Exploring the Efficacy of Brief, Single-Session Interventions to Promote Young People's Mental Health and Wellbeing

Jessica Theresa Ball *(Trainee Clinical Psychologist)*

Primary Supervisor: Dr Kenny Chiu *(Clinical Lecturer in Clinical Psychology)*

Secondary Supervisor: Professor Richard Meiser-Stedman *(Professor of Clinical Psychology)*

Doctorate in Clinical Psychology

University of East Anglia

Faculty of Medicine and Health Sciences

Date of submission: March 2024

Word Count: 23089

(excluding the title page, acknowledgements, table of contents, list of tables and figures, and appendices)

Candidate Registration Number: 100373501

It should also be acknowledged that some material throughout this thesis portfolio has been informed by or utilised from my ClinPsyD Thesis Proposal.

Abstract

Background

Children and young people's mental health is an area of concern worldwide. In the face of barriers such as long waits to access evidence-based treatment, perceived stigma, and a want to deal with difficulties themselves, single session interventions (SSIs) have arisen as one potential solution.

Method

A systematic review and meta-analysis were conducted to synthesise evidence of the efficacy of self-administered SSIs for youth mental health. An empirical study then explored the efficacy of an online growth mindset intervention.

Results

Meta-analyses of 19 studies found a small effect for anxiety symptoms (g = -0.22, 95% CI: -0.40, -0.04) with substantial heterogeneity (I^2 = 67%) and a wide prediction interval (-0.69, 0.25). Furthermore, there was a small effect for depressive symptoms (g = -0.12, 95% CI: -0.23, -0.01) with substantial heterogeneity (I^2 = 58%) and a wide prediction interval (-0.44, 0.20). The empirical study was pre-registered with ClinicalTrials.gov (NCT05676554) and recruited and randomised 104 young people aged 14-18 years old. At the four-week follow-up anxiety and depression symptoms were small (d = .07, [95% CI: -0.32, 0.47]). However, personality mindset yielded a significant large effect (p = .02, d = -.96, [95% CI: -1.87, -0.04]), but this was non-significant following Bonferroni correction for multiple comparisons. Case completer analysis resulted in similar observations.

Conclusions

The complementary projects explored the efficacy of SSIs for young people. The medium to large effect sizes for growth mindset interventions highlighted in the systematic review are consistent with findings from the empirical project. Taken together the research

suggest that SSIs can have positive effects on mental health and have contributed to the field of children and young people's mental health research. The projects have hopefully paved the way for future RCTs.

Table of Contents

List of Tables

List of Figures

List of Appendices

None

Appendices

Appendix A: The Association of Child and Adolescent Mental Health (ACAMH) Journal of Child Psychology and Psychiatry (JCPP) Author Guidelines

Acknowledgements

I firstly would like to thank all the young people who took part in my empirical project, since without them the project could not have happened. Thanks also to my supervisors, Dr Kenny Chiu, and Professor Richard Meiser-Stedman, who have guided me expertly throughout the thesis, and for their encouragement along the way. Further thanks to Kenny for his support with all things stats and teaching me the ways of R – it isn't as scary as I first thought!

To the friends I have made whilst on the course, who have been a tremendous support along the way, and I'll be forever thankful that this process brought us together. Special shoutout to Zoe for her collaboration on the systematic review and meta-analysis!

To my husband, Callum for his unwavering support and belief in my ability, throughout the doctorate (and pre-doctorate!) journey. I couldn't have done this without you.

Special mention also goes to my fur babies, Willow, and Fudge, for their endless distractions and cuddles and generally being the best fluffy co-workers, who deserve an honorary doctorate for the countless hours they put in.

Finally, there was a time I wasn't sure I would reach this point, but I dedicate this to you Grandad.

CHAPTER ONE: Introduction to Thesis Portfolio

Introduction to the Thesis Portfolio

Children and young people's mental health has been a focus of many agendas in the United Kingdom for many years now (NHS England, n.d), due to the rising numbers experiencing poor mental health. Over the last few years, the world has also experienced unprecedented challenges associated with the COVID-19 pandemic. Poor mental health can impact children's social and emotional development as they progress into adulthood (along with the associated economic burden of ill health and the knock-on societal effects). The negative impact on children and young people's mental health because of the COVID-19 pandemic is now also being seen (Kauhanen et al., 2022), and the longer-term effects such as an increased risk of depression and anxiety, subsequent to lack of social support from peers, change in family dynamics and stress associated with the pandemic (Fegert et al, 2020; Racine et al., 2021). During the pandemic mental health services also saw significant disruption and waiting lists are on the rise again (Byrne et al., 2021; Larsson et al., 2022). The latest NHS figures show that one in five young people aged 8-15 years old have a probable mental health disorder (NHS Digital, 2023), compared to one in six in previous years. The report also details that 26.8% of those young people cannot afford to access activities outside of education which may help improve overall wellbeing. Given the rising rates of mental health difficulties, coupled with the well documented barriers, there is a need to increase accessibility to interventions. Single session interventions (SSIs) present one way to potentially achieve this given their acceptability, scalability, and cost effectiveness (Schleider & Beidas, 2022). There have been lots more trialled in recent years that have varied in treatment design, content, method of access etc., leading to a need to evaluate.

Given this, Chapter Two describes a systematic review and meta-analysis of the currently available literature on self-administered SSIs. Chapter Three is the bridging chapter which

serves to link the systematic review and empirical study and highlights their complementary nature, briefly introducing the concept of "Growth Mindset".

Chapter Four details the results from the empirical project which was a randomised controlled trial (RCT) of a growth mindset SSI. The present study is a further stage of the development process of trialling the intervention and aims to resolve previous limitations following the feasibility study which concluded that a full-scale evaluation of the intervention was warranted (Perkins et al., 2021). The rationale for conducting an RCT is because it is considered to provide the most reliable evidence on the effectiveness of interventions, due to it minimising the risk of confounding variables and is known as the "gold standard" (Hariton & Locascio, 2018). The findings generated by RCTs are also likely to be closer to the true effect (Evans, 2013). For the present study, an RCT, especially one conducted online utilising a brief intervention, can potentially reach far more adolescents than the researchers could recruit through local schools and is not as costly as a usual RCT. It also mitigated some of the potential challenges of working with the education system that was present in the feasibility study.

Chapter Five details additional methodology for the empirical project, considered supplementary (due to the restrictions of journal word count) and not necessary to understand the findings of the project. Finally, Chapter Six details the critical review and discussion of the thesis portfolio as a whole.

References

Byrne, A., Barber, R., & Lim, C. H. (2021). Impact of the COVID-19 pandemic – a mental health service perspective. *Progress in Neurology and Psychiatry*, *25*(2), 27. https://doi.org/10.1002/pnp.708

Evans, D. (2003). Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions. *Journal of Clinical Nursing*, *12*(1), 77–84. https://doi.org/10.1046/j.1365-2702.2003.00662.x

Fegert, J. M., Vitiello, B., Plener, P. L., & Clemens, V. (2020). Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and Adolescent Psychiatry and Mental Health*, *14*(1). https://doi.org/10.1186/s13034-020-00329-3

Hariton, E., & Locascio, J. J. (2018). Randomised controlled trials - the gold standard for effectiveness research. *BJOG: An International Journal of Obstetrics & Gynaecology*, *125*(13), 1716. https://doi.org/10.1111/1471-0528.15199

Kauhanen, L., Yunus, W. M. a. W. M., Lempinen, L., Peltonen, K., Gyllenberg, D., Mishina, K., Gilbert, S., Bastola, K., Brown, J., & Sourander, A. (2022). A systematic review of the mental health changes of children and young people before and during the COVID-19 pandemic. *European Child & Adolescent Psychiatry*, *32*(6), 995–1013. https://doi.org/10.1007/s00787-022-02060-0

Larsson, P., Lloyd, R., Taberham, E., & Rosairo, M. (2022). An observational study on IAPT waiting times before, during and after the COVID-19 pandemic using descriptive time-series data. *Mental Health Review Journal*, *27*(4), 455–471. https://doi.org/10.1108/mhrj-04-2022-0023

NHS Digital (2023). *Mental Health of Children and Young People in England, 2023 - wave 4 follow up to the 2017 survey.* Retrieved February 14, 2024, from https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2023-wave-4-follow-up#resources

NHS England. (n.d.). *NHS England » Mental Health » Children and young people*. Retrieved January 28, 2024, from https://www.england.nhs.uk/mental-health/cyp/

Perkins, A. M., Bowers, G., Cassidy, J., Meiser-Stedman, R., & Pass, L. (2021). An enhanced psychological mindset intervention to promote adolescent wellbeing within educational settings: A feasibility randomized controlled trial. *Journal of Clinical Psychology*, *77*(4), 946–967. https://doi.org/10.1002/jclp.23104

Racine, N., McArthur, B. A., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19. *JAMA Pediatrics*, *175*(11), 1142. https://doi.org/10.1001/jamapediatrics.2021.2482

Schleider, J. L., & Beidas, R. S. (2022). Harnessing the Single-Session Intervention approach to promote scalable implementation of evidence-based practices in healthcare. *Frontiers in Health Services*, *2*. https://doi.org/10.3389/frhs.2022.997406

CHAPTER TWO: Systematic Review and Meta-analysis

Self-Administered Single Session Interventions for Mental Health in Young People: A Systematic Review and Meta-Analysis

Authors:

Jessica Ball [a]

Zoe Thompson [a]

Professor Richard Meiser-Stedman [a]

Dr Kenny Chiu [a]

Prepared for submission to The Journal of Child Psychology and Psychiatry

(See Appendix A for Author Guidelines)

Word count: 3828

[a]Department of Clinical Psychology and Psychological Therapies, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, United Kingdom

Abstract

Background

Children and young people's mental health is an area of concern worldwide, especially given the rates in which young people are reporting to experience mental health difficulties is on the rise. In the face of barriers such as long waits to access evidence-based treatment, perceived stigma, and a want to deal with difficulties themselves, self-administered single session interventions (SSIs) have arisen as one potential solution. This systematic review and meta-analysis aim is to synthesise evidence of the efficacy of self-administered SSIs for youth mental health.

Methods

This meta-analytic review was pre-registered on PROSPERO (CRD42023457030). A systematic search of randomised controlled trials (RCTs) from the Cochrane CENTRAL Trial Register, EMBASE, MEDLINE and PsychINFO databases was conducted.

Results

Following screening 22 RCTs met inclusion criteria (5452 participants). None of the studies were rated as having a high risk of bias, 19 of which were meta-analysed. The included studies exhibited either low risk of bias or some concerns, none were rated as high risk. We found a small effect for anxiety symptoms (g = -0.22, 95% CI: -0.40, -0.04) with substantial heterogeneity (I^2 = 67%) and a wide prediction interval (-0.69, 0.25). Furthermore, there was a small effect for depressive symptoms (g = -0.12, 95% CI: -0.23, -0.01) with substantial heterogeneity (I^2 = 58%) and a wide prediction interval (-0.44, 0.20). Studies not included in the quantitative synthesis were outlined, highlighting significant medium to large effects for psychological flexibility.

Conclusions

The findings suggest that, on average, self-administered SSIs are efficacious in reducing anxiety and depressive symptoms. However, future studies may not consistently detect a significant effect, given their wide prediction intervals. Future research should focus on testing the long-lasting effects of SSIs, as well as for whom they may work best for.

Keywords: Anxiety; Depression; Young People; Mental Health; Self-administered; Single-Session Interventions

Introduction

Increasing timely access to mental health support for young people has become a priority due to the rapidly growing number who experience poor mental health (Edbrooke-Childs & Deighton, 2020; Racine et al., 2021) especially following the COVID-19 pandemic (Fegert et al, 2020; Racine et al., 2021). However, there are a number of barriers, including long waits and limited-service provision (Davies, 2023). In addition, patients have identified barriers relating to stigma and discrimination (Tunks et al., 2023). Specifically, young people have reported failing to seek help from professionals due to their preference to deal with difficulties themselves, sense of embarrassment, and poor mental health literacy, as well as fears relating to meeting a new person, lack of time and transportation barriers (Gulliver et al., 2010; Radez et al., 2020).

One potential solution to meet public demand is Single Session Interventions (SSIs). SSIs are defined as an intervention that intentionally involves only one encounter, on any platform (in person in a clinic, digitally, via the telephone, chatbot etc.,), and can be self- (including parent or school led) or therapist- administered, informed by certain theoretical approaches (Schleider & Weisz, 2017). A review of 50 Randomised Controlled Trials (RCTs) published by December 2015 found evidence of mental health symptoms relief, with largest effect sizes seen for the reduction in anxiety symptoms and conduct problems, with no significant statistical differences in efficacy between self- and therapist-administered interventions (Schleider & Weisz, 2017). A more recent meta-analysis conducted by Wang et al (2023) found that internet-based self-help interventions were more effective than control groups, with small-to-moderate effects for anxiety and depression.

Self-administered SSIs have been recognised as important to promote individual's self-efficacy, motivation, and engagement in their health care (World Health Organisation [WHO], 2022). More RCTs of self-administered SSIs have been published in recent years

(Schleider et al., 2019), providing a unique opportunity to further our understanding of their efficacy. As such, this review is designed to systematically review and synthesise current evidence from RCTs of self-administered SSIs for young people's mental health.

Method

Study Registration

This review was carried out in accordance with the recommended guidelines for conducting systematic reviews (Page et al., 2021), with the study protocol registered on PROPSERO (CRD42023457030). The PRISMA checklist is available in Appendix 2.1.

