf. 20 mins	3 modules released per week over 4 weeks	8 weeks	Yes (email reminders)	None
Flett et al. (2019)	Headspace	App (audio)	Theravada Tradition	Reducing symptoms of depression, anxiety, and stress	Self-guided	10 min	1 x session per day	10 + 30 days access	Yes (none)	Course credit offered but not tied to app adherence
Hall et al. (2018)	Mindfulness intervention	2 x in-person groups + 7 weeks of home-based audio-guided mindfulness practice	Mindfulness	Reduce depression, anxiety, stress and sleep dysfunction	Initial in-person groups led by facilitator with MA in counselling psychology, then self-guided (online audio)	1.5hrs (groups), 25-27 mins (online audio)	2 groups + 2 home practice sessions p/w	7 weeks	Yes (weekly text reminders for 2 groups)	None
Lahtinen & Salmivalli (2020)	tietoisuustait opohjainen hyvinvointikurssi or 'Tita' (translates to	Audio, video	MBSR/MBCT	Reducing symptoms of depression, anxiety, school	Self-guided	5-20 mins (audio) 8-20 mins (vid)	7 x audio 9 x video	8 weeks	Yes (weekly email reminder)	Not offered but diploma given

Study Author (year)	Program name	Delivery method(s)	Theoretical framework	Intervention target	Delivered by	Session duration	Session frequency	Total length	Home practice (method)	Comp.
	“mindfulness-based well-being course”)			burnout and higher psychological wellbeing Enhanced mindfulness skills, mental wellbeing and life satisfaction and improved mental health outcomes (stress, depression and anxiety)						if requested
Mak et al. (2015)	Health Action Process Approach (HAPA) enhanced mindfulness	Web-based material, videos and audio, logsheets	MBSR		Self-guided	3 hour workshop , 30 mins online lesson p/w, 20-30 mins p/d daily mindfulness	1 online session p/w, 6 days p/w mindfulness practice	8 weeks	Yes (weekly email reminders)	None
Nguyen-Feng et al. (2017)	Present control intervention plus mindfulness	Online videos, audio, logs	Mindfulness	Reducing symptoms of depression, anxiety, and stress	Self-guided	Unknown	1 st wk: 3 video modules 2 nd wk: 1 video and audio, 3 rd /4 th wk: audio	4 weeks	Yes (email reminders)	None
Orosa-Duarte et al. (2021)	REM Volver a casa (‘Mindfulness-Based	App (audio and video)	MBSR	Reducing anxiety and increasing empathy,	Self-guided	Total 200 mins	8 stages with 3 sections	8 weeks	Yes (none apart from initial instruction)	Codes provided to get

Study Author (year)	Program name	Delivery method(s)	Theoretical framework	Intervention target	Delivered by	Session duration	Session frequency	Total length	Home practice (method)	Comp.
	Emotion Regulation. Going Home')			self-compassion, and mindfulness						the app free of charge at the end
Raeuori et al. (2021)	Meru Health Program (MHP)	App (text, video, audio), discussion board and remote support	MBSR/ MBCT/ CBT/BA	Reduction of depression symptoms	Self-guided, remote therapists for ad hoc 1:1 support	10-45 mins	8 sequentially delivered modules	8 weeks	Yes (none)	None
Ritvo et al. (2021)	Mindfulness Virtual Community (MVC)	Online Videos, discussion forums, videoconf.	Mindfulness	Reducing symptoms of depression, anxiety, and stress	Self-guided, videoconf. led by a MH professional	Video conf. 20 mins	3 modules released per week over 4 weeks	8 weeks	Yes (email reminders)	None
Simonsson et al. (2021)	Mindfulness program	Videoconf.	Mindfulness/ CBT	Affective polarization, reduction of anxiety and depression	Mindfulness teacher, self-guided	90-105 mins	1 per week, 20-30 mins home practice p/d	8 weeks	Yes (none)	None
Sun et al. (2020)	"Mindfulness for Growth and Resilience"	Videoconf., app (videos, audio), online journal and discussion chat	MBSR/ MBCT	Reducing symptoms of anxiety and depression	Self-guided, videoconf. by four RAs trained in mindfulness	60 mins videoconf., 5-40 mins video/audio	Weekly videoconf., 2 x weekly video/audio	4 weeks	Yes (none)	None

Assessment and overview of methodological quality

Studies varied in quality and assessment outcomes are shown in table 2.5. The majority (n = 13, 92.9%) were of medium to high quality overall, with one assessed as low-medium quality. These ratings were assigned following assessments of the four areas of bias for each of the studies mentioned earlier using the NICE methodology checklist, half of which were independently assessed by a second reviewer. A clear strength of all studies was a clearly defined randomisation procedure, usually by computer, and subsequent concealment of allocation (although this was unclear for one). In addition, all but one study reported that groups were comparable at baseline. All groups were identical in terms of treatment other than the intervention they received except for Raevuori et al. (2021) who reported that they were unable to detail TAU (appointment type/ frequency) and were concerned over the possibility that the intervention group received significantly less TAU compared to the control group, among whom TAU was the only treatment. An obvious weakness for all studies was the inability for all of them to blind participants, intervention administrators and in some instances assessors to treatment allocation. Quality is more mixed when considering attrition rates, with eight studies (57.1%) reporting more than 80% participation at final analysis and three (21.4%) that did not report using an intent to treat (ITT) or per protocol (PP) analysis. All studies used a validated measure of anxiety as an outcome and half of all studies included a follow-up.

Table 2.5

Quality assessment outcomes per study.

Study Author (year)	Selection		Performance				Attrition		Detection			Overall Quality Rating
	Randomisation used?	Concealment of allocation?	Groups comparable at baseline?	Groups identical other than interventions?	Participants blinded to allocation?	Administrators blinded to allocation?	>80% in final analysis?	ITT/PP Analysis?	Validated outcome measure	Assessors blinded?	Appropriate length of FU?	
Ahmad et al. (2020)	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	MedHigh
Dai et al. (2022)	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	MedHigh
Devillers-Reolon et al. (2022)	Y	Y	N	Y	N	N	Y	Y	Y	N/A	N	Medium
El Morr et al. (2020)	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	MedHigh
Flett et al. (2019)	Y	Y	Y	Y	N	N/A	Y	N	Y	N	Y	MedHigh
Hall et al. (2018)	Y	Y	Y	Y	Unclear	Unclear	N	N	Y	Unclear	N	LowMed
Lahtinen & Salmivalli (2020)	Y	Y	Y	Y	N	N	N	Y	Y	N	Y	MedHigh
Mak et al. (2015)	Y	Unclear	Y	Y	N	N	N	Y	Y	N	Y	Medium
Nguyen-Feng et al. (2017)	Y	Y	Y	Y	Unclear	N/A	N	Y	Y	Unclear	Y	MedHigh
Orosa-Duarte et al. (2021)	Y	Y	Y	Y	Unclear	Unclear	N	Y	Y	Y	N	MedHigh
Raevuori et al. (2021)	Y	Y	Y	Unclear	N	N	N	Y	Y	N	Y	Medium
Ritvo et al. (2021)	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	MedHigh
Simonsson et al. (2021)	Y	Y	Y	Y	Unclear	Unclear	Y	N	Y	Unclear	N	Medium
Sun et al. (2020)	Y	Y	Y	Y	N	N	Y	Y	Y	N/A	Y	High

Overview of results/outcomes

Results including means, standard deviations and sample size for each of the studies are shown in Table 2.6 for post-treatment and, where this was conducted, follow-up. The post-treatment mean scores for Dai et al. (2019) were not reported so an effect size was calculated and manually inputted for later analysis. Overall, findings show that the majority of studies at post-treatment ($g = -0.23$, 95% CI [-0.42, -0.05]) and follow-up ($g = -0.21$, 95% CI [-0.32, -0.10]) demonstrated statistically significant differences between the intervention and control arms in terms of reductions in self-reported anxiety of mostly non-clinical youth populations. However, the pooled effect of these was small and there existed substantial heterogeneity across studies for post treatment effects. Individual SMDs that reported a reduction in anxiety symptomology ($n = 10$, 71.4%) ranged from -0.01 to -0.92 at post-treatment and from -0.06 to -0.36 for six of the seven studies (85.7%) who conducted follow-up assessments. Additional analyses, which included the exclusion of the lower quality study, did not affect the post-treatment effect to any large degree. Further analyses demonstrated that, when passive controls were removed, these effects diminished.

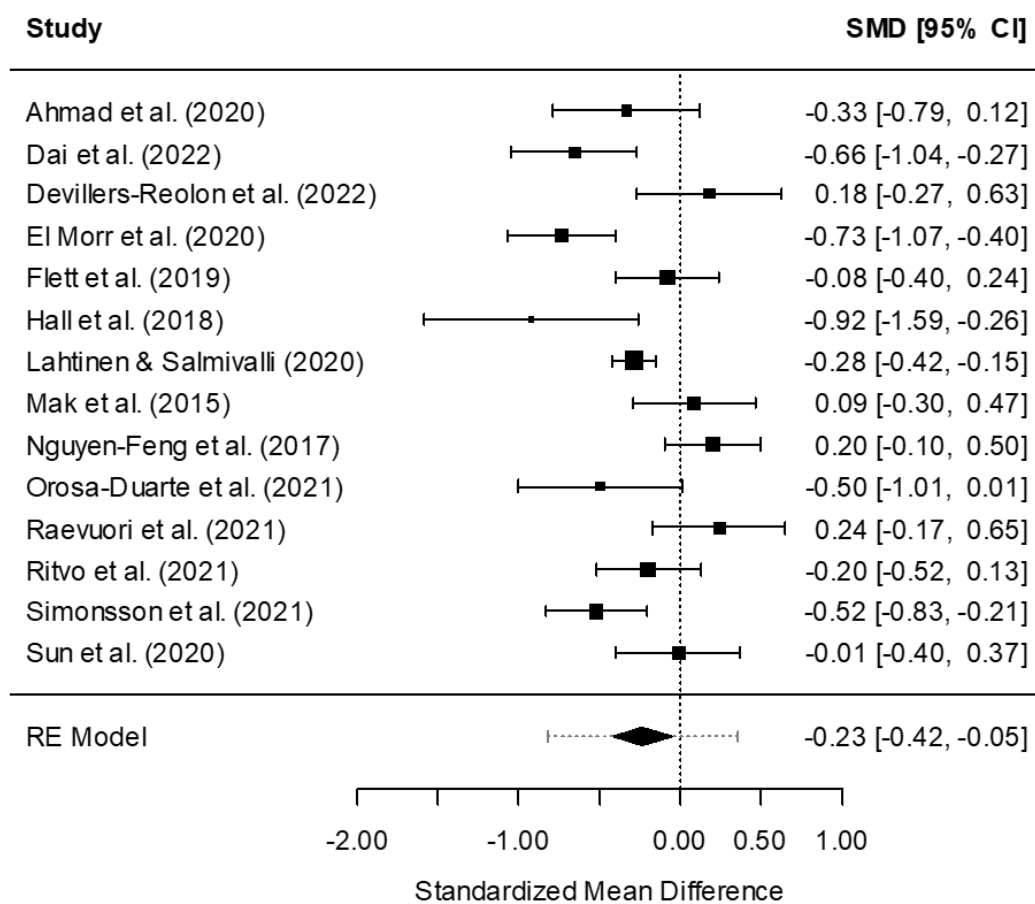
Table 2.6
Study results.