Inclusion and Exclusion Criteria

To be eligible for this review, studies must comprise the following: 1) the study involves a SSI; 2) the study aims to improve psychological or emotional outcomes (e.g. anxiety, depression, externalising behaviours, eating disorders, substance abuse); 3) the study outcome is captured by a validated quantitative measure of psychological or emotional outcomes; 4) the study intervention is not facilitated or delivered by a therapist; 5) the study intervention is not delivered by school staff or a parent; 6) the study is an RCT (e.g. individually randomised trials, cluster randomised trials and feasibility RCTs); 7) the study is published in a peer-reviewed journal written in English; 8) the study recruited participants aged up to 25 years old. This age range was chosen given research evidencing that the adolescent brain continues developing until 25 years old (Arain et al, 2013).

Search Strategy

The Cochrane CENTRAL Trial Register, EMBASE, MEDLINE and PsychINFO databases were searched from first published article to 20 September 2023, using the following search terms: ("single-session" OR "single session" OR "one session" OR "one-session" OR "brief intervention") AND (anxi* OR depress* OR "worry" OR "low mood" OR "mental illness" OR "mental disorder" or "wellbeing" or emotion* OR "psychiatric illness"

OR phobi* OR panic OR sad* OR shame OR guilt OR "mental health") AND (adolesce* OR teen* OR student* OR pupil* OR "young adults" OR youth* OR "young people" OR “young person” OR minors OR child* OR paediatric OR pediatric) AND ("RCT” OR randomi?ed OR “controlled" OR "feasibility" OR "pilot"). Reference lists of previous similar reviews were screened to identify other potentially relevant studies.

Data Extraction

The following information was extracted by the first author (JB): author, publication year, country, journal, sample size, sex, ethnicity, primary target problem, intervention and control group type, follow-up length, intervention and control group length, study type (treatment [sample is selected based on clinical diagnosis], prevention [selected a targeted sample based on elevated scoring on screening measures but no diagnosis, and young people at risk of developing disorders e.g., young people who have experienced loneliness but do not have a diagnoses of a mental health condition]” or universal [everyone was eligible, regardless of a clinical/diagnostic status]), mode of delivery, means and standard deviations of mental health outcome of interest. Correspondence authors were contacted for more information when necessary.

Risk of Bias Assessment

Study quality was assessed using the Cochrane risk-of-bias tool (RoB-2; Sterne et al, 2019). The RoB-2 comprises six domains: selection of reported result, measurement of outcome, missing outcome data, deviations from intended intervention, randomisation process and overall bias rating. Each domain contains a series of signalling questions to elicit features relevant to risk of bias within each trial. The tool produces an overall risk of bias rating (“low risk,” “some concerns, “high risk”). Each included study was evaluated independently by the first author (JB) and second author (ZT). Where there were discrepancies, an agreement was reached through discussion.

Data Analysis Plan

A meta-analysis was conducted when there were five or more studies with data relating to a certain mental health outcome. The Cochrane Handbook (Higgins et al., 2021) states you can perform a meta-analysis with a small number of studies, but that results should be interpreted with caution therefore a minimum five was decided to be conservative, ensure robustness and allow for meaningful and reliable analysis (Lensen, 2023; Bornstein et al., 2009). When there were less than five studies on a certain mental health outcome, results were described qualitatively. The first recorded follow-up data point was extracted for meta-analysis to limit variation in follow-up lengths. A negative effect size indicates that participants receiving the SSI scored lower on the mental health outcomes, compared to the control condition. Hedges' g was calculated for each study at post-intervention and effect sizes were interpreted according to Cohen (2013) whereby 0.2 is considered a small effect, 0.5 a moderate effect and 0.8 a large effect. Effect sizes were pooled using the metafor package in R version 4.3.2 (R Core Team, 2021; Viechtbauer, 2010). A random effects model was applied as we anticipated a high level of heterogeneity across studies due to different study designs (Dettori et al., 2022).

The I^2 statistic was used to assess degree of heterogeneity in effect sizes across studies. A value of 25% was regarded as low, 50% as moderate, and greater than 75% was indicative of substantial heterogeneity (Higgins & Thompson, 2002). Prediction intervals were reported to predict the range in which future studies effect sizes will fall (Borenstein, 2023). A moderator analysis was performed to evaluate effect size and heterogeneity for different intervention types. Leave-one-out analysis was conducted to examine changes in effect sizes when each study was omitted in turn. Evidence of publication bias was assessed using Egger's regression test and visual inspection of funnel plots (see Appendix 2.2 & 2.3).

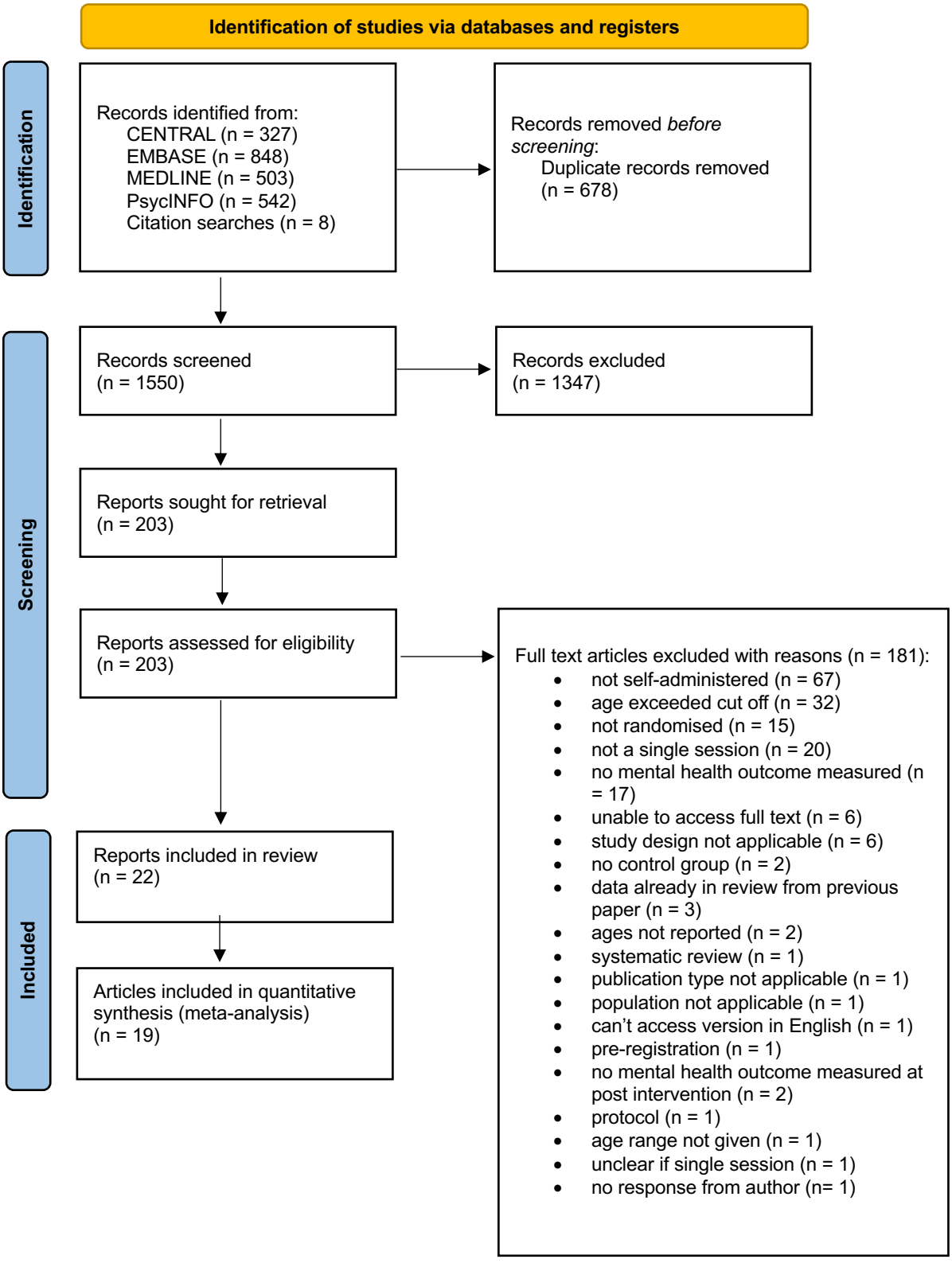
If asymmetry was detected, the trim-and-fill method was used to adjust for possible bias (Duval & Tweedie, 2000).

Results

Study Selection and Inclusion

The initial search yielded 1550 results after deduplication. The first author (JB) screened titles and abstracts on Rayyan (Ouzzani et al., 2016) for eligibility and identified 203 for full text screening. The second author (ZT) independently reviewed a random sample, and there was 100% agreement rate on all articles reviewed by both. A total number of 22 studies were deemed eligible for inclusion (see Figure 2.1 for study selection procedure).

Figure 2.1 PRISMA Flow-chart (Study Selection Process)



Characteristics of included studies

Study characteristics and participant demographic details are summarised in Table 2.1, and characteristics of SSIs and control conditions are presented in Table 2.2. Of the 22 studies, 15 included a measure of depression symptoms, 11 for anxiety symptoms, two explored psychological flexibility, and one respectively for substance use, mental wellbeing and eating disorders.

The total number of participants in included studies was 5452, with sample sizes ranging from 28 to 2452. The ages ranged from 8 to 25 years old. The year of publication ranged from 2005 to 2023. Most of the studies were conducted in the USA; only one study was conducted in a low-income country. The average length of the intervention delivery ranged from 1 minute to 45 minutes. The dominant gender was female (approximately 70%), and most studies participants reported their ethnicity as majority White.

Thirteen studies were coded as being aimed at prevention (they recruited a targeted sample), five at treatment and four at universal prevention (whereby everyone was eligible to take part). The SSIs implemented a range of approaches from motivational interviewing, psychoeducation, and cognitive bias modification. In terms of control conditions this varied from “waitlist/no intervention controls” and “care as usual” (five studies employed this method), to active controls with placebos that matched the SSI in length (17 studies). Most studies were conducted online or on computers (either in the laboratory, at home or school) with only one reporting to be paper based. Follow up length also varied among studies, from immediately post-treatment to 12 months.

Table 2.1 Characteristics of Included Studies and Demographics Details of Participants

Author (Year)	Sample Size	Age: Mean (SD)	Ethnicity (% White)	Gender (% Female)	Primary Target Problem	Relevant Outcome Measure(s)	Location
Armitage et al. (2014)	67	17.09 (0.38)	90	55.2	Substance use	TFLB	UK
Boutelle et al. (2014)	29	10.83 (1.28)	55.2	44	Eating disorders	EAH	USA
Cohen et al. (2023)	54	20.48 (1.81)	NR	46.3	Hopelessness	BHS-4	USA
Dobias et al. (2021)	565	14.95 (0.98)	75.04	66.37	Self-injurious Thoughts and Behaviours	SITBI-R	USA
Fitzpatrick et al. (2005)	110	19.02 (1.21)	75	54.55	Mood/Depression	BDI	USA
Fu et al. (2013)	28	14.5 (1.75)	100% Han Chinese	53.6	Mood/Depression	PANAS-CN	China
Fu et al. (2015)	73	14.06 (1.61)	NR	49	Mood/Depression	PANAS-CN	China
Howard et al. (2018)	119	median 16 years	NR	47	Depression	SSDS	Australia
Norr et al. (2017)	54	19.09 (1.59)	80.0	85.5	Anxiety	ASI-3	USA
Osborn et al. (2020)	103	15.54 (1.22)	Kenyan sample	64.08	Anxiety and depression	PHQ-8; GAD-7	Africa
Papini et al. (2022)	159	19.27 (1.42)	58.4	73.6	Anxiety sensitivity	SSASI	USA
Perkins et al. (2021)	80	16.63 (0.56)	81	84	Anxiety; Depression; Psychological Flexibility	RCADS-25; IPTQ	UK
Ranney et al. (2017)	433	16.8 (1.3)	57	57	Depression	CESD-10	USA
Rheingold et al. (2013)	69	8.32 (3.4)	40.6	63.8	Anxiety	STAI-C	USA
Riddleston et al. (2023)	56	21.57 (1.97)	30.36	83.93	Loneliness	UCLA-LS	UK
Schleider & Weisz (2016)	96	13.32 (1.14)	73	55	Psychological Flexibility	IPTQ	USA

Schleider & Weisz (2018)	96	13.32 (1.14)	73	55	Depression & Anxiety	CDI; SCARED-C	USA
Schleider et al. (2020)	222	15.2 (0.5)	38	100	Internalising and externalising symptoms	SMFQ; SPIN	USA
Schleider et al. (2022)	2452	NR	66.56	88.09	Depression	CDI-SF; GAD 7	USA
Shapiro et al. (2023)	84	18.74 (1.02)	82.1	91.7	Anxiety and Depression	BDI-2; BAI	USA
Shen et al. (2023)	538	15.06 (0.97)	48.14	Assigned female sex at birth 89.22%, identifies as Woman/Girl 36.62 %	Anxiety and Depression (minority stress)	CDI; GAD-7	USA
Short & Schmidt (2020)	61	19.43 (2.04)	NR	NR	Anxiety and Insomnia	BAI	USA

TFLB = The timeline follow back; EAH = Eating in the absence of hunger; BHS-4 = Beck Hopelessness Scale 4 Item; SITBI-R = Self-Injurious Thoughts and Behaviours; BDI = Beck Depression Inventory; PANAS-CN = Positive and Negative Affect Scales for children negative scale; SSDS = Self-Stigma for Depression Scale; ASI-3 = Anxiety Sensitivity Index 3; PHQ-8 = Patient Health Questionnaire– 8; GAD-7 = Generalized Anxiety Disorder Screener–7; SSASI = Short Scale Anxiety Sensitivity Index; RCADS-25 = Revised Child Anxiety & depression Scale, 25 item; CESD-10 = Centre of Epidemiologic Studies Depression Scale, 10-item version; STAI-C = State Trait Anxiety Inventory for Children; UCLA-LS = UCLA Loneliness Scale; IPTQ = Implicit Personality Theory Questionnaire; CDI = Children's Depression Inventory; SCARED-C = Screen for Child Anxiety and Related Disorders-Child version; SMFQ = Short Mood and Feelings Questionnaire; SPIN = Social Phobia Inventory; CDI-SF = Children's Depression Inventory Short Form; BDI-2 = Beck Depression Inventory 2; BAI = Beck Anxiety Inventory; NR = Not Reported

Note: Schleider and Weisz (2016) and 2018 reported on the same study but at different follow up points. They only reported psychological flexibility in 2016, and in 2018 they presented data from a follow-up whereby anxiety and depression were both then reported as outcome measures, therefore have been included in the summary table twice even though sample is the same.