	Int. post Mean	Int. post SD	Int. post n	Cont. post Mean	Cont. post SD	Cont. post n	Int. FU Mean	Int. FU SD	Int. FU n	Cont. FU Mean	Cont. FU SD	Cont. FU n
Ahmad et al. (2020)	10.2	11.1	37	14.2	12.6	38	NA	NA	NA	NA	NA	NA
Dai et al. (2022)	1.23	NA	52	2.11	NA	56	NA	NA	NA	NA	NA	NA
Devillers-Reolon et al. (2022)	4.13	3.24	38	3.55	3.24	38	NA	NA	NA	NA	NA	NA
El Morr et al. (2020)	10.06	7.8	68	18.19	13.18	80	NA	NA	NA	NA	NA	NA
Flett et al. (2019)	5.74	4.14	72	6.05	3.47	75	5.87	4.13	67	6.56	4.81	67
Hall et al. (2018)	5.48	5.48	42	11.83	10.25	12	NA	NA	NA	NA	NA	NA
Lahtinen & Salmivalli (2020)	5.94	4.62	365	7.31	5.02	507	6.25	5.26	216	7.37	4.99	453
Mak et al. (2015)	6.27	6.63	58	5.67	7.26	48	6.46	6.6	37	5.72	7.64	24
Nguyen-Feng et al. (2017)	1.53	0.49	76	1.44	0.42	98	1.35	0.41	74	1.43	0.43	89
Orosa-Duarte et al. (2021)	20.48	12.53	31	26.77	12.35	30	NA	NA	NA	NA	NA	NA
Raeuori et al. (2021)	7.86	3.91	44	6.91	3.94	48	6.81	3.77	37	7.05	3.89	42
Ritvo et al. (2021)	12.29	10.84	69	14.61	12.37	77	NA	NA	NA	NA	NA	NA
Simonsson et al. (2021)	9.81	3.54	79	11.7	3.72	86	9.57	3.76	77	10.9	3.45	85
Sun et al. (2020)	6.08	3.99	52	6.13	4.26	52	5.54	3.48	52	7.04	4.75	47

The forest plot for the meta-analysis of post-treatment scores is shown in Figure 2.2. In terms of heterogeneity, the Q statistic was statistically significant ($Q [13] = 43.2898, P = <.0001$) which indicates that heterogeneity was greater than expected due to chance. The I^2 index was 74.5%, indicating a substantial degree of heterogeneity. The majority ($n = 8, 57.1\%$) of studies' individual SMDs are to the left of the vertical axis or 'line of no effect', indicating that these studies demonstrated a difference between the intervention and control groups in terms of a reduction in anxiety symptomology. Five of these studies showed a statistically significant effect, with the largest of these from Hall et al. (2018). Four studies demonstrated an increase in anxiety scores. Raevouri et al. (2021) was also the only sample to include a clinical population. The diamond representing the pooled effect is to the left of the axis and is statistically significant ($g = -0.23, 95\% \text{ CI } [-0.042, -0.05]$).

Figure 2.2

Forest plot for baseline and post-treatment and effect sizes.



Seven studies (50%) conducted follow-up assessments, which ranged from one month to six months post-intervention, with a median of three months ($n = 3, 42.9\%$). Efforts were made to reduce this variability by selecting follow-ups of equal length if there was more than one to choose from, however this was not possible for four of the studies. The forest plot for the meta-analysis for follow-up scores is shown in Figure 2.3. In terms of heterogeneity, the Q statistic was not statistically significant ($Q [6] = 3.4388, P = .75$) and the I^2 index was 0.00%, indicating heterogeneity may not be present. More of the studies at follow-up demonstrated sustained or improved anxiety scores compared to post-treatment, with four studies showing the same or increased effect in this direction and two studies demonstrating a statistically significant difference. The pooled effect shows a statistically significant, if small, effect in the same direction ($g = -0.21, 95\% \text{ CI } [-0.32, -0.10]$).

Figure 2.3

Forest plot for follow-up effect sizes.

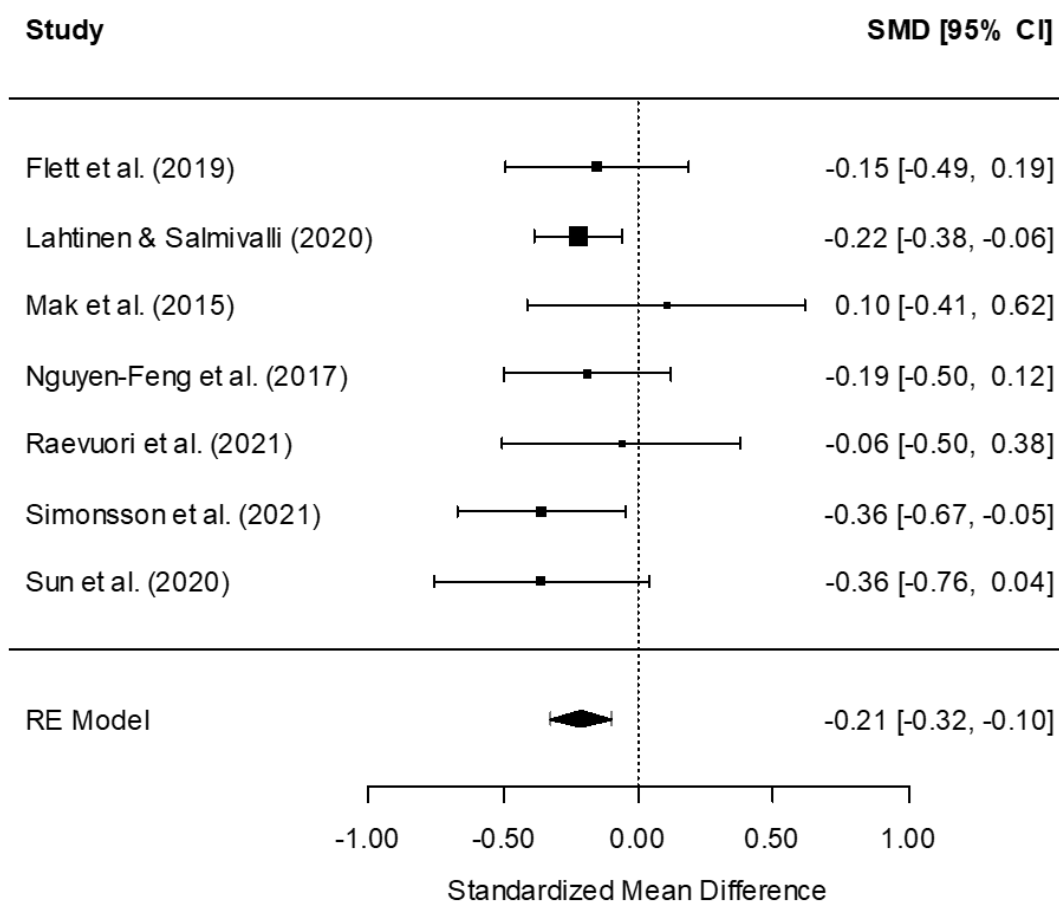
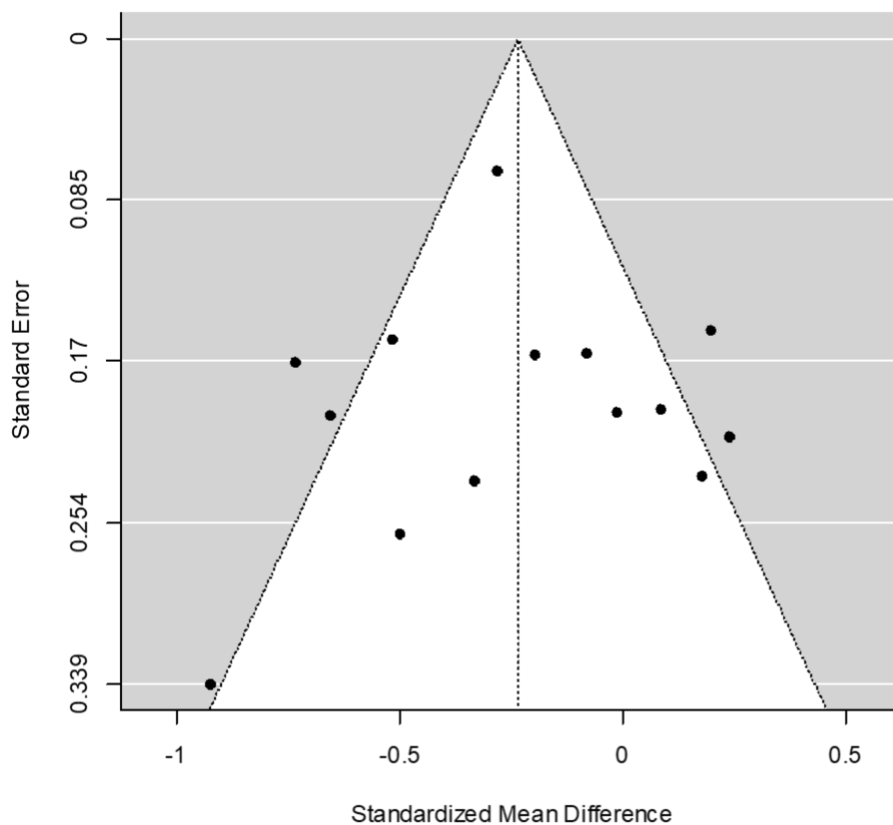


Figure 2.4 shows the funnel plot for the meta-analysis. The reasonable degree of symmetry of the studies on either side of the effect line shows that publication bias is unlikely to be present. A formal test of funnel plot asymmetry (Egger et al., 1997) was used to examine the association between the overall estimated post-test intervention effect and the standard error of the intervention effect, which was not found to be significant ($P = .47$).

Figure 2.4

Funnel plot for publication bias.



Additional analyses

A sensitivity analysis was conducted, in light of the substantial heterogeneity observed for post-treatment effects, by excluding the one study of poorer quality (. The higher likelihood of bias resulting from lower quality trials has meant many meta-analyses exclude them. Systematic bias can contribute to error, which could favour either the experimental or the control/comparison

treatment and some researchers have found outcomes of treatment efficacy have been exaggerated when low quality trials have been included (Conn & Rantz, 2003; Moher et al., 1998). Confounding between quality dimensions and other important aspects of the studies could therefore exist (Juni et al., 1999). In terms of heterogeneity for post-treatment, the Q statistic was statistically significant ($Q [12] = 39.1544, P = <.0001$) and the I^2 index was 73.41%, indicating a substantial degree of heterogeneity, both of which were similar to the heterogeneity observed in post-treatment outcomes prior to the exclusion of Hall et al. (2018). The pooled effect was again statistically significant ($P = .03$), with a similar overall effect as before ($g = -0.20, 95\% \text{ CI } [-0.38, -0.03]$), suggesting minimal impact of the exclusion of the low quality study.

A moderator analysis was also conducted which excluded all passive controls. The use of passive controls can expose studies to a variety of threats to internal validity such as expectancy effects and demand characteristics. The presumed solution to these threats adopted by many in the research community has been to use active controls, in which the control group participates in an alternative intervention not designed to target the core outcome of interest (Au et al., 2020). In the current study, passive controls comprised all nine studies that used a waitlist control. This left five studies with active controls. The test for moderators was significant ($QM [1] = 14.2132, P = .0002$), demonstrating very clear evidence of moderation. The forest plot for the meta-analysis for passive controls is shown in Figure 2.5. In terms of heterogeneity, the Q statistic was statistically significant ($Q [8] = 18.5208, P = .02$) and the I^2 index was 59.89%, indicating a moderate degree of heterogeneity. The pooled effect was statistically significant ($P = <.0001$), with a small to medium overall effect size ($g = -0.41, 95\% \text{ CI } [-0.59, -0.23]$). The forest plot for the meta-analysis for active controls is shown in Figure 2.6. In terms of heterogeneity, the Q statistic was not statistically significant ($Q [4] = 2.4948, P = .65$) and the I^2 index was 0.00 %, indicating a lack of heterogeneity. The pooled effect was not statistically significant ($P = .25$), with an effect size of $g = 0.10, 95\% \text{ CI } [-0.07, 0.26]$.