Table 2.2 Characteristics of Interventions (and Controls)

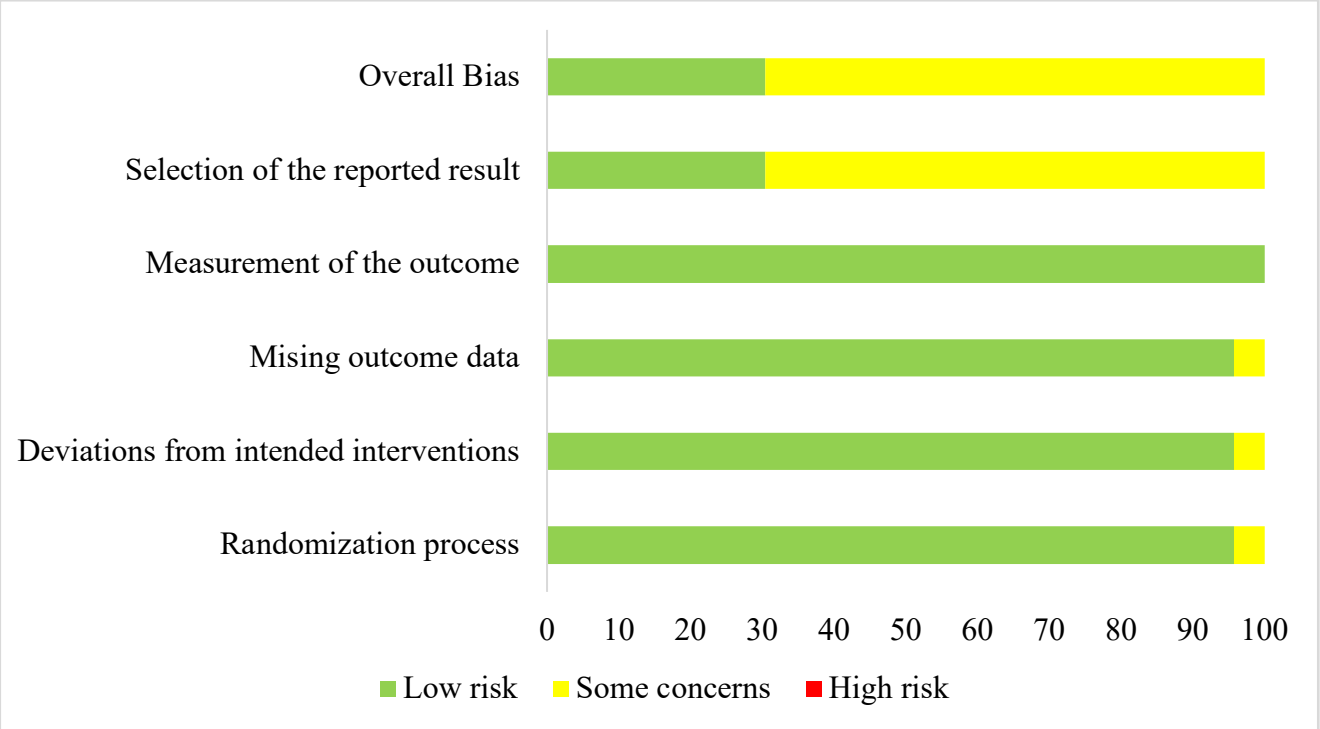
Study	Intervention	Control	Study Type	SSI Length (mins)	Control Length (mins)	Follow Up Length (weeks)
Armitage et al. (2014)	Self-affirming	Control placebo	Prev	5	NR	8
Boutelle et al. (2014)	Attention modification	Attention control	Tx	10	NR	0
Cohen et al. (2023)	Enhanced crisis response SSI	Control	Prev	1	1	0
Dobias et al. (2021)	P-E (PROJECT SAVE)	Placebo ST	Tx	30	30	12
Fitzpatrick et al. (2005)	P-E	No treatment	Tx	35	35	0, 1, 2, 3
Fu et al. (2013)	CBM-I	Neutral control	Tx	10	NR	0
Fu et al. (2015)	CBM-I	Control placebo	Prev	10	NR	0
Howard et al. (2018)	P-E (biological focus)	Neutral control	Univ Prev	40	40	0
Norr et al. (2017)	P-E (CAST)	PHET	Prev	35	NR	0
Osborn et al. (2020)	Shamiri (thrive)	Study skills	Univ Prev	60	NR	2
Papini et al. (2022)	P-E CBT based	NR	Tx	60	NR	2
Perkins et al. (2021)	Growth mindset	WL	Univ Prev	30	0	0, 4, 8
Ranney et al. (2017)	SafER Teens Brief Intervention (computerised) MI	Therapist delivered SafER Teens and a control group	Prev	30–45	NR	13, 26, 52
Rheingold et al. (2013)	P-E video	Standard care information	Prev	20	N/A	0, 6
Riddleston et al. (2023)	CBM-I	Active control	Prev	NR	NR	NR
Schleider et al. (2016)	Growth mindset	ST	Prev	20–30	20–30	0
Schleider et al. (2018)	Growth mindset	ST	Prev	20–30	20–30	39
Schleider et al. (2020)	Growth mindset (Growing minds)	Active control (HEART)	Univ Prev	45	NR	17
Schleider et al. (2022)	Growth mindset (Project Personality) and Behavioural Activation (Project ABC)	Psychotherapy placebo/P-E (Sharing Feelings)	Prev	NR	NR	0, 13
Shapiro et al. (2023)	IoU focused P-E	Health focused P-E	Prev	50	50	0, 1, 4
Shen et al. (2023)	Project RISE	Active information only	Prev	20–30	0	0, 2
Short et al. (2020)	The FSET Anxiety and Sleep Treatment (FAST)	Physical Health Education Treatment (PHET)	Prev	45	45	1, 4

CBM-I = Cognitive Bias Modification; CAST = Computerised Anxiety Sensitivity Treatment; CBT = Cognitive Behavioural Therapy; IoU=Intolerance of Uncertainty; MI = Motivational Interviewing; PHET = Physical Health Education Training; ST=Supportive Therapy; NR = Not reported; P-E = Psychoeducation; Tx = Treatment; Prev = Prevention; Univ Prev = Universal Prevention

Risk of bias

No studies were considered to be at high risk of bias (see Figure 2.2 for graphical representation, for breakdown see Appendix 2.4). Most of the studies did not pre-register their trials. Other factors that affected the risk of bias include: 1) one study reported their control and intervention groups to have significantly different ages; 2) 11 studies reported to have less than 95% data at follow-up, however all bar one of these studies handled missing data appropriately to reduce bias according to the Cochrane RoB-2 tool; 3) one study (Howard et al., 2018) did not explicitly state how missing data was handled and therefore scored some concerns on this domain; 4) finally, it was unclear in three studies whether participants were blinded to the experimental condition.

Figure 2.2 Proportion (%) of studies rated low, some concerns or high risk of bias

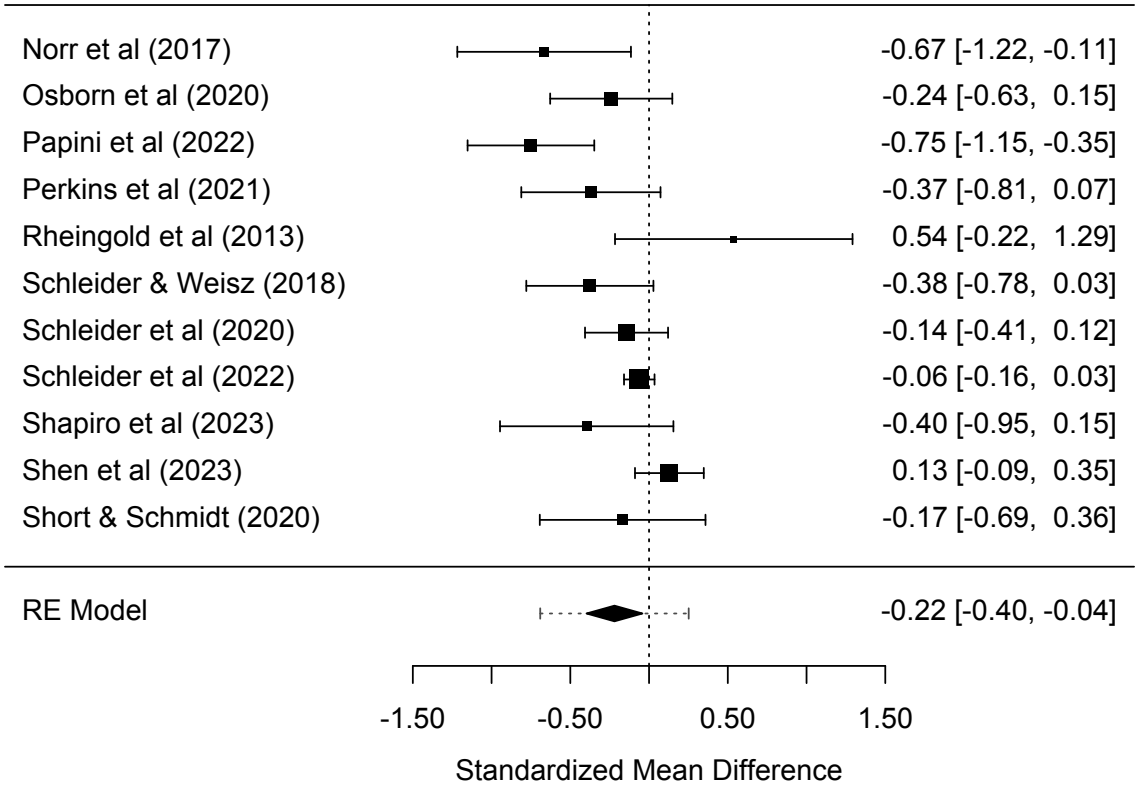


Meta-analysis of effects of self-administered SSIs on anxiety and depression

Anxiety

The weighted mean post-treatment Hedges'g for the 11 studies that reported an anxiety outcome was -0.22, 95% CI [-0.40, -0.04] (see figure 2.3). The prediction interval ranged from -0.69 to 0.25, meaning that effect sizes in future studies could range from positive benefit to no effect. In the analysis for the anxiety outcomes there was significant substantial heterogeneity (Q(10) = 26.60, p = .003, I^2 = 67.62%).

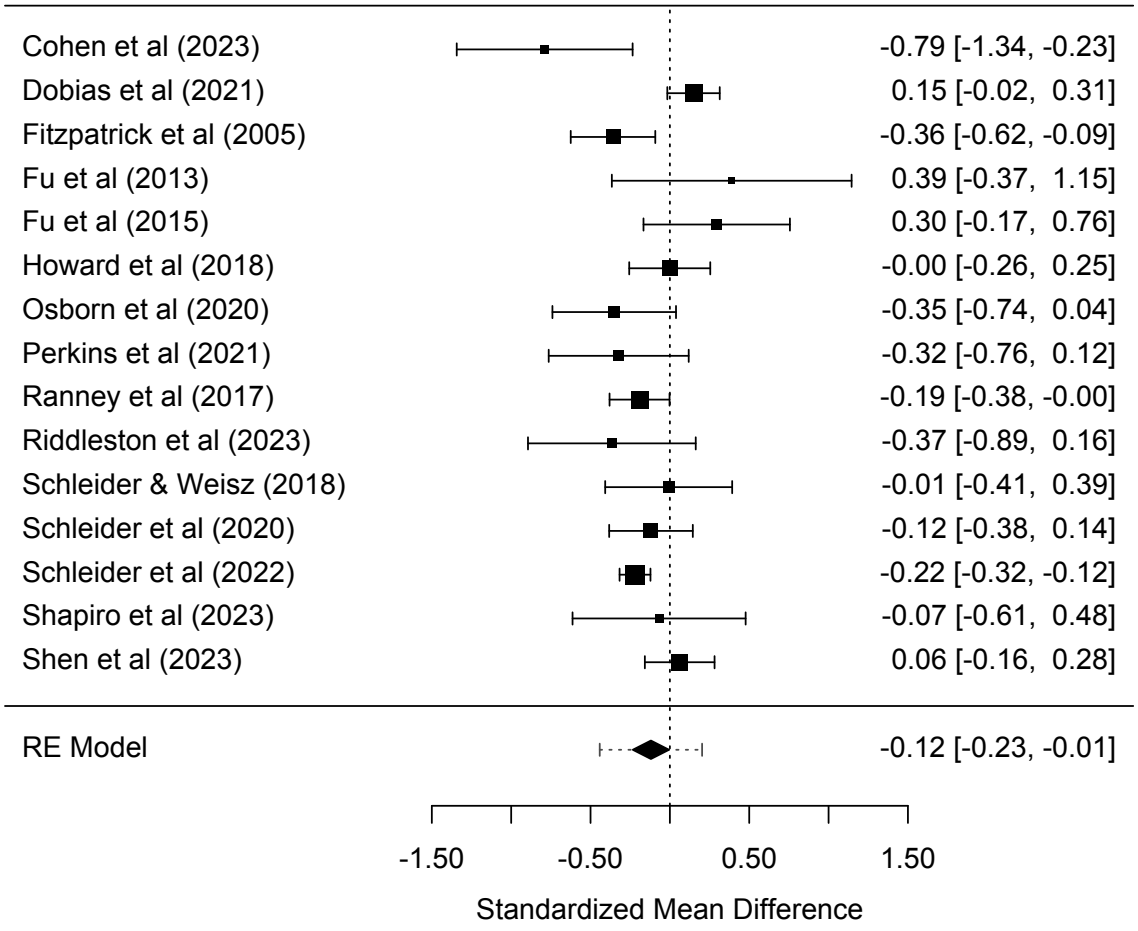
Figure 2.3 Forest Plot of Symptoms of Anxiety Effect Sizes



Depression

The weighted mean post-treatment Hedges'g for the 15 studies that reported a depression outcome was -0.12, with a 95% confidence interval of -0.23 to -0.01 (see Figure 2.4). Prediction intervals ranged from -0.44 to 0.20, meaning effect sizes in future studies could range from positive benefit to no effect. There was also significant substantial heterogeneity for depression outcomes (Q(14) = 35.02, p = .002, I^2 = 58.34%).

Figure 2.4 Forest Plot for symptoms of Depression Effect Sizes



Note: all participants are independent samples regardless of study/author

Subgroup analysis

A subgroup analyses was run to compare the mean effect sizes for studies whose interventions type had been coded as treatment, prevention or universal. The results suggest no evidence of differential effects across subgroups based on intervention type for either anxiety or depression symptoms (see Table 2.3). Further analysis on active versus passive control conditions could not be explored due to varying detail provided amongst studies reducing ability to sufficiently code them, which limited ability for moderation analysis.

Table 2.3 Subgroup Analyses of Intervention Type

	k	SMD	95%CI	p-value	I^2 (Q with p-value)	95% PI
Anxiety						
Prevention	7	-0.13	-0.35, 0.09	.237	64.87% (13.87, .031)	-0.60, 0.34
Treatment	1	-0.75	-1.15, -0.35	.000	0% (0, 1)	-1.15, -0.35
Universal	3	-0.12	-0.40, -0.02	.034	0% (0.77, .680)	-0.4, -0.02
Depression						
Prevention	8	-0.12	-0.30, 0.01	.075	53.03% (15.32, .032)	-0.45, 0.18
Treatment	3	-0.00	-0.42, 0.41	.986	81.18% (11.01, .004)	-0.74, 0.74
Universal	4	-0.12	-0.29, 0.02	.083	0% (2.95, .400)	-0.29, 0.02

k = number of studies; SMD = standardised mean difference; CI = confidence interval; PI = prediction interval

Publication bias

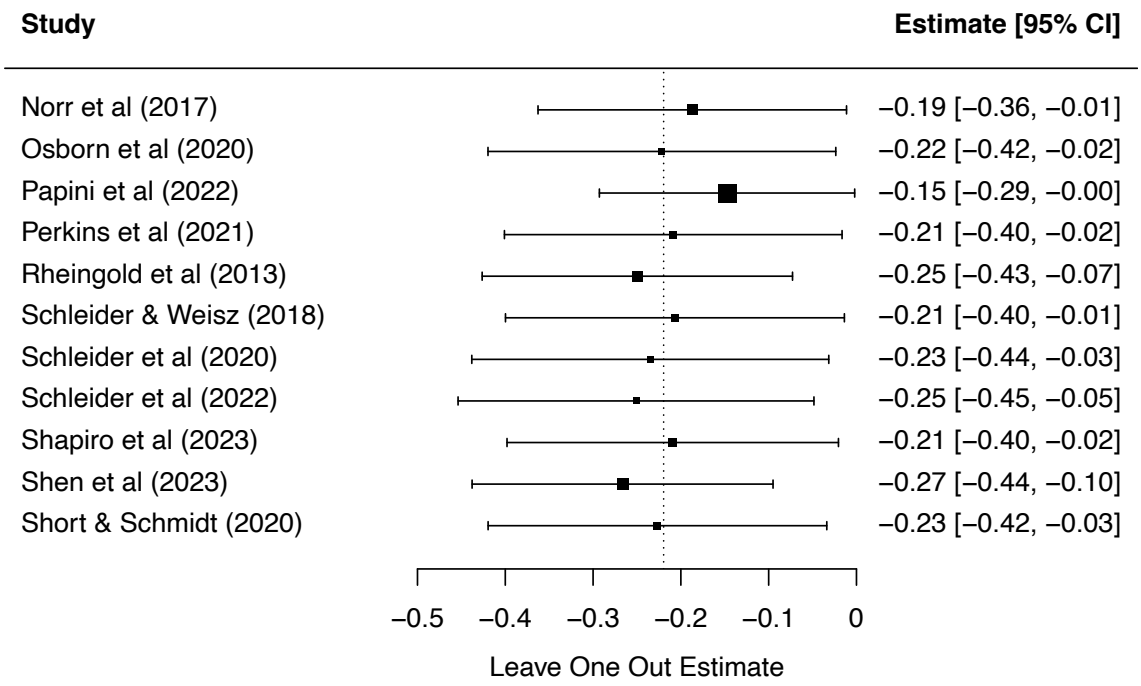
Visual inspections of funnel plots (Appendix 2.2) indicated evidence of symmetry for depression, and this was supported by the results of the Egger's regression test for funnel plot asymmetry which was non-significant (z = -0.357, p = .721), indicating the likelihood that there is no publication bias present. However, asymmetry was observed when inspecting funnel plots for the anxiety outcomes (Appendix 2.3), although Egger's test was non-significant (z = -0.949, p = .343), suggesting no potential publication bias.

Sensitivity analysis

A sensitivity analysis where the high risk of bias studies would be removed was not possible as all studies were rated as either low or some concerns, and there were an insufficient number of studies to only explore low risk. For anxiety symptoms, taking out studies by Rheingold et al. (2013), Schleider et al. (2022) and Shen et al. (2023) slightly increased the overall effect size (see Figure 2.5), but for depression the results were consistent (Appendix 2.5) and there was no real change to effect sizes. For anxiety

symptoms, removing one outlier (Rheingold et al., 2013) did not affect the statistical significance of heterogeneity test, Q(df = 9) = 23.72, p = .005.

Figure 2.5 Leave-One-Out Sensitivity Analysis for Anxiety Outcomes



Narrative synthesis

Substance Use

One study was identified that evaluated the effect of SSIs on substance use. A small effect (g = -0.19 [95% CI: -0.67, 0.29]) was found (Armitage et al., 2014). This study was the only one that examined self-affirming (motivation to defend sense of self-worth [Steele, 1988]) SSI tool, and reported a significant reduction in alcohol consumption in the intervention group compared to control ($p < .05$).

Psychological Flexibility

Two studies used a measure of psychological flexibility. A medium and large effect sizes were reported, g = -0.54 [95% CI: -0.97, -0.11] (Schleider & Weisz, 2016), g = -0.67 [95% CI: -1.12, -0.22] (Perkins et al., 2020). Studies were rated as some concerns and low

risk of bias respectively. Both studies theoretical underpinning for their SSI was growth mindset, with Perkins et al (2020) also incorporating elements of third wave cognitive behavioural therapy. Null hypothesis significance testing was not used in Perkins et al (2020) due the nature of being feasibility trial (and underpowered), however Schleider & Weisz, (2016) reported significant improvements in psychological flexibility ($p < .001$) as a result of their SSI.

Mental wellbeing

One study explored the effects of SSIs on mental wellbeing and was therefore not pooled but found a small effect $g = 0.19$ [95% CI: -0.20, 0.57] (Osborn et al., 2020). No significant findings were reported for wellbeing following their SSI. This study was also rated as low risk of bias.

Eating Disorder Symptoms

Finally, Boutelle et al (2014) was the only study included that investigates SSIs on eating disorder symptoms, finding a small effect $g = -0.09$ [95% CI: -0.81, 0.64]. They did not report significant findings for their SSI on eating in the absence of hunger.

Discussion

The aim of this study was to systematically review and synthesise evidence of the efficacy of self-administered SSIs on mental health outcomes in young people. Meta-analyses of 19 included studies showed that there was a significant small effect for both anxiety and depression symptoms, with a significant degree of heterogeneity and a wide prediction interval in each meta-analysis. No studies were deemed to be high risk of bias.

A high level of heterogeneity was observed across studies. When exploring possible sources of heterogeneity, the number of studies included in each meta-analysis limited confidence since it might not be representative of the population, and the indication that effect sizes differ across type of treatment and target problem. Other differences arise from

the population sampled and mixture of theoretical underpinnings of the SSIs. Furthermore, the varying length of follow-ups reported, and the variance this presents with regards to treatment effect, raises an interesting question about the lasting effects of SSIs, given research suggests supportive environments are more likely to sustain effects (Hecht et al., 2023). The wide prediction intervals observed in our analyses mean that future studies may not always be able to replicate the significant findings. This could be a result of the heterogeneity among studies and variability in individual study effects, as well as small sample sizes leading to wider parameters.

The magnitude of the pooled effect size in this study is similar to the one reported in a meta-analysis (g = 0.21 in Schleider et al., 2017), suggesting that time-limited interventions can have a positive impact on children and adolescents' mental health (Carey et al., 2023). Of note, previous reviews (Schleider & Weisz, 2017) found a promising, but non-significant effect for SSIs on depressive symptoms, whereas the current review presents new evidence of a significant effect for self-administered SSIs. Interestingly, although only two studies were identified that focused on psychological flexibility, both found medium to large effect sizes for their growth mindset interventions.

There was also a significant effect for subgroup analysis of anxiety treatments and universal interventions, but not anxiety prevention interventions or any form of intervention for depression. However, due to the small number of studies in each subgroup, further research is needed to ascertain these findings. A strength of the included studies comes from their medium-to-low risk of bias, suggesting good methodological quality of included RCTs. Also, there is no evidence of publication bias, suggesting research is being published even when non-significant small effects are present. Given the research showing SSIs are more likely to show small to no effect, this is positive for the transparency around the reporting of these interventions.

The majority of studies included in this review were also conducted in wealthy nations, compared to only one in a low-income country, therefore any effects can only really be applied to the western world and future research should aim to address this gap.

Clinical and Research Implications

Self-administered SSI do not always contribute to a significant treatment effect, and efficacy seems to differ by intervention type (universal, preventive, treatment). As such, future research should investigate design factors that can help optimise treatment efficacy, such as participant socioeconomic status, follow-up initiatives, anonymous participation, contact with a real person, co-production, and theoretical modalities.

In addition, it would be important for future research to investigate factors that promote lasting effects of SSIs. For example, research has suggested that supportive cues can enhance the longevity of SSI effects and effects can persist at 9 months post intervention (Hecht et al., 2023; Schleider & Weisz, 2017).

Future research could also explore co-production. For example, in this review, Riddleston et al. (2023) co-created their cognitive modification SSI with young people with lived experience, to ensure they targeted the concept of loneliness, and suggested that this improved acceptability and efficacy.

This review highlighted the limited availability of evidence for the effects of self-administered SSIs on concepts other than anxiety and depression. Given the multifaceted nature of mental health more research is needed to assess other aspects of mental health, such as low self-esteem, stress, compassion, and psychological flexibility given the previous focus on symptom reduction rather than improvement of wellbeing and functioning (Becker et al., 2011). Furthermore, given the lack of studies that recruited participants from non-western, low-income countries, future research could aim to explore different adaptations and acceptability of SSIs in non-western cultures.

Research is also expanding to now include artificial intelligence/chat bots (e.g. Cohen et al., (2023) trialled a crisis messenger). Such SSIs can be accessed anonymously which can be a beneficial in overcoming traditional barriers to access (Loades & Schleider, 2023).

In terms of clinical applications this review highlights the benefits SSIs can have on young people's mental health. With timely access, we might be more likely to see improvements in positive indicators of mental health such as psychological flexibility. Furthermore, given the utility of SSIs and their ability to reduce access barriers, they could potentially reduce service burden as there is no need for clinicians to facilitate them, and no expectation of a second visit since the 'treatment dose' is achieved in the single session (unlike conventional digital interventions which have been subject to drop out [Loades & Schleider, 2023]). Furthermore, digital guided self-help has now been recognised by the National Institute of Clinical Excellence (NICE) Early Value Assessment as a recommended tool for young people (NICE, 2023), it would be valuable for mental health services to explore implementing SSIs as a form of early intervention.

This review also demonstrated that SSIs could benefit young people who are often less likely to access traditional mental health support (e.g., Shen et al., 2023). Furthermore, given that most studies were conducted online, this demonstrates their accessibility given 97% of young people have access to the internet (Ofcom, 2023), and aligns with the NHS long term plans of transforming mental health care to integrate the digital world (Health Education England, 2019), suggesting they could have a role in future service delivery.