Figure 2.5

Forest plot for passive controls effect sizes.

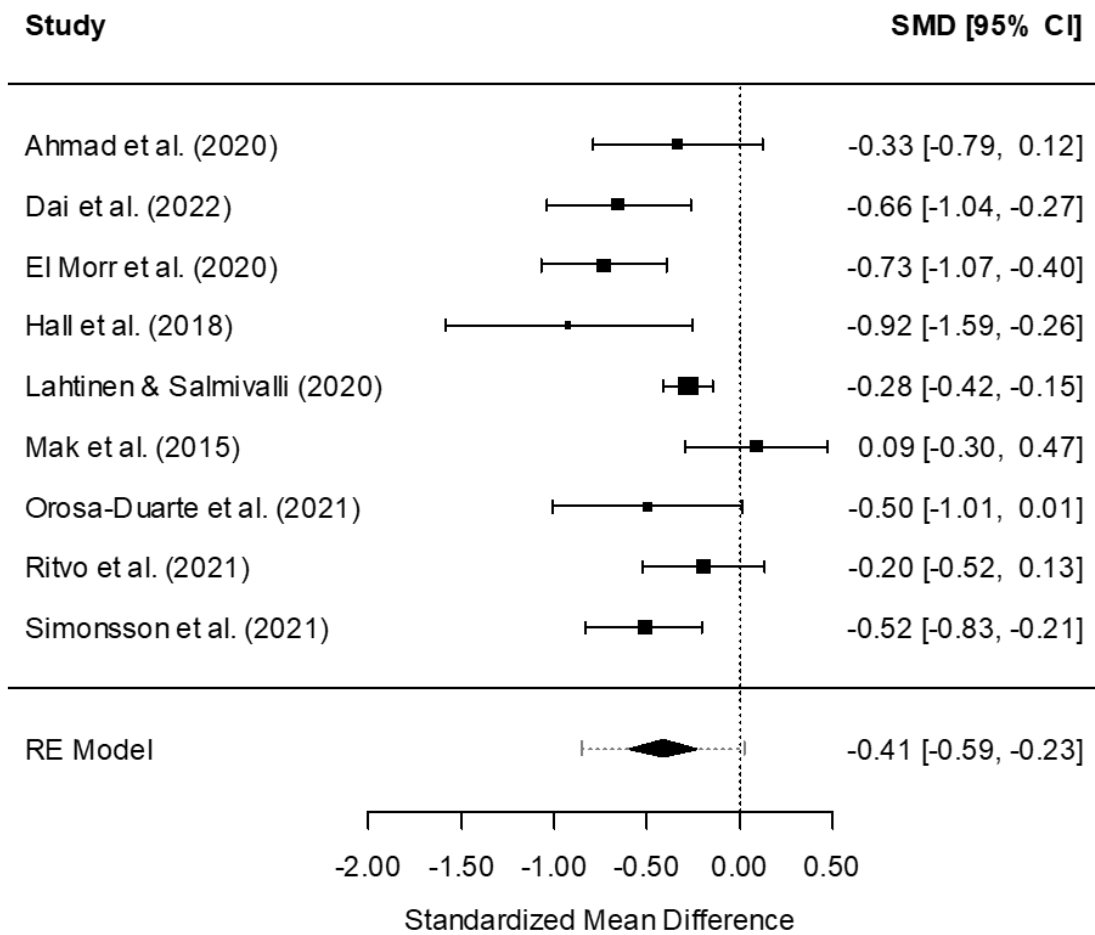
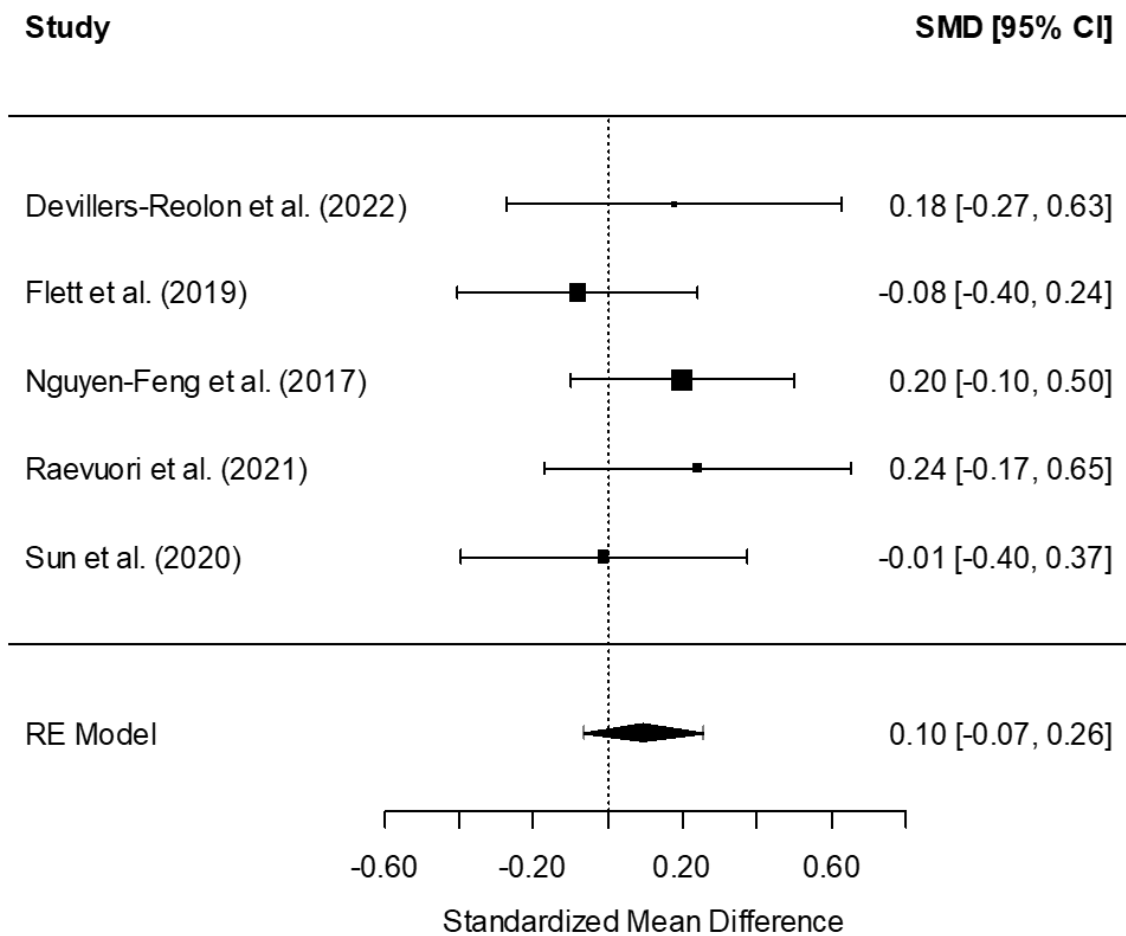


Figure 2.6

Forest plot for active controls effect sizes.



Discussion

This manuscript used systematic review methodology to investigate whether online MBIs were effective in reducing self-reported anxiety in young people. Application of inclusion criteria to the results of the searches identified 14 papers for inclusion in this review, albeit a small number given the recent expansion of research in this area. Nevertheless, a robust and focused search strategy was carried out that enabled the first author to obtain a reasonable number of specific studies that allows confidence in the conclusion that all relevant research was included in this review and that conclusions arising from this review can be based on a synthesis of all available evidence.

Overall, there appears to be a small but statistically significant effect in terms of the effectiveness of online MBIs in reducing self-reported symptoms of anxiety across the included studies. However, online MBIs' effectiveness reduces when compared with active controls, suggesting that these interventions fare no better than other comparable interventions but are at least better than no intervention at all.

Effect direction

Findings from the meta-analysis show that the majority of studies at post-treatment and follow-up demonstrated differences between the intervention and control arms in terms of reductions in self-reported anxiety, but that the pooled effect of these was small. Five studies were statistically significant at post-treatment, with Hall et al. (2018) demonstrating the largest effect, although with a wide CI and thus should be interpreted with caution. Two studies were statistically significant at follow-up, with Simonsson et al. (2021) and Sun et al. (2022) demonstrating the largest effects. Only Lahtinen & Salmivalli (2020) demonstrated statistically significant, albeit small, effects at both post-treatment and follow-up. Four studies showed effects in the other direction and reported increases in anxiety symptomology at post treatment, although none of these were statistically significant. It should be noted that anxiety was not the sole intervention target of any of these four studies, with one stating that their aim was to improve 'mental health' generally and another focused primarily on the reduction of depressive symptoms. This study was also the only included study to use a clinical sample of young people. The number of studies reporting an increase reduced to just one at follow-up. Only Mak et al. (2015) demonstrated worse outcomes at both post-treatment and follow-up, the reasons for which will be considered later.

The overall small effects reported in this study aligns with similar effect sizes reported in other reviews that have pooled the effects of MBIs on anxiety symptoms (Krusche et al., 2013; Dunning et al., 2019; Odgers et al., 2020; Sommers-Spijkerman et al., 2021). In terms of individual study effect, Lahtinen and Salmivalli (2020) had the most precise estimate of SMD compared to other studies, as shown by the narrow CI. One obvious reason for this is the substantially higher

number of participants in the study compared to the others. The most pronounced effect at post-treatment according to SMD was evidenced in Hall et al. (2018), followed by Dai et al. (2022). This could be due to the presence of in-person elements in both studies in addition to receiving weekly reminders from the research team. Other interventions that used group-based elements were either totally virtual, anonymous or both.

Intervention comparison

In terms of the theoretical frameworks used for the interventions themselves, studies that used protocols or techniques derived from MBSR or MBCT principles fared just as well as interventions that used bespoke mindfulness packages at both post-treatment and follow-up. This aligns with previous reviews, one of which found that over 42% of included studies were mixed or hybrid interventions, encompassing elements of both MBSR and MBCT as well as other mindfulness-based exercises (Sommers-Spijkerman et al., 2021). Further and similar to other studies exploring the effectiveness of online MBIs, the majority of studies compared interventions to a waitlist control group. When passive control groups alone are compared to online MBIs, the latter's effects are increased. However, when active controls are compared these effects reduce, suggesting effects of online MBIs are not superior to other comparable interventions.

Outcomes

Anxiety symptom thresholds remained largely consistent across the studies, with mean scores all falling within either the "low", "normal" or "mild" range at baseline, post-intervention and, for those that included them, follow-up. The only exception was Sun et al. (2022) whose baseline mean scores fell within the "moderate" range for both intervention and control participants, although only just, and these fell within the "mild" range at post-intervention and follow-up. As such, the small effects observed may also be due to the relatively low baseline of most participants in the included studies. There is also variability amongst the various measurement tools in the current review, both in terms of length (varying from seven to 40 items) and in terms of the nature of questions. The BAI, for example, places a heavier emphasis on somatic experiences compared to

other measures, with 15 of its 21 items specifically assessing this. There does not, however, appear to be an association with outcome between studies that used different measures.