Conclusion

In summary, the landscape of mental health care for young people is rapidly changing, and the interest in SSIs is growing. Therefore, it is important that the emerging evidence is examined and synthesised regularly to allow access to the most up to date and comprehensive summary is available. To the authors knowledge this is the first meta-analytic review to focus

solely on self-administered single session interventions and it highlighted a small but promising effect for reduction in both anxiety and depression symptoms, further adding to the support of the growing evidence base for the role of SSIs for promoting mental wellbeing in children and young people.

Key points and relevance

What's known: There are a number of well documented barriers to accessing mental health support. Single Session Interventions (SSIs) have arisen as one potential solution. A previous meta-analysis found large effects for reduction in anxiety and conduct problems.
What's new: No previous reviews have focused solely on examining the efficacy self-administered SSIs.
What's relevant: This review highlights small but promising effect for reduction in both anxiety and depression symptoms and highlights the utility of SSIs as universal tools to support mental health.

References

References marked with an asterisk indicate studies included in the meta-analysis.

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., Sandhu, R. S., & Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment*, 449. https://doi.org/10.2147/ndt.s39776

Armitage, C. J., Rowe, R., Arden, M. A., & Harris, P. R. (2014). A brief psychological intervention that reduces adolescent alcohol consumption. *Journal of Consulting and Clinical Psychology*, *82*(3), 546–550. https://doi.org/10.1037/a0035802

Becker, K. D., Chorpita, B. F., & Daleiden, E. L. (2011). Improvement in symptoms versus functioning: How do our best treatments measure up? *Administration and Policy in Mental Health and Mental Health Services Research*, *38*(6), 440–458. https://doi.org/10.1007/s10488-010-0332-x

Borenstein, M. (2023). How to understand and report heterogeneity in a meta-analysis: The difference between I-squared and prediction intervals. *Integrative Medicine Research*, *12*(4), 101014. https://doi.org/10.1016/j.imr.2023.101014

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. https://doi.org/10.1002/9780470743386

Boutelle, K. N., Kuckertz, J. M., Carlson, J., & Amir, N. (2014). A pilot study evaluating a one-session attention modification training to decrease overeating in obese children. *Appetite*, *76*, 180–185. https://doi.org/10.1016/j.appet.2014.01.075

Byrne, A., Barber, R., & Lim, C. H. (2021). Impact of the COVID-19 pandemic – a mental health service perspective. *Progress in Neurology and Psychiatry*, *25*(2), 27. https://doi.org/10.1002/pnp.708

Carey, E., Ridler, I., Ford, T., & Stringaris, A. (2023). Editorial Perspective: When is a 'small effect' actually large and impactful? *Journal of Child Psychology and Psychiatry*, *64*(11), 1643–1647. https://doi.org/10.1111/jcpp.13817

Cohen, J. (2013). Statistical Power Analysis for the Behavioral Sciences. In *Routledge eBooks*. https://doi.org/10.4324/9780203771587

*Cohen, K., Dobias, M., Morris, R. R., & Schleider, J. L. (2023). Improving uptake of mental health crisis resources: Randomized test of a single-session intervention embedded in social media. *Journal of Behavioral and Cognitive Therapy*, *33*(1), 24–34. https://doi.org/10.1016/j.jbct.2022.12.001

Davies, G. (2023). Progress in improving mental health services in England. In *National Audit Office*. Retrieved January 14, 2024, from https://www.nao.org.uk/wp-content/uploads/2023/02/Progress-in-improving-mental-health-services-CS.pdf

*Dobias, M., Schleider, J. L., Jans, L., & Fox, K. (2021). An online, single-session intervention for adolescent self-injurious thoughts and behaviors: Results from a randomized trial. *Behaviour Research and Therapy*, *147*, 103983. https://doi.org/10.1016/j.brat.2021.103983

Dryden, W. (2020). Single-Session One-At-A-Time Therapy: a Personal approach. *Australian and New Zealand Journal of Family Therapy*, *41*(3), 283–301. https://doi.org/10.1002/anzf.1424

Duval, S., & Tweedie, R. L. (2000). Trim and Fill: a simple Funnel-Plot–Based method of testing and adjusting for publication bias in Meta-Analysis. *Biometrics*, *56*(2), 455–463. https://doi.org/10.1111/j.0006-341x.2000.00455.x

Dettori, J. R., Norvell, D. C., & Chapman, J. R. (2022). Fixed-Effect vs Random-Effects Models for Meta-Analysis: 3 Points to Consider. *Global Spine Journal*, *12*(7), 1624–1626. https://doi.org/10.1177/21925682221110527

Edbrooke-Childs, J., & Deighton, J. (2020). Problem severity and waiting times for young people accessing mental health services. *British Journal of Psychiatry Open*, *6*(6). https://doi.org/10.1192/bjo.2020.103

*Fitzpatrick, K. K., Witte, T. K., & Schmidt, N. B. (2005). Randomized controlled trial of a brief problem-orientation intervention for suicidal ideation. *Behavior Therapy*, *36*(4), 323–333. https://doi.org/10.1016/s0005-7894(05)80114-5

Fegert, J. M., Vitiello, B., Plener, P. L., & Clemens, V. (2020). Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and Adolescent Psychiatry and Mental Health*, *14*(1). https://doi.org/10.1186/s13034-020-00329-3

*Fu, X., Du, Y., Au, S., & Lau, J. Y. F. (2013). Reducing negative interpretations in adolescents with anxiety disorders: A preliminary study investigating the effects of a single session of cognitive bias modification training. *Developmental Cognitive Neuroscience*, *4*, 29–37. https://doi.org/10.1016/j.dcn.2012.11.003

*Fu, X., Du, Y., Au, S., & Lau, J. Y. F. (2015). Single-Session Cognitive Bias Modification of Interpretations Training in High-Anxious Adolescents. *Journal of Cognitive Psychotherapy*, *29*(3), 253–272. https://doi.org/10.1891/0889-8391.29.3.253

Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry*, *10*(1). https://doi.org/10.1186/1471-244x-10-113

Harrer, M., Cuijpers, P., Furukawa, T. A., & Ebert, D. D. (2021). *Doing Meta-Analysis with R*. https://doi.org/10.1201/9781003107347

Health Education England. (2019). *The Digital Future of Mental Healthcare and its Workforce: a report on mental health stakeholder engagement to inform the Topol*

Review. NHS England. Retrieved February 29, 2024, from https://topol.hee.nhs.uk/wp-content/uploads/HEE-Topol-Review-Mental-health-paper.pdf

Hecht, C. A., Gosling, S. D., Bryan, C. J., Jamieson, J. P., Murray, J. S., & Yeager, D. S. (2023). When do the effects of single-session interventions persist? Testing the mindset + supportive context hypothesis in a longitudinal randomized trial. *JCPP Advances*, *3*(4). https://doi.org/10.1002/jcv2.12191

Higgins, J.P.T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., Welch, V.A., (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.4 (updated August 2023). Cochrane, 2023. Available from www.training.cochrane.org/handbook.

Hedges, L. V., & Pigott, T. D. (2001). The power of statistical tests in meta-analysis. *Psychological Methods*, *6*(3), 203–217. https://doi.org/10.1037/1082-989x.6.3.203

*Howard, K. A., Griffiths, K. M., McKetin, R., & Ma, J. (2018). Can a brief biologically based psychoeducational intervention reduce stigma and increase help-seeking intentions for depression in young people? A randomised controlled trial. *Journal of Child & Adolescent Mental Health*, *30*(1), 27–39. https://doi.org/10.2989/17280583.2018.1467323

Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*, *21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Larsson, P., Lloyd, R., Taberham, E., & Rosairo, M. (2022). An observational study on IAPT waiting times before, during and after the COVID-19 pandemic using descriptive time-series data. *Mental Health Review Journal*, *27*(4), 455–471. https://doi.org/10.1108/mhrj-04-2022-0023

Lensen, S. (2023). When to pool data in a meta-analysis (and when not to)? *Fertility and Sterility*, *119*(6), 902–903. https://doi.org/10.1016/j.fertnstert.2023.03.015

Loades, M., & Schleider, J. L. (2023). Technology Matters: Online, self-help single session interventions could expand current provision, improving early access to help for young people with depression symptoms, including minority groups. *Child and Adolescent Mental Health*, *28*(4), 559–561. https://doi.org/10.1111/camh.12659

National Institute for Health and Care Excellence. (2023*). Guided self-help digital cognitive behavioural therapy for children and young people with mild to moderate symptoms of anxiety or low mood: early value assessment* *https://www.nice.org.uk/guidance/hte3*

*Norr, A. M., Gibby, B. A., & Schmidt, N. B. (2017). Is computerized psychoeducation sufficient to reduce anxiety sensitivity in an at-risk sample?: A randomized trial. *Journal of Affective Disorders*, *212*, 48–55. https://doi.org/10.1016/j.jad.2017.01.032

*Osborn, T. L., Rodríguez, M., Wasil, A. R., Venturo-Conerly, K. E., Gan, J., Alemu, R., Roe, E., G, S. A., Otieno, B. H., Wasanga, C., Shingleton, R., & Weisz, J. R. (2020). Single-session digital intervention for adolescent depression, anxiety, and well-being: Outcomes of a randomized controlled trial with Kenyan adolescents. *Journal of Consulting and Clinical Psychology*, *88*(7), 657–668. https://doi.org/10.1037/ccp0000505

Ofcom. (2023). *Children and Parents: Media Use and Attitudes*. Retrieved March 3, 2024, from https://www.ofcom.org.uk/__data/assets/pdf_file/0027/255852/childrens-media-use-and-attitudes-report-2023.pdf

Ouzzani, M., Hammady, H. M., Fedorowicz, Z., & Elmagarmid, A. K. (2016). Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews*, *5*(1). https://doi.org/10.1186/s13643-016-0384-4

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T., Mulrow, C. D., Shamseer, L., Tetzlaff, J., Akl, E. A., Brennan, S., Chou, R., Glanville, J., Grimshaw, J., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *The BMJ*, n71. https://doi.org/10.1136/bmj.n71

*Papini, S., Jacquart, J., Zaizar, E. D., Telch, M. J., & Smits, J. a. J. (2023). Targeting Anxiety Sensitivity with Evidence-Based Psychoeducation: A Randomized Waitlist-Controlled trial of a brief standalone digital intervention. *Cognitive and Behavioral Practice*, *30*(4), 678–691. https://doi.org/10.1016/j.cbpra.2022.04.001

*Perkins, A., Bowers, G., Cassidy, J. D., Meiser-Stedman, R., & Pass, L. (2021). An enhanced psychological mindset intervention to promote adolescent wellbeing within educational settings: A feasibility randomized controlled trial. *Journal of Clinical Psychology*, *77*(4), 946–967. https://doi.org/10.1002/jclp.23104

R Core Team. (2019). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. Available from: https://www.R-project.org/

Racine, N., McArthur, B. A., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19. *JAMA Pediatrics*, *175*(11), 1142. https://doi.org/10.1001/jamapediatrics.2021.2482

Radež, J., Reardon, T., Creswell, C., Lawrence, P. J., Evdoka-Burton, G., & Waite, P. (2020). Why do children and adolescents (not) seek and access professional help for their mental health problems? A systematic review of quantitative and qualitative studies. *European Child & Adolescent Psychiatry*, *30*(2), 183–211. https://doi.org/10.1007/s00787-019-01469-4

*Ranney, M. L., Goldstick, J. E., Eisman, A. B., Carter, P. M., Walton, M. A., & Cunningham, R. M. (2017). Effects of a brief ED-based alcohol and violence intervention on depressive symptoms. *General Hospital Psychiatry*, *46*, 44–48. https://doi.org/10.1016/j.genhosppsych.2017.01.008

*Rheingold, A. A., Danielson, C. K., Davidson, T. M., Self-Brown, S., & Resnick, H. S. (2012). Video Intervention for child and caregiver distress related to the Child Sexual Abuse Medical Examination: a randomized controlled pilot study. *Journal of Child and Family Studies*, *22*(3), 386–397. https://doi.org/10.1007/s10826-012-9591-3

*Riddleston, L., Bangura, E., Gibson, O., Qualter, P., & Lau, J. Y. F. (2023). Developing an interpretation bias modification training task for alleviating loneliness in young people. *Behaviour Research and Therapy*, *168*, 104380. https://doi.org/10.1016/j.brat.2023.104380

Schleider, J. L., Dobias, M., Sung, J., & Mullarkey, M. C. (2019). Future directions in Single-Session Youth Mental Health interventions. *Journal of Clinical Child and Adolescent Psychology*, *49*(2), 264–278. https://doi.org/10.1080/15374416.2019.1683852

Schleider, J. L., & Weisz, J. R. (2016). Reducing risk for anxiety and depression in adolescents: Effects of a single-session intervention teaching that personality can change. *Behaviour Research and Therapy*, *87*, 170–181. https://doi.org/10.1016/j.brat.2016.09.011

*Schleider, J. L., & Weisz, J. R. (2018). A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial. *Journal of Child Psychology and Psychiatry*, *59*(2), 160–170. https://doi.org/10.1111/jcpp.12811

*Schleider, J. L., Burnette, J. L., Widman, L., Hoyt, C. L., & Prinstein, M. J. (2020). Randomized trial of a Single-Session growth Mind-Set intervention for rural

adolescents' internalizing and externalizing problems. *Journal of Clinical Child and Adolescent Psychology*, *49*(5), 660–672. https://doi.org/10.1080/15374416.2019.1622123

* Schleider, J. L., Mullarkey, M. C., Fox, K., Dobias, M., Shroff, A., Hart, E. A., & Roulston, C. A. (2022). A randomized trial of online single-session interventions for adolescent depression during COVID-19. *Nature Human Behaviour*, *6*(2), 258–268. https://doi.org/10.1038/s41562-021-01235-0

*Shapiro, M. O., Allan, N. P., Raines, A. M., & Schmidt, N. B. (2022). A randomized Control Trial Examining the Initial Efficacy of an Intolerance of Uncertainty Focused Psychoeducation Intervention. *Journal of Psychopathology and Behavioral Assessment*, *45*(2), 379–390. https://doi.org/10.1007/s10862-022-10002-y

*Shen, J., Rubin, A., Cohen, K. E., Hart, E. A., Sung, J. E., McDanal, R., Roulston, C. A., Sotomayor, I., Fox, K., & Schleider, J. L. (2023). Randomized evaluation of an online single-session intervention for minority stress in LGBTQ+ adolescents. *Internet Interventions*, *33*, 100633. https://doi.org/10.1016/j.invent.2023.100633

* Short, N. A., & Schmidt, N. B. (2020). Developing and testing a novel, computerized insomnia and anxiety intervention to reduce safety AIDs among an at-Risk student sample: a randomized controlled trial. *Behavior Therapy*, *51*(1), 149–161. https://doi.org/10.1016/j.beth.2019.05.012

Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, Cates CJ, Cheng H-Y, Corbett MS, Eldridge SM, Hernán MA, Hopewell S, Hróbjartsson A, Junqueira DR, Jüni P, Kirkham JJ, Lasserson T, Li T, McAleenan A, Reeves BC, Shepperd S, Shrier I, Stewart LA, Tilling K, White IR, Whiting PF, Higgins JPT. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019; **366:** l4898.

Tunks, A., Berry, C., Strauss, C., Nyikavaranda, P., & Ford, E. (2023). Patients' perspectives of barriers and facilitators to accessing support through primary care for common mental health problems in England: A systematic review. *Journal of Affective Disorders*, *338*, 329–340. https://doi.org/10.1016/j.jad.2023.06.035

Viechtbauer, W. (2010). Conducting Meta-Analyses In R with the Metafor Package. *Journal of Statistical Software*, *36*(3). https://doi.org/10.18637/jss.v036.i03

Wang, Q., Zhang, W., & An, S. (2023). A systematic review and meta-analysis of Internet-based self-help interventions for mental health among adolescents and college students. *Internet Interventions*, *34*, 100690. https://doi.org/10.1016/j.invent.2023.100690

Wasil, A. R., Park, S. J., Gillespie, S., Shingleton, R., Shinde, S., Natu, S., Weisz, J. R., Hollon, S. D., & DeRubeis, R. J. (2020). Harnessing single-session interventions to improve adolescent mental health and well-being in India: Development, adaptation, and pilot testing of online single-session interventions in Indian secondary schools. *Asian Journal of Psychiatry*, *50*, 101980. https://doi.org/10.1016/j.ajp.2020.101980

World Health Organization: WHO. (2022, June 30). *Self-care interventions for health*. https://www.who.int/news-room/fact-sheets/detail/self-care-health-interventions#:~:text=Self%2Dcare%20interventions%20promote%20individuals,autonomy%20and%20engagement%20in%20health.

Zhou, X., Edirippulige, S., Bai, X., & Bambling, M. (2021). Are online mental health interventions for youth effective? A systematic review. *Journal of Telemedicine and Telecare*, *27*(10), 638–666. https://doi.org/10.1177/1357633x211047285

CHAPTER THREE: Bridging Chapter

Bridging Chapter

The systematic review and meta-analysis in chapter two focused on exploring the effectiveness of single session interventions (SSIs) and found small but promising effects for the use of SSIs in reducing anxiety and depression symptoms. However, it did find that future studies may not be able to replicate the effects. There was also limited available evidence to quantitatively synthesise their effectiveness for other mental health outcomes (mental wellbeing, disordered eating symptoms etc.,).

One of the theoretical underpinnings of SSIs detailed in the previous chapter which had limited studies and therefore were not pooled for meta-analysis was growth mindset interventions. The concept of a growth mindset has been around for a while, with Dweck & Leggett (1988) defining it as "beliefs in the malleability of human traits and attributes". Furthermore, growth mindset is underpinned by theories of motivation, in particular how we respond to setbacks and challenges, with the view that we have the potential to change, relative to our prior abilities (Yeager & Dweck, 2020). It has been largely explored in the field of academia to improve educational outcomes in students, and over recent years has garnered interest in the field of mental health, with research highlighting that growth mindsets are negatively associated with psychological distress (Burnette et al., 2020).

A recent systematic review by Burnette et al. (2022) suggests that the effects of mindset interventions on mental health are stronger than the effects for academic achievement but the number of studies for mental health outcomes is limited. Furthermore, following the Coronavirus pandemic, much of the world also moved to an online model of working, making it a widely adopted way to reach young people on mass (Hawke et al., 2021). Digital media is also a space where the younger generations feel more confident and equipped to engage with mental health promotion (Prescott et al., 2019). Furthermore, digital guided self-help has now been recognised by the National Institute of Clinical Excellence

(NICE) Early Value Assessment as a recommended tool for young people (NICE, 2023). The following chapter will therefore present the findings and implications from a clinical trial which focused on a trialling a digital growth mindset SSI video, with the aim to explore its efficacy in relation to anxiety and depression, as well as personality mindset and psychological flexibility.

References

Burnette, J. L., Knouse, L. E., Vavra, D., O'Boyle, E. H., & Brooks, M. A. (2020). Growth mindsets and psychological distress: A meta-analysis. *Clinical Psychology Review*, *77*, 101816. https://doi.org/10.1016/j.cpr.2020.101816

Burnette, J. L., Knouse, L. E., Billingsley, J., Earl, S., Pollack, J. M., & Hoyt, C. L. (2022). A systematic review of growth mindset intervention implementation strategies. *Social and Personality Psychology Compass*, *17*(2). https://doi.org/10.1111/spc3.12723

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, *95*(2), 256–273. https://doi.org/10.1037/0033-295x.95.2.256

Hawke, L. D., Sheikhan, N. Y., MacCon, K., & Henderson, J. (2021). Going virtual: youth attitudes toward and experiences of virtual mental health and substance use services during the COVID-19 pandemic. *BMC Health Services Research*, *21*(1). https://doi.org/10.1186/s12913-021-06321-7

National Institute for Health and Care Excellence. (2023*). Guided self-help digital cognitive behavioural therapy for children and young people with mild to moderate symptoms of anxiety or low mood: early value assessment* *https://www.nice.org.uk/guidance/hte3*

Prescott, J., Hanley, T., & Gomez, K. U. (2019). Why do young people use online forums for mental health and emotional support? Benefits and challenges. *British Journal of Guidance & Counselling*, *47*(3), 317–327. https://doi.org/10.1080/03069885.2019.1619169

Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, *75*(9), 1269–1284. https://doi.org/10.1037/amp0000794

CHAPTER FOUR: Empirical Paper

The Efficacy of an Online Self-Administered Single Session Intervention to Promote Growth Mindset in Adolescents: A Randomised Controlled Trial

Authors:

Jessica Ball[a]

Richard Meiser-Stedman[a]

Maria Loades[b]

Amorette Perkins[c]

Gemma Bowers[c]

Laura Pass[a]

Kenny Chiu[a]

Word count: 5120

Prepared for submission to the Journal of Child Psychology and Psychiatry (Author guidelines in Appendix A)

[a]Department of Clinical Psychology and Psychological Therapies, University of East Anglia, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, United Kingdom

[b]Department of Psychology, University of Bath, Claverton Down, Bath, BA2 7AY, United Kingdom

[c]Norfolk and Suffolk NHS Foundation Trust, Drayton High Rd, Norwich, NR6 5BE, United Kingdom

Abstract

Background

Single-session interventions (SSIs) are one promising way to support young people's mental health at universal level. Building upon a feasibility study of a growth mindset SSI conducted by Perkins et al. (2021), this Randomised Controlled Trial (RCT) aimed to evaluate its efficacy when delivered online to young people.

Methods

We recruited 104 participants aged 14–18-year-olds (mean age 16.3) via social media, schools, and charities in the UK. Participants were randomised to receive either an online video-based intervention or be placed on a waitlist control. Participants reported anxiety and depression symptoms, as well as personality mindset and psychological flexibility at baseline and at 1-month follow up. This trial was registered at clinicaltrials.gov (NCT05676554).

Results

An intention to treat (ITT) analyses effect sizes for the primary outcome (anxiety and depression symptoms) was small (d = .07 [95% CI: -0.32, 0.47]) at four-week follow-up, as well as secondary outcome measures including psychological flexibility (d = -0.12, [95% CI: -0.50, 0.25]). The personality mindset measure yielded a significant large effect (p = .02, d = -.96, [95% CI: -1.87, -0.04]), however was non-significant following Bonferroni correction. Case completer analysis resulted in similar observations. The study findings should be interpreted with caution as they were limited by its sample size and poor participant retention.

Conclusions

Online delivery of self-administered SSIs has the potential to maximise its reach to young people with mental health needs. Evaluation of its efficacy could be challenged by various factors such as sample size, retention rate at follow-up, and level of engagement. Future research is needed to overcome these limitations.

Keywords; Randomised Controlled Trial; Youth Mental Health; Growth Mindset; Single-Session Interventions; Self-administered.

Introduction

Adolescent mental health is an area of great concern worldwide, with up to 20% of young people reported to be living with a clinically significant mental health condition, and more experiencing non-clinical symptoms and/or are exposed to risk factors for developing difficulties (World Health Organisation [WHO], 2003; Public Health England & Children and Young People's Mental Health Coalition, 2015). In the UK this figure is currently at one in five (NHS Digital, 2023) with reports detailing 75% of those who need support are not receiving it (National Health Service [NHS] Digital, 2021). Evidence suggests that most mental health conditions in adult life develop during childhood or adolescence (Kessler et al., 2005), therefore there is a universal agenda to act now to promote positive emotional wellbeing and prevent conditions from developing in the first instance (Department of Health and Social Care, 2015; Public Health England, 2019).

Single-session interventions (SSIs) have been suggested to be one promising way to support young people's mental health on a more universal level (Schleider et al., 2020). There have been several trials conducted to start building an evidence base for SSIs. A meta-analysis by Schleider & Weisz (2017) highlighted SSIs as having the largest effect sizes for anxiety and conduct problems and the effects did not differ for self- versus therapist-administered SSIs. They also found that young people who received an SSI were 58% more likely to have better outcomes than participants who received no intervention.

Online, self-guided SSIs may also be uniquely scalable, particularly if they are freely available for use as needed (Schleider et al., 2020). SSIs can also be informed by a range of underlying theoretical approaches, one being through promotion of a growth mindset. A mindset can be defined as "the fundamental, core beliefs that individuals hold about the nature and malleability of various aspects of the human condition" (Ryan & Mercer, 2012, p. 74). Research suggests those who hold a growth mindset are more likely to prosper in the

face of difficulty compared to those who have a fixed mindset, who may be wary of challenges or fail to meet their potential (Dweck & Yeager, 2019). This has also been linked to those having a fixed mindset experiencing more mental health problems (Schroder et al., 2019) and young people performing worse academically (Yeager & Dweck, 2020). Furthermore, there is evidence from a recent meta-analysis that suggests across clinical and non-clinical populations, fixed mindsets have been negatively associated with psychological distress, and a positive link between growth mindsets and coping (Burnette et al., 2020) further supporting its potential role as a modifiable factor.

There have so far been two digital growth mindset feasibility studies in the UK (Ching et al., 2022; Perkins et al., 2021). In their feasibility study, Ching et al. (2022) did find small effects for anxiety and depression outcomes measured at 1-month follow-up. However, they were limited by their small sample which constituted only paediatric patients on a mental health waitlist and had no control group. A study by Perkins et al (2021) based on a video promoting a growth mindset found that such an intervention can be feasible, acceptable, and potentially scalable. They recruited 16–18-year-olds and administered the 30-minute SSI via the internet within a classroom setting, whilst those randomised to the waitlist condition continued with their normal timetabled school activities. However, limitations included lengthy questionnaires, and the sample was restricted by the schools who chose to take part, potentially causing an underrepresentation of some gender and ethnicity groups. Also, being delivered in a school context produced burden for schools which could be reduced by moving to an online delivery model. Finally, the option for young people to opt for earlier access to interventions could be beneficial as mindsets develop and potentially become ingrained over time (Limeri et al., 2020).

The current study aimed to build on the previous feasibility study, and evaluate the efficacy of a low cost, solely online, self-help single-session growth mindset video

intervention and to explore whether outcomes are indicative of positive change in anxiety and depression symptoms, beliefs about growth in mindset and psychological flexibility.

Method

Design and Ethical Approval

The present study is a randomised controlled trial (RCT), with parallel groups and an intended allocation ration of 1:1 to yield broadly equal groups. The intervention group immediately watched the intervention SSI and a waitlist control group received access to the intervention at the end of the study. The trial was registered with ClinicalTrials.gov (NCT05676554) before the first participant was recruited and followed CONSORT guidelines for reporting of RCTs (Appendix 4.1). One participant was removed from the intervention arm after randomisation due to being unable to match them to any provided baseline data. The study ethical approval was granted by the University of East Anglia Faculty of Medicine and Health Sciences Research Ethics Committee (ETH2223-0067; Appendix 4.2).