Quality rating of studies

There were some instances of bias that lowered the methodological quality of some studies. One area of bias that was particularly noteworthy for some studies was attrition. Significant dropout was reported by Hall (2018), Mak et al. (2015) and Orosa-Duarte et al. (2021) and six studies reported that less than 80% of participants were included in the final analysis, although this was somewhat mitigated by the use of ITT or PP analysis for all but one of them. Mak et al. (2015) also reported poor overall retention rates at post-assessment and 3-month follow-up, and was also the only study to not show an effect at either timepoint. The attrition rates reported in the studies is similar to the average attrition rates for digitally delivered MBIs found in other studies, with a reported range of between 8% and 60% attrition (Spijkerman, 2016) comparable to the range reported in the current review. Moreover, purely app-based interventions have been found to have slightly higher retention rates, ranging from 58% to 92% (Rooksby et al., 2015). The current review tentatively supports this, albeit with limited data, with the three of the five studies that utilised apps in their interventions reporting lower attrition rates for these arms compared to other arms (Flett et al., 2019; Orosa-Duarte et al., 2021).

Another area of bias relates to that fact that all but one of the interventions were developed by the researchers themselves, thereby introducing the potential for bias in terms of their evaluation. Earlier reviews of MBIs for youth have similarly highlighted this as a potential issue (Dunning et al., 2019). Further, as is the case with most psychological intervention RCTs, participants and administrators were not blinded to treatment allocation and so performance bias cannot be ruled out for any of the included studies. Additionally, all outcome measures were self-reported and therefore introduced the possibility of social desirability bias for all studies. Lastly, the self-guided element of many of the interventions also introduced the risk of confounding variables that were

difficult if not impossible to control for in terms of effect, such as life events and external stressors or simply the passage of time between the beginning and end of treatment.

Strengths, Limitations and Future Research

The decision to include only randomised controlled trials in the current review was based on the prevailing view that RCTs are considered the reference standard for driving practice (Tarnow-Mordi et al., 2017). This is due to the fact that randomisation reduces bias and provides a rigorous tool to examine cause-effect relationships between an intervention, allowing attribution of any differences in outcome to the study intervention that is not possible with any other study design (Hariton & Locascio, 2018). The use of a waitlist control is common in psychotherapy research (Steinert et al., 2017) and in controlled studies that have compared mindfulness-based therapy in particular (Hofman et al., 2010). The inclusion of five active controls was shown to affect the comparability of the effect sizes of the studies as previously mentioned, suggesting that online MBIs may be a useful intervention in the absence of other interventions but not necessarily instead of them. This is supported by existing research that finds wait list control groups typically yielding the largest effects (Barth et al., 2013).

The current review included RCTs that for the most part did not recruit from selected clinical populations, except for Raevuori et al. (2021) which required International Statistical Classification of Diseases and Related Health Problems (ICD-10; WHO, 2019) diagnosis of a major depressive disorder. The small, pooled effect size found in the current review that focused on predominantly non-clinical samples aligns with those found in earlier reviews of web-based psychological interventions for young people, with one study finding improvements in anxiety with small effect sizes in general populations (Pennant et al., 2015), and can thus be considered a relative strength of the study. A small effect size in a predominantly non-clinical sample as in the current review could still be relatively meaningful in terms of reducing the risk of developing more severe anxiety for general populations. Online MBIs may not be as helpful for clinical populations, however, which the

increase in anxiety symptomology in Raevuori et al. (2021) appears to suggest, although further research with these populations would provide more evidence.

The pooled mean age of the meta-analysis was 22.5 years and most samples used university students, with only one study including participants below the age of 18. This does limit the generalisability of the results but does provide data for one of the stated objectives of the current review which was to incorporate studies of participants aged beyond 18 years old as has been the case in previous reviews. Future research could seek to review studies that have conducted research into school-age populations, for example. Further, although the preponderance of females in the included studies aligns with existing evidence regarding the higher proportion of women than men who receive support for mental health problems in western nations (Wang et al., 2005; Rapee, 2012; McManus et al., 2016), this further limits the generalisability of the findings to a wider and more gender-balanced population.

The degree of heterogeneity present between the studies included in the current review poses additional questions regarding the precise mechanisms of the small effects observed. Future research could therefore take into account potentially moderating variables such as sample size, measure of outcome, duration of intervention and mode of delivery. More rigorous attention to personal characteristics of samples may also aid in the isolation of specific variables associated with outcome. Subgroup analysis and meta regression may be required to investigate this further in order to investigate possible differences between the studies and other factors that may influence the effect. Similar studies have found this to be useful (Pennant et al., 2015), where significant subgroup differences were observed when studies of anxiety were separated by age and severity.

Each study had varying lengths of follow-up and half of included studies reporting no follow-up at all. Although the variability in follow-up measurements is noted in a similar systematic review and meta-analyses (Sommers-Spijkerman et al., 2021), it remains unclear whether the tentatively encouraging effects in the current review of online MBIs shown at 3 months post-intervention are sustained over longer periods and thus future research could include longer term follow-ups. The

considerable variability in attrition and retention rates for each of the included studies also warrants control in future studies. One final limitation concerns the absence of a second reviewer during study selection. The Cochrane Collaboration recommends using two or more members of the review team, working independently, to screen studies (Higgins et al., 2011). Although a second reviewer was recruited to screen for bias of the selected studies and thus provided inter-rater reliability for this stage of the review, the omission of them in the selection process is an obvious limitation.

Clinical implications and conclusions

The current review contributes to existing literature regarding the clinical effectiveness of online MBIs for younger populations with self-reported symptoms of anxiety. Small effects in the direction of the reduction of anxiety symptomology following a course of online MBI suggest initially promising outcomes. The small effect observed in the current review is consistent with findings from similar meta-analysed studies and the relatively low mean baseline scores also meant that most participants did not meet clinical thresholds in terms of symptom severity, thus providing tentative evidence that online MBIs may be a useful intervention for young people who may not otherwise meet criteria or who are not referred for more specialised mental health care. The stronger effects present when active controls are removed also suggest online MBIs could be useful for those who are on a waitlist but that they may not be as effective when compared to other psychological interventions. However, the over-representation of female, university-age students limit the generalisability of these conclusions and raises questions as to whether the small effects observed would still be present in clinical and in younger, more representative samples.

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CHAPTER THREE

Bridging Chapter

Bridging Chapter

The systematic review explored the clinical effectiveness of online MBIs for younger populations with self-reported symptoms of anxiety. Findings suggest that their use may be of benefit in reducing anxiety of non-clinical samples with mild baseline symptom severity. The relatively low-intensity, affordability and accessibility of online MBIs could therefore be added to the growing toolkit of self-help methods that can promote better overall mental health such as improving self-awareness, looking after one's physical health and developing and nourishing social connections (Mind, 2017).

Mental health exists on a complex continuum, with experiences ranging from an optimal state of well-being to debilitating states of great suffering and emotional pain (WHO, 2022). In order to address another key point along this continuum, the following empirical paper will shift focus towards an understanding of what components of mental health care might be pertinent to young people with more severe and complex mental health difficulties. The data used for this paper will be from the PRODIGY (prevention and treatment of long-term social disability amongst young people with emerging severe mental illness with social recovery therapy) trial (Fowler et al., 2021). This pragmatic, multicentre, single-blind, superiority RCT aimed to evaluate a new approach to early intervention with young people with social disability and severe and complex mental health problems. The approach, known as social recovery therapy (SRT), was implemented over a period of 9 months and was compared with enhanced standard care (ESC), with the primary hypothesis being that, for young people who are socially disabled and severe and complex mental health problems, SRT plus enhanced standard care would be superior to enhanced standard care alone in improving social functioning. Participants between the ages of 16 and 25 years who had persistent social disability, a history of social impairment problems and the presence of severe and complex mental health problems were recruited between 2012 and 2017. In terms of outcomes, there was a general pattern of large and clinically significant improvements over time in both arms. However, there was

no evidence for the clinical superiority or cost-effectiveness of SRT as an adjunct to ESC (Berry et al, 2022).

Although PRODIGY was an RCT, the current study will not be using the data in this way. For the purposes of the following empirical project, both arms of the trial will be combined into one group and the data used as a quantitative longitudinal cohort study. Variations in ESC, in particular, will be explored to see whether these were associated with baseline and outcome variables.

CHAPTER FOUR

Empirical Paper

Article prepared for submission to the British Journal of Clinical Psychology (Guidelines for authors in Appendix D).

Exploring packages of care received by young people with complex mental health difficulties and social disability: a longitudinal study using data from the PRODIGY trial

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Declarations of interest: none

Word count: 4979

Key words: youth mental health, care package, social disability

ABSTRACT

Objective

There is an increasing demand to identify possible models of care that better serve the needs of young people and help prevent further deterioration of their mental health. This study aimed to explore variations in Enhanced Standard Care (ESC) offered as part of the PRODIGY trial and explore how these were associated with baseline and outcome variables.

Methods

The current study utilised a large, pre-existing dataset of young people (N = 222) with complex presentations of mental health difficulties and social disability, defined operationally as below 30 hours of 'structured activity' per week. Variations in packages of care received over a 9 month period were explored, along with associations with baseline characteristics and outcomes.

Results

Three care packages were identified (Primary/Community, Specialist and Comprehensive). Young people with more severe symptomatic difficulties at baseline received more complex packages of care. However, functional outcomes were similar across the different care packages.

Conclusions

Findings demonstrate substantial heterogeneity in what care people received. The level of input an individual receives does not appear to affect the degree of social recovery they experience, with similar outcomes observed across all three care packages. Symptom severity and risk, rather than functioning, looks to be a marker of how much care individuals receive.

INTRODUCTION

Youth mental health and social disability

Most socially disabling chronic and severe mental health problems begin in adolescence, with 75% of all severe and chronic mental illnesses emerging between the age of 15 and 25 years. Further, between 3% and 5% of adolescents present with complex mental health problems associated with social disability (Kessler et al., 2005; Kim-Cohen et al., 2003). Social disability in young people with severe mental health problems can be operationally defined as low activity, or time spent, in social and economic domains (Hodgekins et al., 2015). These domains include socialising with friends and family, employment, education and engagement in leisure activities. It has been shown that poor social and occupational functioning in young people by way of withdrawal from and/or avoidance of these domains is a good predictor of longer-term mental health difficulties (Fowler et al., 2010). Young people who have a combination of severe and persistent mental health needs and who are socially disabled present with problems that have the highest lifelong burden (Knapp et al., 2016).

Several UK guidelines have highlighted the importance of managing severe and complex mental health problems in young people, particularly in those at risk of social disability, including those for social anxiety (National Institute for Health and Care Excellence; NICE, 2013), depression (2019) and psychosis and schizophrenia (2013). These best practice guidelines are based on single diagnoses or a 'family' of disorders. However, research has shown that most young people referred to services show high rates of diagnostic co-morbidity (Garland et al., 2001; Weisz et al., 2012). As such, many young people with co-morbid mental health difficulties in addition to poor functioning arguably fall between the gaps of services or are treated for only one difficulty. As such, current best practice, where the focus is primarily on symptom reduction, may not adequately meet the needs of young people with complex presentations.

Current youth mental health policy

Nationally, there is an acknowledged need to reform mental health services for young people. Focus on youth mental health has been highlighted by various government reviews such as Future in Mind (2015), the Five Year Forward View for Mental Health (2016) and the NHS Long Term Plan (2019). However, A report by the Care Quality Commission (CQC) in 2018 highlighted that many children and young people experiencing mental health problems don't get the kind of care they require, and that the system is complicated, with no easy or clear way to get help or support (Care Quality Commission, 2018). Local transformation models have been enacted to address these issues, such as the Norfolk Youth Service, which aims to provide pragmatic, assertive and "youth friendly" services that transcend traditional service boundaries (Wilson et al., 2018). This includes new ways of working with the third sector and education system. There are early signs that these local transformation models are working for some areas (Rocks et al., 2020). However, clearly more still needs to be done, with COVID-19 additionally demonstrating the necessity of a more coherent and flexible youth mental health service (Holmes et al., 2020).

The PRODIGY trial

The economic costs of not addressing mental health problems associated with social disability at an early stage are high (Mangalore & Knapp, 2007). Compared to their peers, young people with mental illness are nearly twice as likely not to be in education, employment or training (O'Dea et al., 2014), reducing both the workforce and tax base, increasing the burden on the working population, raising expenditure on long term health care and reducing economic growth (Rechel et al., 2009). Thus, numerous studies have attempted to develop interventions that support social and functional recovery for young people with complex mental health difficulties, rather than focusing solely on symptomatic outcomes (Fowler et al., 2010; 2018). The PRODIGY (prevention and treatment of long term social disability amongst young people with emerging severe mental illness with social recovery therapy) trial (Fowler et al., 2021), aimed to explore the effectiveness of a novel intervention, Social Recovery Therapy (SRT), which has previously found to be effective in young people with psychosis (Fowler et al., 2018), in improving time spent in structured activity as a

measure of functional outcome for a cohort of young people. Participants in the PRODIGY trial were recruited from primary and secondary youth and adult NHS mental health services, third sector, youth, and education organisations and were required to be aged 16-25 years with persistent social disability and severe and complex mental health problems. Exclusion criteria were the presence of active psychotic symptoms or history of psychosis; severe learning disability; non-English speaking, or disease or physical problems likely to undermine participation. Initial findings found no evidence for the clinical superiority or cost-effectiveness of SRT as an adjunct to Enhanced Standard Care (ESC) over a period of 9 months (Berry et al, 2022). However, large improvements in primary and secondary outcomes were shown in both the SRT and ESC arms of the trial.

The present study

The present study involves a more in-depth analysis of ESC received by all participants in the PRODIGY trial. ESC involved a summary of the baseline assessment and signposting to a Best Practice Manual, which summarised routinely available evidence-based good practice. The aim of ESC was to signpost participants and their referring clinician to evidence-based medical, psychological, and psychosocial treatments that were already available within mental health services. ESC was heterogeneous across trial participants and included provision of short-term individual and family psychological therapies, medication management, support and monitoring within primary or secondary mental health services. Participants could also have received a range of education, social, training, vocational and youth work interventions from a variety of statutory and non-statutory service providers.

As there were no differences in outcome between the two arms of the trial, and as such no added benefit over and above ESC, the current study sought to analyse data for all participants in the PRODIGY trial by combining data from the two arms for secondary analysis. Combining trial data for secondary analysis where no differences between intervention and control groups were identified maximises the use of research data and reduces research waste and follows previous research that has successfully employed this methodology (Fowler et al., 2012). The findings from

this analysis were then used to identify packages of support which may address gaps in current service provision for young people with complex mental health problems and social disability.

Optimising standard care to ensure targeted delivery of existing interventions may improve outcomes for young people (Berry et al, 2022). The complex nature of child and adolescent mental health services (CAMHS) and by consequence the service transformations taking place make evaluation challenging (Rocks et al., 2018). The current study therefore afforded an opportunity to explore a large, heterogenous dataset to identify variations in the packages of care received by young people with complex mental health problems and social disability. The study examined differences in baseline characteristics and outcomes between groups receiving different care packages. For the purposes of the current study, a 'care package' was defined based on the 'input' that a young person received. This input may have been from health professionals (such as a GP, psychologist, psychiatrist or nurse) but also included other forms of care such as friends and family or support from third sector organisations.

RESEARCH QUESTIONS

1. What care packages did young people receive as part of ESC during the PRODIGY trial?
2. Were there any baseline differences between young people who received different packages of care as part of ESC during the PRODIGY trial?
3. Was there a difference in functioning at 9 months between the groups receiving different care packages?

METHOD

Design

PRODIGY was a pragmatic, single-blind, superiority randomised controlled trial that was conducted in three UK centres: Sussex, Manchester and East Anglia. The current study was a secondary analysis of the trial data. For the purposes of the study both arms of the trial were combined and the data used as a quantitative longitudinal cohort study, with assessment points at baseline and 9 months. This was acceptable given the lack of statistically significant differences between the two groups.

Participants

Participants were recruited from child, adolescent and adult primary and secondary care mental health services and from youth, social, education and third-sector services. Eligible participants completed baseline assessment measures, were randomised to the intervention or control arm of the trial and were followed up over the following 24 months. Participants were recruited between 2012 and 2017 and were aged between 16 and 25 years with persistent social disability, defined as less than 30 hours per week of structured activity with social impairment for at least 6 months. In addition, participants had severe and complex mental health problems, defined as either meeting at-risk mental states (ARMS) criteria for psychosis on the Comprehensive Assessment of At-Risk Mental States (CAARMS; Yung et al., 2005) (46%) or the presence of severe non-psychotic mental health problems indicated by a Global Assessment of Functioning (GAF) score of equal to or less than 50 and persisting for at least 6 months (54%). Exclusion criteria were current or historical psychosis, severe learning disability, presence of disease, physical problems, or non-English speaking to a degree that interfered with the capacity to consent to and participate in the research.

In total, 270 participants were recruited for the PRODIGY study, with 135 randomised per trial arm to either ESC+SRT or ESC-alone. Out of this total, 222 were included in the current study, with the remaining 48 having insufficient data recorded at 9 months. The majority (57%) of these

participants were between 16 and 19 years of age, with a mean age of 20 years. There was a majority of male (58%) compared to female (42%) participants and the majority of participants were white (91%), single (86%), heterosexual (78%) and unemployed (71%), although a significant proportion were students (23%). In terms of accommodation, the majority of participants lived in rented properties (55%), while a smaller but significant proportion lived in owner-occupied accommodation (35%). With regards social functioning, approximately 71% of participants were defined as 'very low functioning' (engaging in less than 15 hours per week of structured activity). Almost half of all participants (48%) also met criteria for ARMS.

Measures

The Health Service Resource Use Questionnaire (HSRUQ; Thornicroft et al., 2006) is an adapted version of the Client Socio-Demographic and Service Receipt Inventory – European Version (Chisholm et al., 2000), and was used to identify and define the three packages of care received by participants at 9 months. The HSRUQ includes data on health and social care professional contact, inpatient and A&E admissions and attendances, police contact, social security benefits, medication, support services/groups and support from family and friends. This measure was administered retrospectively at 9 months by research assistants in the PRODIGY trial, who were blind to group allocation, to explore what care participants had received over the preceding 9 month period. The measure asked participants to say whether they had accessed any of the support named above and the frequency or total time spent receiving this.

The Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Version Four (SCID; Spitzer et al., 1992) and the CAARMS (Yung et al., 2005) were used to define the presence of mental health difficulties and identify the presence of comorbidities at baseline to see if this was associated with what level of care participants received. The SCID is an interviewer-led outcome measure that uses a decision tree approach to identify the presence or absence of 'disorders', as defined in the diagnostic and statistical manual of mental disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) within the last month and over a person's lifetime. The

CAARMS is also interviewer-led and measures the intensity, frequency, duration and recency of subthreshold psychotic symptoms and is used to group respondents into varying levels of risk.

In addition to interview-based outcomes, several self-reported measures were used to determine whether certain baseline variables were associated with particular care input. These included the 24-item Belief Core Schema Scale (BCSS; Fowler et al., 2006) which concerns participants' beliefs about the self and others that are assessed on a five-point rating scale (zero to four); the Beck Depression Inventory (BDI-II; Beck et al., 1996), a 21-item, self-report rating inventory that measures characteristic attitudes and symptoms of depression; the Acceptance & Action Questionnaire (AAQ-II; Bond et al., 2011), a seven item self-report questionnaire that uses a Likert-type scale that runs from 1 (never true) to 7 (always true), to determine the level of psychological flexibility; and the Schizotypal Symptoms Inventory (SSI; Hodgekins et al., 2012), a 20 item self-report measure assessing subthreshold psychotic phenomena across a five point Likert scale from 'not at all' to 'all of the time'. The addition of these measures enabled self-reported perspectives to be taken into account alongside the interview-based outcome measures, as some studies have demonstrated comparable strength in self-reported outcomes and practitioner-led clinical interviews being able to identify the presence of particular mental health difficulties (Kaplan et al., 1994; Stuart et al., 2014; Steketee et al., 1996).

Poor social and occupational functioning is a well-established risk factor for the later development of later mental health difficulties (Hartmann et al., 2019). As such, structured activity (SA) in the Time Use Survey (TUS; Short, 2006) was used as the main outcome variable of the current study in terms of functional outcome. The TUS was originally developed by the Office for National Statistics (ONS) for the UK 2000 Time Use Survey, a study investigating how the general population of the UK spend their time and provided a measure of average hours per week spent in SA (i.e., work, education, housework and childcare and sport and leisure activities) over the previous month. This study showed that, on average, adults between the ages of 16 and 64 spend 63.49 hours in SA per week. A cut-off of 30 hours per week can be used to differentiate those with and without social

disability. This was suggested following a further study that compared hours in SA in three clinical groups at different stages of psychosis. Initially the clinical cut-off was 45 hours, but a lower cut-off was recommended as potentially useful for determining those with more severe levels of social disability and thus increasing the specificity of the TUS (Hodgekins et al., 2015).

There is a plethora of evidence regarding the protective effects of social support on mental health (Ichiro & Berkman, 2001; Khan and Husain, 2010; Eisman et al., 2015; Li et al, 2021). For example, a recent systematic review of pathways to care in ARMS found that, in addition to mental health professionals and primary care, family were found to be key pathway agents (Allan et al., 2020). Therefore, TUS socialising data was also explored to see whether there was an association between care package and the level of social support participants received at baseline.

Procedure and Analysis Plan

In order to explore what care packages young people received as part of ESC during the PRODIGY trial, the initial phase of the study began by reviewing the data from the HSRUQ at 9 months to explore what care participants had received during this time. Care was organised into groups according to the type of support participants received. Care packages were initially ordered into seven categories, each varying in level of complexity and service input. These categories were defined as Primary only, Secondary only, Community only, Primary and Secondary, Primary and Community, Secondary and Community and Primary, Secondary and Community. These groups were subsequently collapsed into three main care packages based on level of input – Primary/Community, Specialist and Comprehensive (see results section for further details).

Once care packages had been defined, group differences between them were then explored and compared, according to baseline variables. These included baseline demographics including gender, age and ethnicity as well as the baseline outcome measures mentioned above. A one-way ANOVA was used to analyse continuous variables and a Chi-Squared test was used for categorical variables. Post-hoc analyses using the Hochberg's GT2 pairwise test procedure were carried out in addition to the Games-Howell procedure. The Hochberg test was selected due to the difference

between the sample size of the care packages and the Games-Howell test was selected as it's use is recommended alongside any other tests because of the uncertainty of knowing whether the population variances are equivalent (Field, 2018). An ANCOVA was performed to adjust for statistically significant outcomes found in these analyses and to reduce within-group error variance and eliminate confounds.

Ethical Considerations

Permissions were granted from the trial team to use the PRODIGY dataset for further analysis following completion of the trial, which itself received ethics approval from the former East of England Cambridgeshire and Hertfordshire National Research Ethics Service Committee for recruitment to an internal pilot (12/EE/0311) and the Preston Research Ethics Committee (REC) North West (15/NW/0590) for recruitment to the definitive trial. The Primary Supervisor of this project was a co-applicant and local Principal Investigator (PI) for the Norfolk site on the PRODIGY trial.