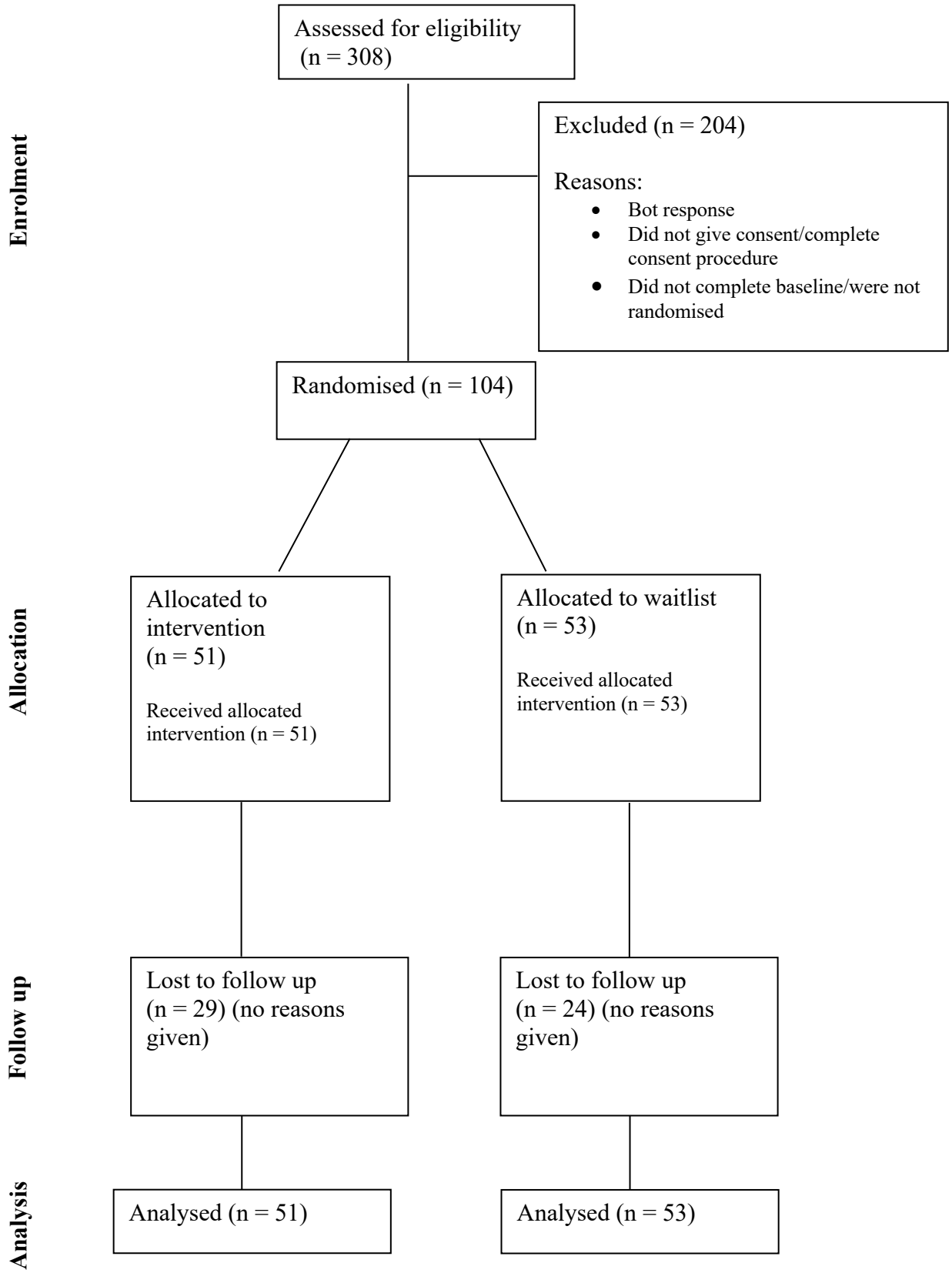
Participants

Participants were deemed eligible if they were aged 14-18 years old, were based in the UK, and can read or write English. They were offered to enter a prize draw with a chance to win one of 15 shopping vouchers (worth £10) following completion of their follow-up questionnaires. They were recruited through online social media platforms (Facebook and Instagram). Paid targeted adverts costing £158.03 in total, ran from the 1st February 2023 to 30th April 2023 at specific times of day e.g., after school so that the study advertisement was displayed to the correct age groups at peak times on their social media, and during half terms more frequently (see Appendix 4.3 for example advertisement). The research team also shared the study information online through social media accounts. The initial recruitment effort resulted in 538 young people who progressed from the advertisement to the project

information page (see Appendix 4.4 for advert results), but this did not translate to participation. Due to a low uptake, recruitment was extended to schools and local charities. Initially local mainstream schools and colleges were contacted (local authority and academy trusts), before reaching out to schools nationally. A total of 473 schools were reached out to by the research team via a mixture of email and telephone correspondence, two schools agreed to meet and discuss the project and share, and approximately a further six shared the project without discussing with the research team as noted by sign up data. Eight local third sector organisations and charities were also contacted, and one agreed to share project details.

Prior to the start of recruitment, a power analysis was conducted to calculate an appropriate sample size, a minimum target sample size of 220 (effect size .38, power .8) was calculated using G*Power (Appendix 4.5) however the researchers aim was 300 participants to allow for attrition rates. In total 308 participants were recruited between February 2023 and January 2024. Of these participants, 66.2% did not give full consent to take part, we therefore obtained a final sample consisting of 104 participants, (see CONSORT flow diagram in Figure 4.1).

Figure 4.1 CONSORT Study Flow Diagram



Procedure

Interested participants clicked the link (or scanned a QR code) for more information where detailed study information (including the consent form [Appendix 4.6]) was provided on Qualtrics. Participants read the information sheet and consent form, then ticked to consent (for themselves) to take part, they were then allocated an identification number which was linked to their email address. Once consented, participants were invited to complete a questionnaire and randomised either to the treatment arm or waitlist control (WLC) arm. A single-blind approach was taken as neither the researcher nor participants were aware of allocation until after enrolment. Those who were allocated to the treatment arm watched a ten-minute psychoeducation video (animation) on their own device, followed by five minutes of stories from fictional students about how they apply the concepts. The intervention integrated concepts from Cognitive Behavioural Therapy, Compassion Focused Therapy and Acceptance and Commitment Therapy to mitigate any unhelpful beliefs/consequences that could arise as a result of increasing malleability of beliefs (e.g. perfectionistic striving, self-blame or decrease in acceptance [Dweck et al., 1995; Tamir et al., 2007; Kneeland et al., 206; Hoyt & Burnette, 2020]). Instead, the intervention encourages a compassionate stance, and a recognition that we cannot always control in the moment transient psychological experiences. Please see Perkins et al (2021) for more detail (see Table 4.1 for more detail). Participants then completed three multiple choice questions aimed to assess their understanding and ability to apply concepts from the video, followed by a 'letter of advice' task where participants wrote advice to a fictional younger student struggling with their mental health, based on the information presented in the animation and videos. In total the first part of the intervention (watching the video, questions, and letter task) took on average 17 minutes to complete, and the follow up 6.5 minutes (in total 23.5 minutes). Screenshots have been included in the appendices (Appendix 4.7).

All participants were contacted by email four weeks post-randomisation for a follow-up assessment where they were asked to complete all measures again. Following the completion of outcome measures, participants in the WLC group were able to access and watch the video.

Table 4.1 Detailed description of intervention

Underlying concept	Overview of content
Information on brain activity and neuroplasticity based on neurological science	Thoughts, emotions, and behavioural urges are a result of neurological processes. We therefore do not have complete control of in-the-moment experiences due to the rapid and complex nature of neuronal activity. There is also an enormous number of pathways in the brain meaning we can have thousands of different experiences in our mind every day, and these are not fixed, instead transient. Our brain also has the ability to change in response to our experiences (neuroplasticity).
Interconnectedness of our internal experiences from psychological theories such as CBT	We make sense of the world based on our previous experiences. Our thoughts, emotions, behaviours, and physiological responses are all connected and can influence one another. We can get stuck in repeated patterns of behaviour (because at one time it was helpful for our survival/to protect us) and at times we can continue to behave in ways that are either helpful or unhelpful.
CFT and ACT principles	Humans are not perfect, and everyone has different strengths and limitations. We can be compassionate towards ourselves when we experience difficulties, and the aim is to not get fused with these difficult emotions which can make us feel worse, instead we have the ability to change our response/how we react (instead of controlling the experience itself). Changing our behaviour to live in accordance with our values enhances our wellbeing.

Growth mindset	Change is possible as emotions are not fixed states, instead they are transient/malleable.

CBT = Cognitive Behavioural Therapy; CFT = Compassion Focused Therapy; ACT = Acceptance and Commitment Therapy.

Outcomes

Demographics

Participants age, gender identity, ethnicity, and location were collected, and the question "do your parents own their own home?", to explore participants socioeconomic status (Taylor, 2017).

Primary outcome: Anxiety and depression symptoms

The 11-item Revised Child Anxiety and Depression Scale (RCADS-11; Radez et al., 2021 [Appendix 4.8]) was used to measure anxiety and depression symptoms. It contains six items on anxiety symptoms (e.g. "I worry when I go to bed at night") and five on depression symptoms (e.g. "I have no energy for things"), using a Likert scale from 0 (Never) to 3 (Always) with a maximum score of 33. Higher scores indicate higher reported symptoms with cut off scores provided, differentiated by gender. The RCADS-11 developers proposed interpretation/cut off scores: Anxiety symptoms (males ≥ 5, females ≥ 9), depression symptoms (males ≥ 8, females ≥ 9), total scale symptoms (males ≥ 9, females ≥14), total scale symptoms + impact (males ≥ 14, females ≥ 18).

The 11-item RCADS attained sensitivity/specificity values > .75 which are comparable to the full 47-item RCADS (Chorpita et al., 2000) and it can be used to differentiate between community and clinic referred samples accurately. In the present study the Cronbach's alpha was a = .91.

Secondary Outcome: Personality mindset

As per the feasibility study, three items from the Implicit Personality Theory Questionnaire (IPTQ) (Appendix 4.9) were used to assess respondent's view on whether their personality is fixed or malleable (Yeager et al., 2013). The self-report three items are: "You have a certain personality, and it is something that you can't do much about," "Your personality is something about you that you can't change very much," and "Either you have a good personality, or you don't, and there is really very little you can do about it." The items are rated on a Likert scale from 1 (really disagree) to 6 (really agree), with a higher score suggesting a more fixed mindset. In Schleider and Weisz's (2016) sample of adolescents, these items yielded an internal consistency of a = .82, in the feasibility trial (16–18-year-olds) reliability was a = .78 and the current trial, a = .80.

Secondary Outcome: Psychological flexibility

The Acceptance and Fusion Questionnaire for Youth-Short Form (AFQ-Y8; Greco et al., 2008 [Appendix 4.10]) was used to capture third-wave cognitive behavioural constructs assess psychological flexibility (being present, aware, and accepting of our thoughts and emotions) and acting on values rather than short-term impulses (Hayes et al., 2011; Hülsheger et al., 2013; Neff, 2003).

The AFQ-Y8 is an eight item self-report measure which uses a Likert scale from 0 (not at all true) to 4 (very true). Some example items are: "My life won't be good until I feel happy" or "I am afraid of my feelings". Possible scores range from 0 to 32. There are no clinical cut off scores, but lower total scores indicate greater psychological flexibility. It is validated for use within the adolescent population with reported reliability being .83 (Greco et al., 2008), and in this trial a = .87.

Data Analysis

Demographic data were analysed descriptively. Missing data was handled by multiple imputation following procedures outlined by Harrer et al. (2023). For the primary analysis, an

Intention-to-treat (ITT) analysis was conducted in R Studio (R Studio Team, 2015), which is often used to assess clinical effectiveness because it mirrors real life practice and reduces biases (McCoy, 2017).

For the primary analysis, a series of Analysis of Covariance (ANCOVA) were conducted to explore differences between post-treatment outcome measures for participants in the intervention and waitlist control arm, whilst controlling for baseline outcome scores. Effect sizes (Cohen's *d*) were calculated by extracting the intervention and control group standard deviations from each imputed data set, then taking the mean value, and calculating the pooled standard deviation. Finally, the standardised mean difference estimated by the coefficient of the group was divided by the pooled standard deviation (Harrer et al., 2023). A sensitivity analysis was conducted using Case Completer data, performed using IBM SPSS Statistics 24.0. Effect sizes are reported as Partial Eta Squared (n_p^2). The Bonferroni correction was applied to account for multiple comparisons and reduce the likelihood of Type 1 errors (Armstrong, 2014).

To explore individual responses to the intervention, the Reliable Change Index (RCI) was calculated for all outcome measure scores pre-post treatment change for the case completer sample (Jacobson & Truax, 1991).

Missing data

There was no missing baseline data, however 51-55.8% of follow up data were missing, with the IPTQ missing the most responses and RCADS the least (see Table 4.4 for breakdown). Little's (1988) test of Missing Completely At Random (MCAR) test was non-significant ($X^2 = 9.249$, DF = 9, $p = .411$) suggesting the null hypothesis that data were missing completely at random cannot be rejected. For ITT analysis, Multivariate Imputation by Chained Equations (MICE) was used to impute missing data, with 50 iterations. Although more than 50% of follow up data was missing, it was still multiply imputed as it has been

shown to be more accurate and reduce bias, compared to only examining case completer data (Woods et al., 2023). Following multiple imputation, assumptions for a between subjects ANCOVA were tested prior to analyses. Variances were homogenous as tested by Levene's test of Equality Variances, and normality was assessed using Shapiro-Wilk test, furthermore there was homogeneity of regression slopes, and across all imputed data and the original data set, results were non-significant, suggesting assumptions for ANCOVA were met.