The current research was carried out in accordance with the British Psychological Society's (BPS) Code of Human Research Ethics guidelines (BPS, 2021) and complied with United Kingdom General Data Protection Regulation (UK GDPR) and Data Protection Act (DPA, 2018). The researcher was only able to access anonymised data via a secure database in accordance with the original trial protocol for data collection and sharing. Informed consent was obtained from participants at the beginning of the PRODIGY trial which included the future use of anonymised data.

RESULTS

What care packages did young people receive as ESC during the PRODIGY trial?

Table 4.1 provides a breakdown of the type of care that comprised each of the initial seven categories and the number of visits for each.

Table 4.1

Baseline care packages

Care Package	Type of Service	N	Total No. of Visits	Avg. No. of Visits per N
1 – Primary Only	GP	15	105.17	7.01
2 – Secondary Only	Psychological Therapies, Case Manager/Care Coordinator/Social Worker/Mental Health Nurse, Psychiatrist, A&E attendance, Mental Health Admission	18	172.67	9.59
3 – Community Only	Housing Services and Support, Youth Services and Support, Employment Support, Educational Services and Support, Telephone Support, Statutory Services, Financial Services and Support, Social Support Groups	15	110.17	7.34
4 – Primary and Secondary	Any combination of 1 and 2	43	785.83	18.28
5 – Primary and Community	Any combination of 1 and 3	24	547.75	22.82
6 – Secondary and Community	Any combination of 2 and 3	23	422.08	18.35
7 – Primary, Secondary and Community	Any care involving 1, 2 and 3	84	2403.52	28.61
		222	5287.60	19.66

For the purposes of inferential analysis, the seven categories were collapsed into three main care packages of varying ‘input level’. This decision was made following examination of the HSRUQ data. For example, if participants only saw their GP, they would be sorted into the ‘Primary/Community’ category and if they saw their GP as well as receiving support from a CAMHS service, they were sorted into the ‘Specialist’ category. If they also received third sector support, they would be grouped into the ‘Comprehensive’ category. It was deemed more clinically appropriate to organise categories in this way rather than simply organising the data into the number of services a participant was receiving. This categorisation also aligned more with existing models of mental health care in England at the time of the PRODIGY trial, with the three new categories more accurately reflecting the varying complexity of care a young person might receive within the pre-Integrated Care System of tiered NHS mental health care (primary, secondary and tertiary). Further, formulating the data in this way allowed for the categories to be more equitable in terms of sample size. See Figure 4.1 below for a diagrammatic representation of the above and Table 4.2 for the sample sizes and number of visits participants received within each category.

Figure 4.1

Collapse of Care Categories

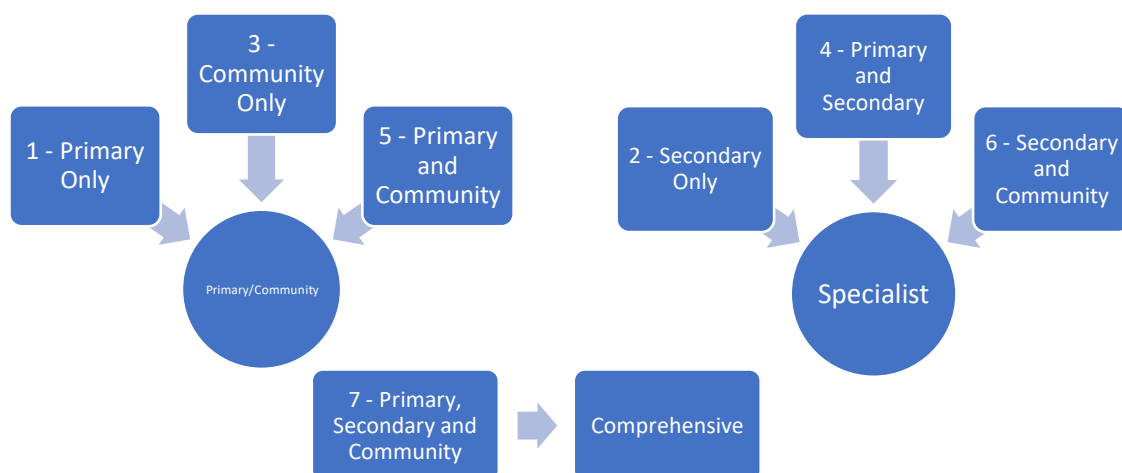


Table 4.2*Number of visits per care package at baseline*

Care Package	N	Total Visits	Average Visits Per N
Primary/Community	54	763.09	14.13
Specialist	84	1380.58	16.44
Comprehensive	84	2403.52	28.61
	222	5287.60	19.66

Were there any baseline differences between young people who received different packages of care as part of ESC during the PRODIGY trial?

Following the definition of the three care packages, between-group differences were compared according to demographic and baseline variables and are shown in Tables 4.3 (continuous variables) and 4.4 (categorical variables), along with statistical significance.

Table 4.3*Statistical outcomes for continuous baseline variables by care package*

Baseline Variable	Care Package	N	M	SD	Range	ANOVA
Age	Primary/Community	54	19.63	2.67	9	p = 0.05
	Specialist	84	19.07	2.54	9	
	Comprehensive	84	20.04	2.60	9	
TUS Structured Activity	Primary/Community	54	10.80	8.37	28.66	p = 0.95
	Specialist	84	10.82	8.68	29.03	
	Comprehensive	84	11.16	7.53	28.24	
	Primary/Community	51	8.53	6.81	24.00	p = 0.02

Baseline BCSS Negative	Specialist	82	9.49	6.74	23.00	
Self	Comprehensive	84	11.48	5.36	22.00	
Baseline BCSS Positive	Primary/Community	54	5.09	4.01	16.00	
Self	Specialist	80	5.65	5.25	24.00	p = 0.79
	Comprehensive	82	5.40	4.28	21.00	
Baseline BCSS Negative	Primary/Community	54	7.33	6.15	21.00	
Other	Specialist	83	8.41	6.57	24.00	p = 0.10
	Comprehensive	83	9.59	5.42	24.00	
Baseline BCSS Positive	Primary/Community	54	8.81	5.54	24.00	
Other	Specialist	83	9.36	6.09	24.00	p = 0.03
	Comprehensive	83	7.11	4.72	21.00	
TUS Direct Socialising	Primary/Community	54	10.0	18.5	83.1	
	Specialist	84	13.4	18.2	77	p = 0.28
	Comprehensive	82	15.2	19.6	105	
TUS Indirect Socialising	Primary/Community	54	21.1	24.5	84	
	Specialist	84	17.5	27.5	105	p = 0.52
	Comprehensive	84	15.9	22.1	85.5	
AAQ-II	Primary/Community	54	32.74	9.59	38.00	
	Specialist	84	35.64	9.54	38.00	p = 0.01
	Comprehensive	83	37.73	8.60	42.00	
SSI	Primary/Community	52	29.71	12.84	50.00	
	Specialist	80	30.95	14.19	61.00	p = 0.04
	Comprehensive	84	35.13	12.78	63.00	
BDI-II	Primary/Community	52	25.31	13.02	52.00	
	Specialist	80	29.91	12.81	56.00	P = <.001

Table 4.4

Statistical outcomes for categorical baseline variables by care package

Baseline Variable	Care Package	N	%	Chi-Square
Gender (female)	Primary/Community	16	29.6%	p = 0.01
	Specialist	32	38.1%	
	Comprehensive	46	54.8%	
Ethnicity (non-white)	Primary/Community	1	1.9%	p = 0.08
	Specialist	11	13.1%	
	Comprehensive	8	9.5%	
Comorbidities (>3)	Primary/Community	31	57.4%	p = 0.48
	Specialist	50	59.5%	
	Comprehensive	56	66.7%	
At-Risk Mental State	Primary/Community	21	38.9%	p = 0.002
	Specialist	39	46.4%	
	Comprehensive	59	70.2%	
HSRUQ Friends and Relatives socialising / companionship ("Yes")	Primary/Community	6	11.1%	p = 0.07
	Specialist	14	16.7%	
	Comprehensive	22	26.2%	

There were significant between-group differences highlighted on the following variables: age, gender, meeting ARMS criteria, BCSS Negative Self Schema, BCSS Positive Other Schema, AAQ-II, SSI, and BDI-II scores. There was a significant difference in Baseline Negative Self schema scores between the Primary/Community and Comprehensive care packages following the Hochberg GT2 test ($p = 0.026$) and Games-Howell test ($p = 0.027$). Hochberg's GT2 procedure showed a significant

difference in scores between the Comprehensive and Specialist groups for Baseline Positive Other schema ($p = 0.025$) and was similarly confirmed by the Games-Howell procedure ($p = 0.023$).

Identical tests were carried out for the three additional outcome measures that showed significant difference between care packages and these showed a significant difference in baseline AAQ-II ($p = 0.007$) and BDI ($p = <0.001$) scores between the Primary/Community and Comprehensive groups.

Only the Games-Howell procedure revealed a significant difference in baseline scores between the Primary/Community and Comprehensive care packages for the SSI ($p = 0.048$).

Due to the number of statistical tests conducted during the analysis of baseline differences and different packages of care, it was necessary to perform a multiple correction test to adjust the p-values and correct for the potential occurrence of false positives or Type 1 errors. Thus, the eight statistically significant p-values (0.000887, 0.002, 0.009, 0.009, 0.020, 0.025, 0.039 and 0.05) were corrected using the Benjamini Hochberg adjustment, due to the variation in sample sizes, adjusting the significance level to $p = 0.009$. Based on this, only gender, ARMS status, BDI and AAQ-II remained significant. Thus, the results suggest that there were more females and individuals meeting ARMS criteria in the comprehensive care package group. This group also scored higher on the BDI-II and the AAQ-II compared to the other care package groups.

Is there a difference in functioning outcomes on the TUS at 9 months between groups receiving different care packages?

Table 4.5

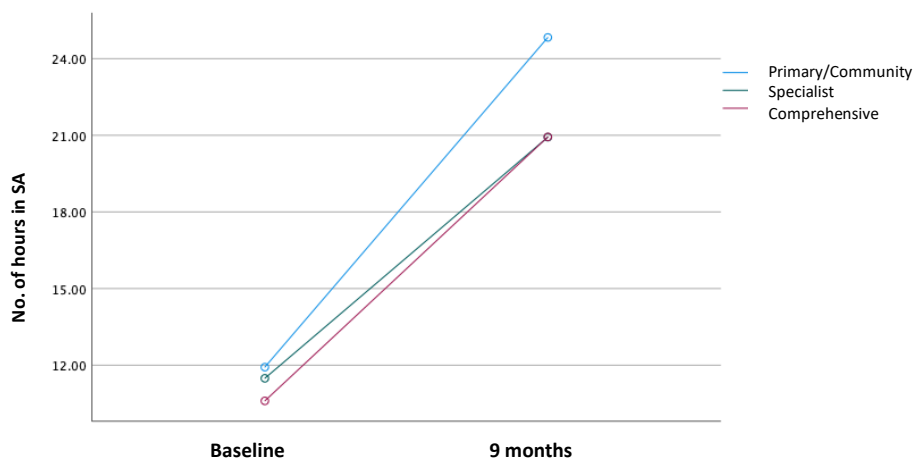
Time Use Structured Activity at baseline and nine months

Care Package	N	Baseline M	Baseline SD	Range	9m M	9m SD	Range
Primary/ Community	54	10.80	8.37	0.38 – 29.04	22.76	19.88	0.20 – 86.02
Specialist	84	10.82	8.68	0.05 – 29.08	20.54	14.72	0.37 – 65.35
Comprehensive	84	11.16	7.53	0.70 – 28.94	22.05	18.21	0.00 – 69.92

A one-way ANCOVA was performed to determine whether there was a significant difference between TUS scores at 9 months between the three care package groups, controlling for baseline TUS, gender, BDI, AAQ-II and ARMS status as covariates. There was no significant effect found between care package and TUS scores after controlling for these variables, $F(2, 219) = 0.183, p = 0.83$. This is shown graphically in Figure 4.2. Figure 4.3 further demonstrates the similarity of TUS scores between the care packages at nine months when adjusting for the variables mentioned above.

Figure 4.2

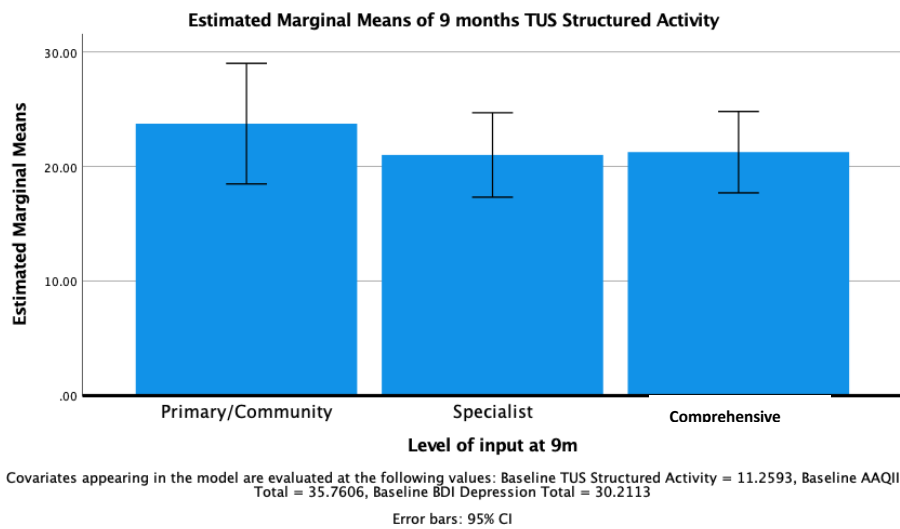
TUS scores for each care package at baseline and nine months.



Covariates appearing in the model are evaluated at the following values: Stratifier At Risk Mental States status = .4742, Baseline Gender = 1.5915, Baseline BDI Depression Total = 30.2113, Baseline AAQII Total = 35.7606

Figure 4.3

Care package differences at nine months.



DISCUSSION

The study aimed to explore variations in care received by young people as part of ESC using data from the PRODIGY trial. Between-group differences in baseline variables and outcomes were compared between three care packages (Primary/Community, Specialist and Comprehensive). Analyses revealed that there were statistically significant differences between groups receiving different care packages in terms of gender, ARMS status as well as scores on the BDI and AAQ-II. As such, those with more severe presentations at baseline appeared to receive more complex care. Functional outcomes at 9 months were comparable across the different care package groups.

The study confirmed substantial variation in ESC and thus the results emphasise the highly heterogeneous nature of care and support that young people with equally diverse characteristics and presentations receive. Tentative observations can be made about the type of young people that may present with certain levels of complexity and the degree of input they receive. For example, those receiving more intensive and multi-faceted care appear to be more severe in terms of their mental health presentation at baseline, with more participants who meet criteria for ARMS, have less psychological flexibility and show higher signs of depression receiving more complex care.

In terms of baseline characteristics, far fewer females appeared in the Primary/Community care package than in the other two care packages, where there was more of an even split. This fits with the most recent 'Adult Psychiatric Morbidity Survey', which showed no significant differences between men and women in terms of prevalence rates of more severe mental health difficulties, such as psychosis (McManus et al., 2016). However, the fact that females seem underrepresented within the Primary/Community care package may indicate that men may be less inclined to seek support outside of primary care. Men are less likely to access psychological therapies than women for example, where only 36% of referrals to NHS talking therapies are for men (Mental Health Foundation, 2021). Further, males tend to disengage from services at a higher rate than women (Kim et al., 2019) which may indicate why their presence declines as the level of care increases.

Those receiving more complex care had more severe scores on the BDI-II and AAQ-II and higher rates of ARMS. One explanation for this could be the presence of risk. Those with higher rates of ARMS may have been referred to early intervention in psychosis (EIP) services, for example, where access and waiting time standards aim to provide care for at least 60% of those at risk of developing psychosis or experiencing their first episode within two weeks of referral (NICE, 2016). This may also explain some of the higher instances of visits reported in the Comprehensive care group, which were over double the number those in the Primary/Community group received. However, this also highlights how other mental health difficulties or those with multiple comorbidities not meeting criteria for ARMS may not be offered a timely, multi-dimensional care package currently being offered to those who are at risk of developing psychosis. Indeed, the single disorder approach employed by existing models of care risks excluding many presentations of mental health disorders, such as anxiety and depression, that fail to meet criteria or that present as a mixed symptomology (Cross et al., 2014).

Another component concerning risk is suicide. The link between suicide and mental health problems is well known, with one study reporting that over 90% of people who died by suicide also experienced a psychiatric disorder (Lönnqvist, 2000) and another showing that one in three young

people seeking care have already experienced suicidal thoughts (Scott et al., 2012). Depression is strongly related to both suicidal ideation and attempt (Bradvik, 2018) and higher scores on the BDI-II may therefore also point to the elevation of suicide risk. Similarly, higher rates of psychological inflexibility from higher scores in the AAQ-II could indicate the presence of cognitive rigidity, which has also been shown to predict suicidality (Miranda et al., 2012). Risk assessment is a central component of current practice in mental health services, with some even noting a 'risk preoccupation' (Royal College of Psychiatrists; RCP, 2010). Findings may therefore represent a tendency for services to offer care based on elevated signs of risk.

It should be noted that the use of outcome tools such as the AAQ-II and BDI-II are prone to error and may be misleading, with some finding that changes in scores on self-administered depression questionnaires often differ from patients' own views of changes in their mood (Hobbs et al., 2021). Further, a study evaluating the psychometric properties of the AAQ-II suggested that certain items were more effective than others in discriminating among levels of psychological inflexibility and warned that a failure to attend to differences in the information contributed by certain items may lead to incorrect conclusions if the AAQ-II is simply summed and interpreted in a total score (Ong et al., 2019). Outcome measures such as these are widespread in mental health services (Collins, 2019). However, the measuring of symptoms in this way may neglect other important aspects of individuals' lives that may be contributing to their mental health difficulties and functioning.

Strengths and weaknesses

The analysis of the PRODIGY dataset afforded a cost-efficient way to make full use of a large amount of data that has already been collected to address potentially important new research questions, such as those addressed in the current study, and to provide a more nuanced assessment of the initial results. The current study sought to investigate what variables were associated with different packages of care young people received throughout the course of a 9 month period. To this end, the project achieved its aim in that tentative assumptions can be made regarding how mental

health care is offered in England, with those presenting with higher scores on these measures receiving more input and the positive and equitable outcomes suggesting this was a successful framework for allocating care.

In terms of limitations, the fact that all participants experienced severe mental health problems at baseline suggests there could be other variables not accounted for in this project that may be affecting the type of care individuals receive, with functional outcomes seemingly unaffected. For example, although not the objective of this project, other studies have highlighted other predictors of better or worse outcomes, such as emotional processing (Kee et al., 2003), neurocognition (Milev et al., 2005) and poor introspective accuracy (Silberstein & Harvey, 2019). In terms of methodological limitations, the lack of a power calculation to determine the optimal sample sizes for the study and to specify the probability of a type 2 error is missing. Retrospective analyses of power could therefore be conducted with a view to emphasise that the findings in the current study are a 'true' representation of the data.

Conclusions

Findings from the current study demonstrate substantial heterogeneity in what care young people were receiving even though all participants were experiencing severe and complex mental health difficulties and high levels of social disability. Further, the level of input an individual receives does not appear to affect the degree of social recovery they experience, with similar outcomes observed across all three care packages. This suggests that symptom severity and risk, rather than functioning, looks to be a marker of how much care individuals receive. Findings suggest that those with more complex needs received a more complex package of care and the positive and equitable outcomes suggested this was a successful framework for allocating care. This can not be conclusively determined from the existing data, however, and more research is needed to explore this, which could include using the care packages identified in this study to explore longer term trends by investigating outcomes at 15 and 24 months.

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CHAPTER FIVE

Discussion and Critical Evaluation

Discussion and Critical Evaluation

Overview

The thesis portfolio sought to identify possible care packages and interventions that may support the mental health of groups of young people that may present along two different points along a continuum of mental health difficulty. The systematic review explored a low-intensity, targeted intervention for anxiety in youth using a meta-analytic approach. Findings suggest that online MBIs could be useful for non-clinical populations of young people with mild self-reported signs of anxiety, with an overall small but statistically significant effect size reported at post-treatment and follow-up. The empirical project explored a large existing dataset of young people with complex and severe mental health difficulties and social functioning difficulties to explore variation in packages of care received and variables associated with this. Findings from the empirical paper suggest that there was substantial heterogeneity in the amount and type of care received, with functional outcomes comparable across three different care packages.

Although there is widespread agreement that current classification systems in psychiatry are insufficient for identifying illness and timely intervention (Cuthbert, 2014; Carpenter & van Os, 2011), this is a particular problem for young people. Current models of care do not take into account the heterogeneity and developmental complexity of youth generally and youth mental health more specifically. Current pathways impose barriers for access too, with receipt of care usually based on the attainment of rigid symptom thresholds and risk levels. However, it has been demonstrated that young people often present for care with significant functional impairment and distress, even though their symptoms are subsyndromal (Hamilton et al., 2011; Scott et al., 2009). Further, throughout the course of the youth age span (12-25 years), the evolution of syndromes may involve shifts across diagnostic boundaries and categorisation of psychological difficulties is complicated by frequent symptom overlap across diagnostic categories, high rates of clinical comorbidity, and developmental changes in symptom prevalence over time (Chu et al., 2016; Shah et al., 2020). This

means that individuals observed repeatedly during the development of a severe mental difficulty can acquire multiple diagnoses over time, which is sometimes perceived as comorbidity (Loftus et al., 2016) rather than the reality of heterotypic continuity (Lahey et al., 2014). As such, findings from both papers support the understanding of youth mental health as highly heterogeneous and the decisions around what care might best support whom highly individualised.

Systematic Review and meta-analysis findings

Overall, findings from the meta-analysis demonstrated statistically significant differences between the intervention and control arms in terms of the reduction in self-reported anxiety of mostly non-clinical youth, but that the pooled effect of these was small and effects reduced when interventions were compared to active controls. Online MBIs may be a useful intervention in the management of milder presentations of anxiety and provide an easily accessible, affordable method for young people who may not have yet reached clinical thresholds of existing mental health care systems or who may be on a waitlist. This is also important in making evidence-based treatment more accessible to those who are unable (e.g. due to mobility or geographic limitations) or unwilling (e.g. due to perceived stigmatization or low acceptance) to receive in-person treatment (Banos et al., 2022).

Empirical paper findings

The empirical paper aimed to explore what care packages young people received as part of ESC using data from the PRODIGY trial and to investigate whether packages of care were associated with outcomes, with a view to assist in the emerging discussions around helpful models of care for young people. Following the creation of three main care packages (Primary/Community, Specialist and Comprehensive), analyses revealed that those with more severe difficulties at baseline received more complex care packages, although mental health difficulties were poor across the sample as a whole. Social recovery was not found to be markedly dissimilar across the varying levels of care that participants received, suggesting that the level of social disability someone is experiencing does not

necessarily align with how much care they receive and that care was allocated according to a person's risk level and symptom severity.

Strengths and Limitations

Combined, the two papers shine a spotlight on two points along the 'continuum' of mental health difficulty and add further evidence to the growing literature surrounding how care is received and whether or not this care is effective for young people. The pooled effect size found in the systematic review aligned with similar studies of digital interventions for young people and provides tentative support for their modest effectiveness for anxiety, albeit only when compared with a passive control condition. The empirical study afforded an opportunity to conduct a secondary analysis of a large amount of data to explore different packages of care young people received. The project offered some evidence as to how care is allocated in England and provided important findings concerning the degree to which this care pertains to risk and symptom severity, rather than functioning.

In terms of limitations, the seeming ineffectiveness of online MBIs when compared to an active control, relatively short follow-up periods, variability in attrition and retention rates and lack of generalisability in terms of age and gender necessitates further study and a broader demographic scope. For the empirical project there appeared to be important questions that emerged from the data more than there were answers. Although not the objective of this empirical project, future research could explore potential predictors of outcomes, as these were seemingly unaffected by the level care that was received. There were also some methodological limitations for both papers, namely the absence of a second reviewer during study selection of the systematic review and a lack of power calculation to specify the probability of a type 2 error in the empirical project.

In addition, it is important to note that both the systematic review and empirical paper rely on self-reported measures of various symptomology in terms of outcomes. This is concerning, since outcomes such as these reveal only a snapshot of what an individuals' difficulties might be and may not align with the outcomes service users themselves desire (Collins, 2019). The limitations of self-

reported outcome measures are well documented (Odgers et al., 2020) and recent reviews have emphasised the importance of using multiple informants and methods when assessing mental health difficulty, especially given the vast ways it can present in individuals (Spence et al., 2018; Etkin et al., 2021). Moves towards a more formulation-based and holistic approach are happening, for example in how risk is assessed (Hawton et al., 2022). Future research could therefore endeavour to include a multi-dimensional perspective when evaluating outcomes which may in turn provide more robust evidence of their effectiveness, with self-reported outcome tools used as helpful additions rather than standalone indicators of the presence or absence of mental health difficulties.

Clinical implications

The systematic review explored the effectiveness of online MBIs. In terms of specific interventions, NHS Talking Therapies services currently offers disorder-specific interventions, usually cognitive behaviour therapy (CBT), for common mental health problems (NHS, 2018) and certainly CBT currently receives the most empirical support, for example for anxiety treatment in adults (Carpenter et al., 2018; Hofman & Smits, 2008). However, for those with co-occurring difficulties, which is the norm rather than the exception for many young people (McGrath et al., 2020), the prospects of recovery may be affected by the use of standard talking therapies that do not target all relevant symptoms. NICE currently only recommends MBIs for children and young people with mild depression (2019). Online MBIs could therefore be recommended for young people with milder presentations of mental health difficulty and who may be waiting for other therapies currently offered.

The use of digital technologies offers a scalable solution to facilitate multidimensional assessment at entry into care and for ongoing monitoring, which can promote a change in care plan that is tailored to the individual's needs (Boswell et al., 2015; Falconer et al., 2018), with young people then receiving more timely care that prevents the progression of illness and its associated risk of poorer outcomes (Iorfino et al., 2021). Indeed, this may also address difficulties associated with access, with a recent study by Reardon and colleagues (2020) highlighting that less than 3% of

families in a UK community study recall receiving evidence-based care. This, alongside widening access to waitlist interventions such as online MBIs and existing evidence-based interventions (Bertie & Hudson, 2021), may help plug the gap for mental health interventions across as broad a spectrum as possible for young people.

Developing care packages and treatment frameworks for youth mental health is no easy task and there are increasing calls to adopt a more “transdiagnostic” clinical staging approach – one that views the individual as located along a multidimensional and evolving continuum of illness – rather than a traditional narrow view based on the historical concept of risk for development of a single and categorically discrete adult-type “disorder” (McGorry & Nelson, 2019; Lahey et al., 2014). Disorders that, traditionally, represent the fully-formed, prototypical and relatively late-stage syndromes that are managed in adult health systems (McGorry et al., 2006). With its focus on two points of a continuum, the thesis portfolio suggests a flexible framework such as this could be useful for understanding and treating youth psychopathology, one that takes into account more complex phenomena, such as the fluctuating features, heterotypy, and impairment frequently seen in youth (Shah, 2019).

A clinical staging framework proposes that the emergence of earlier stages of mental health difficulties represents a modifiable risk factor to progression to later and more serious stages of a mental health difficulty, thereby changing the focus of the clinician from treating the current episode to being mindful of the longer-term trajectory of illness (Cross et al., 2014). This includes the potential to predict the onset of new clinical and functional outcomes, including multidimensional factors, to justify the early allocation of more intense and specific interventions for those at greater risk, as evidenced by Capon and colleagues (2022). Clinical stage may therefore be a key marker to assist clinicians in identifying those with underlying risk with the aim of addressing subthreshold difficulties to prevent them from becoming full threshold problems and to adjust the interventions based on severity (Capon et al., 2022).

The theoretical utility of a staging model, particularly if adopted in youth primary care services, has been recently outlined as a promising step towards better identification and treatment of disorders (Patel et al., 2018; Raballo et al., 2017; Van Os et al., 2023). Indeed, significant delays in receiving care have been shown to be attributable to the reduced ability of services to rapidly deliver specialist mental healthcare for youth in need after a first primary care consultation (Fusar-Poli, 2019). As such, some have argued that if the available treatments were reconfigured and assembled into a practical therapeutic toolbox for use in primary care settings, where most people are already seeking help and where they would receive their treatment, prospects for recovery could be greatly improved (Perez & Jones, 2021). Gender differences in help seeking may also be relevant here, in that the empirical project highlights that young men may not seek help as much outside of primary care settings. Therefore, it would also be important to consider potential gender disparities in terms of how care is configured, promoted and ultimately accessed, particularly in primary care or community settings.

Conclusions

Findings from the two papers are pertinent to current trends regarding the prevalence of mental health problems in young people. Among people younger than 25 years old, mental health problems, especially anxiety and mood disorders, account for 45% of the global burden of disease (Gore et al., 2011). Further, 75% of adult-pattern mental disorders emerge by the age of 25 (Jones, 2013). With regards to the focus of the individual papers, over a lifetime, more than one in four people will experience an anxiety disorder with the majority of individuals experiencing clinically significant symptoms of anxiety before they reach adulthood (Hudson et al., 2019a,b; Kessler et al., 2007), and about 1% of the population will develop psychosis and schizophrenia (National Institute for Health and Care Excellence; NICE, 2014). Clearly, there is a global need to identify better models of care to meet the needs of young people with these mental health difficulties.

Shifts away from a traditional and diagnostically entrenched approach to mental health difficulties, that may focus too heavily on symptom severity and risk level, to a more flexible, multi-

dimensional approach may be advantageous. A clinical staging approach to youth mental health care may offer a way forward, with individuals placed on a continuum that enables clinicians to select more effective treatments, one of which could be alternative, digitally delivered therapies, with the ultimate aim of reducing the risk of progression to more severe forms of mental health difficulties and offering a multi-dimensional, personalised treatment based on clinical need (McGorry et al., 2006; Cross et al., 2014). Whatever model and treatment are selected, their aim should be to enable the identification and management of care needs that will enable all young people to strive towards a flourishing, rather than languishing, future.

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Appendices

Appendix A: Submission guidelines for 'Mindfulness' journal

Submission guidelines

Instructions for Authors

Editorial procedure

Double-blind peer review

This journal follows a double-blind reviewing procedure. This means that the author will remain anonymous to the reviewers throughout peer review. It is the responsibility of the author to anonymize the manuscript and any associated materials.

- Author names, affiliations and any other potentially identifying information should be removed from the manuscript text and any accompanying files (such as figures of supplementary material);
- A separate Title Page should be submitted, containing title, author names, affiliations, and the contact information of the corresponding author. Any acknowledgements, disclosures, or funding information should also be included on this page;
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Manuscript Submission

Manuscript Submission

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Methodology checklist: randomised controlled trials

Checklist

Study identification					
Include author, title, reference, year of publication					
Guideline topic:		Review question no:			
Checklist completed by:					
		Circle or highlight one option for each question			
A. Selection bias (systematic differences between the comparison groups)					
A1	An appropriate method of randomisation was used to allocate participants to treatment groups (which would have balanced any confounding factors equally across groups)	Yes	No	Unclear	N/A
A2	There was adequate concealment of allocation (such that investigators, clinicians and participants cannot influence enrolment or treatment allocation)	Yes	No	Unclear	N/A
A3	The groups were comparable at baseline, including all major confounding and prognostic factors	Yes	No	Unclear	N/A
Based on your answers to the above, in your opinion was selection bias present? If so, what is the likely direction of its effect?					
Low risk of bias Unclear/unknown risk High risk of bias					

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Likely direction of effect:					
B. Performance bias (systematic differences between groups in the care provided, apart from the intervention under investigation)					
B1	The comparison groups received the same care apart from the intervention(s) studied	Yes	No	Unclear	N/A
B2	Participants receiving care were kept 'blind' to treatment allocation	Yes	No	Unclear	N/A
B3	Individuals administering care were kept 'blind' to treatment allocation	Yes	No	Unclear	N/A
Based on your answers to the above, in your opinion was performance bias present? If so, what is the likely direction of its effect?					
Low risk of bias Unclear/unknown risk High risk of bias					
Likely direction of effect:					
C. Attrition bias (systematic differences between the comparison groups with respect to loss of participants)					

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The guidelines manual: appendices B-I

C1	All groups were followed up for an equal length of time (or analysis was adjusted to allow for differences in length of follow-up)	Yes	No	Unclear	N/A
C2	a. How many participants did not complete treatment in each group?				
	b. The groups were comparable for treatment completion (that is, there were no important or systematic differences between groups in terms of those who did not complete treatment)	Yes	No	Unclear	N/A
C3	a. For how many participants in each group were no outcome data available? .				
	b. The groups were comparable with respect to the availability of outcome data (that is, there were no important or systematic differences between groups in terms of those for whom outcome data were not available).	Yes	No	Unclear	N/A

Based on your answers to the above, in your opinion was attrition bias present? If so, what is the likely direction of its effect?

....

Low risk of bias Unclear/unknown risk High risk of bias

Likely direction of effect: .

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D. Detection bias (bias in how outcomes are ascertained, diagnosed or verified)					
D1	The study had an appropriate length of follow-up	Yes	No	Unclear	N/A
D2	The study used a precise definition of outcome	Yes	No	Unclear	N/A
D3	A valid and reliable method was used to determine the outcome	Yes	No	Unclear	N/A
D4	Investigators were kept 'blind' to participants' exposure to the intervention	Yes	No	Unclear	N/A
D5	Investigators were kept 'blind' to other important confounding and prognostic factors	Yes	No	Unclear	N/A
Based on your answers to the above, in your opinion was detection bias present? If so, what is the likely direction of its effect?					
....					
Low risk of bias Unclear/unknown risk High risk of bias					
Likely direction of effect: .					
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Notes on use of Methodology checklist: randomised controlled trials

The studies covered by this checklist are designed to answer questions about the relative effects of interventions such as drugs, psychological therapies, operations or placebos.

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Sections

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