Results

Sample Characteristics

The descriptive characteristics of the 104 participants are reported in Table 4.2. Participants had a mean age of 16.3 (range 14–18), and most reported being white (82.9%). Seventy-five percent of participants also reported that their parents owned their own home. In terms of how participants heard about the study 47.1% reported school, 34.6% did not report where (potentially via social media adverts), 7.7% for "other", 4.8% Facebook, 3.8% Twitter, and 1.9% Instagram.

Participant flow is summarised in the CONSORT diagram (Figure 4.1), with 51 participants randomised to the immediate treatment arm (22 completed follow up), and 53 to the waitlist arm (29 completed follow up). Of those randomised to the treatment arm 48% scored above recommend cut-off for anxiety, 19% for depression, and 55.8% total score was above threshold. In terms of the waitlist arm, 56.6% scored above cut off for anxiety, 37.7% for depression, and 67.9% total RCADS score was above threshold. No significant group differences were observed across demographics and baseline outcome measures; therefore, randomisation was considered successful. There were also no significant group differences for those who were retained at follow up compared to those lost to follow up.

Table 4.2 Baseline Participant Characteristics

Participant characteristics	**All Participants**	**Treatment**	**Waitlist**
	***N* = 104**	***N* = 51**	***N* = 53**
Age, *M* (*SD*)	16.3 (1.38)	16.18 (1.45)	16.38 (1.30)
Gender, *n* (%)			
Female	61 (58.7%)	29	32
Male	22 (21.2%)	12	10
Non-binary	12 (11.5%)	4	8
Prefer not to say	4 (3.8%)	3	1
Transgender	5 (4.8%)	3	2
Ethnicity, *n* (%)			
Asian or Asian British	7 (6.7%)	0	7
Black, Black British, Caribbean, or African	3 (2.9%)	2	1
Mixed or multiple ethnic groups	6 (5.8%)	3	3
Other ethnic group	2 (1.9%)	0	2
White	86 (82.7%)	46	40
Parents own their own home, *n* (%)			
Yes	78 (75%)	40	38
No	26 (25%)	11	15

Treatment adherence

Qualtrics tracks the length of time spent on the webpage and did not allow participants in the intervention arm to proceed until the video finishes, therefore we can be certain that those participants who were randomised to intervention and completed their

follow-up engaged with the video. There were 23 out of 51 (45%) participants in the intervention arm who also completed the optional letter to a student task and follow up questions. Those who completed the letter writing task often mentioned the brain and how it can adapt, and how emotions are transient. Completers wrote on average 183 words (*SD* = 122.5, range 53–460).

Intention-to-treat Analysis

The pooled results for both primary and secondary outcomes are displayed in Table 4.3 the results were all nonsignificant with small effect sizes, except for IPTQ which demonstrated a significant, large effect.

Table 4.3 Intention to Treat Analysis ANCOVA of Primary and Secondary Outcomes

Outcomes	F	df	p	Cohen's d	95% CI
Primary Outcome					
RCADS Total	0.07	1, 28.66	.794	0.07	-0.32, 0.47
Secondary Outcomes					
RCADS Anxiety Total	0.985	1, 11.52	.341	-0.13	-0.60, 0.34
RCADS Depression Total	0.027	1, 5835.68	.869	0.14	-0.12, 0.40
AFQ Total	2.739	1, 15.54	.118	-0.12	-0.50, 0.25
IPTQ Total	8.706	1, 7.29	.020	-0.96	-1.87, -0.04

Note: df = degrees of freedom; p = significance value, CI = confidence interval.

Case Completer Analysis

Differences between groups outcome measure scores for Time 1 and Time 2 for all case completers are presented in Table 4.4.

Table 4.4 Descriptive Statistics for Case Completers

		Intervention			Waitlist		
		M	**SD**	**N**	**M**	**SD**	**N**
RCADS Total	Pre	17.6	8.2	51	18.7	7.1	53
	Post	17.6	7.2	22	19.9	7.3	29
RCADS Anxiety Total	Pre	9.7	4.5	51	10.3	4.1	53
	Post	8.9	4.3	22	10.6	3.9	29
RCADS Depression Total	Pre	7.8	4.5	51	8.5	3.6	53
	Post	8.7	3.6	22	9.3	3.9	29
AFQ Total	Pre	14.5	7.9	51	16.9	7.7	53
	Post	13.9	7.4	19	17.9	6.9	28
IPTQ Total	Pre	9.5	3.6	51	10.9	3.7	53
	Post	7.3	3.2	18	11.3	3.7	28

Note: M = Mean; SD = Standard Deviation; N = Number of Participants

Primary Outcome

RCADS Total

The ANCOVA did not reveal a statistically significant effect on RCADS scores, $F(1, 48) = .090$, $p = .766$, $n_p^2 = .002$. Inspection of adjusted means for RCADS scores showed that the intervention group ($M = 19.12$, $SE = .85$), did not exhibit a statistically significant difference in post intervention scores compared to the waitlist ($M = 18.78$, $SE = 0.74$).

Secondary Outcomes

RCADS Anxiety Total

The ANCOVA showed no significant differences between the intervention and waitlist group completers when controlling for baseline anxiety symptoms, $F(1, 48) = .581$, $p = .450$, $n_p^2 = .012$. Adjusted means indicated that the intervention arm ($M = 8.91$, $SE = .91$) did not show a statistically significant difference in post-intervention anxiety scores compared to the WLC ($M = 10.62$, $SE = .73$).

RCADS Depression Total

ANCOVA results did not produce a statistically significant effect, $F(1, 48) = .939$, $p = .337$, $n_p^2 = .019$. Examining adjusted means, the intervention group ($M = 9.43$, $SE = .54$), did not statistically differ on scores, compared to the WLC ($M = 8.74$, $SE = .47$).

AFQ Total

The ANCOVA did not yield a statistically significant effect $F(1, 44) = .036$, $p = .850$, $n_p^2 = .001$, and when examining adjusted means the intervention group ($M = 16.17$, $SE = .84$), does not significantly differ compared to the WLC ($M = 16.38$, $SE = .69$).

IPTQ Total

The ANCOVA showed no significant differences, $F(1, 43) = 2.997$, $p = .091$, $n_p^2 = .065$. The adjusted means indicated the intervention group ($M = 8.6$, $SE = .78$) did not significantly differ compared to the WLC ($M = 10.43$, $SE = .61$).

Reliable Changes

When inspecting the case completer data further, one (4%) of the participants in the treatment arm demonstrated reliable improvement on the RCADS, and one (3.4%) in the WLC; two (9%) demonstrated reliable deterioration in the treatment arm and three (10.3%) in the WLC. No reliable improvement or deterioration was seen for AFQ scores in the intervention group, however one (3.6%) of the WLC reliably deteriorated. Furthermore, two (11.1%) experienced reliable improvement in the intervention arm for IPTQ scores, with one (5.6%) deteriorated, and four (14.3%) in the WLC improved, and four (14.3%) deteriorated.

Discussion

This RCT aimed to build upon the feasibility trial by Perkins et al. (2021), to investigate the efficacy of a growth mindset SSI on reducing symptoms of anxiety and depression and increasing psychological flexibility and growth mindset. This was not confirmed however as the results were mostly non-significant, and importantly, the small sample size and low retention rate meant the study was underpowered.

An additional outcome of this trial was to increase the interventions accessibility. Recruiting through social media allowed the researchers to reach adolescents that may not otherwise be accessible and to target the specific population needed for the study (Gelinas et al., 2017). The study advertisement reached a large number of young people, although this was not cost effective and did not amount to participation. However, it is a positive sign that using social media can reach young people *en masse.* This study therefore contributes valuable learning and highlights some of the challenges of recruiting young people for online RCTs.

In terms of results, we found a significant large negative effect size for personality mindset which is in line with the nature of the intervention and previous research, however, after applying Bonferroni correction this result was non-significant. It might be possible to detect significant effects for all outcomes if there was a larger sample and a higher follow-up rate. In contrast to our expectations, there was an observed increase in mean scores pre and post treatment for RCADS depression, and although underpowered to detect an effect it was noted that there was also a wide confidence interval. This differs from the feasibility trial which found a small negative effect and is contradictory to other studies (Osborn et al., 2020; Schleider & Weisz 2016; 2018). However, this is an interesting finding which future research can explore given that the mechanism of action in the intervention is to foster a growth and flexible mindset in the first instance, rather than directly target mental health symptoms.

Furthermore, an effect on anxiety, but not depression was reported by a recent online growth mindset RCT by Zimmermann and Papa (2023) which perhaps suggests the effect of such interventions on depressive symptoms is not always replicable. One suggestion for the differences in effect seen compared to previous research is that the intervention video in the present trial is more passive and incorporates third wave concepts of self-compassion, and perhaps effects would be greater if participants were more actively involved.

In terms of reliable improvement in the case-completer sample, although the sample was limited, we did observe some improvement across all outcome measures in the intervention arm (other than psychological flexibility, although we observed deterioration in the WLC). There were also improvements observed in the WLC, but a greater amount of deterioration in total.

Limitations

The main limitation in this trial is the small sample size and high attrition rate. These difficulties are not novel in the context of online RCTs (Team et al., 2018; Moffat et al., 2023). The recruitment numbers are comparable to Schleider & Weisz (2016) who randomised 96 young people and lost about half to follow-up attrition over nine months. Furthermore, this study has built upon the feasibility trial of the growth mindset intervention which recruited 80 young people (retaining 52.5% at the final 8-week follow-up).

In terms of attrition, it was very easy for participants to disengage with the RCT (e.g. closing a tab on their phone) which is both positive for freedom to choose to engage, but negative for retention and understanding why participants may disengage. Young people are now consuming content in very short periods and the 15-minute video coupled with the lengthy information sheet and baseline questionnaires could have impacted on their attention and ability to engage. It is also worth noting over half the young people recruited scored above cut off for anxiety and depression symptoms. Neil et al. (2009) suggests that clinically

higher scoring adolescents are more likely to complete an intervention in a naturalistic setting which was seen in the present study, with the high completion rate for those in the intervention arm. However, it is possible that the intervention appealed to young people who were experiencing a higher level of difficulties than an SSI is sufficient to meet, which could account for poor retention to follow-up. Another potential barrier to engaging with the follow-up was that the study did not have any guaranteed monetary incentives to take part other than a low value prize draw (unlike other trials which have paid around £10 for each follow-up). Cohen & Schleider (2022) found that RCTs were more likely to retain young people when they were paid to complete follow-ups.

A further limitation is that we did not account for the delay in follow-up completion, and a participant who followed up on time may have experienced greater effects than those who surpassed the four-week window.

Strengths

A strength lay with the adherence to the intervention given that everyone randomised to the intervention arm took part. No young people contacted the research team to report adverse advents and there was also evidence of reliable improvement in the intervention arm, with only small evidence of reliable deterioration. The intervention was also previously deemed acceptable and feasible, and the engagement in the current trial is further evidence of this.

Additionally, young people aged 14–16 were able to access the intervention without parental consent, which is important for their right to choose how and when they participate in research. They could also access the research trial when it was suitable for them, and they were not coerced into taking part. We were also able to measure engagement in real world context (e.g. not being expected to complete measures in a classroom with teachers or researchers observing).

Another strength is that the trial adhered to its pre-registration and conducted an ITT analysis, using multiple imputation to reduce bias given that more than 10% of follow up data was missing (Bennett, 2001). Given that the ITT analysis yielded a significant large effect for personality mindset, this needs to be interpreted with caution. However missing data is a real issue for clinical trials and again not uncommon (Austin et al., 2021), and this study aimed to handle missing data transparently.

Further strengths lie with the low-cost design to run, with research funding only being spent on the advertisement and prize draw. There was no therapist involvement, so low burden/low cost for delivery. To the researcher's knowledge this is one of the most inexpensive RCTs run in the UK exploring a universal preventative mental health intervention which was freely accessible for young people; we hope it has laid a foundation for others to follow.

Implications for research

One implication for future RCTs of self-administered SSIs is to increase the incentive for adherence, and to design a robust strategy for promoting the uptake of follow-ups (for example regular reminders) to explore the true effects of the intervention at four weeks. A further important implication is increasing recruitment rates, which could be explored by adopting paid incentives, looking to recruit targeted samples, and improving advertisement of the SSI (e.g., co-producing materials with young people to ensure they are appealing or using popular figures to promote the study online).

Another potential way to increase recruitment rates could be to explore other treatment avenues which could facilitate the use of SSIs include schools and colleges, mental health services and youth groups. Investing research time to developing relationships with schools and other services could enhance recruitment as described by Hatch et al. (2023). Research has shown there are barriers to accessing schools (Gee et al., 2020) but brief digital

SSIs could be incorporated into lessons, due to their unguided nature. Furthermore, mental health services could introduce SSIs as part of their assessment period to alleviate waiting times and potentially reduce symptoms, as evidenced by Fursland et al. (2019) who trialled an SSI in an eating disorder service. Research suggests that in the UK although young people like a mixture of intervention methods, they may still prefer to see a therapist face-to-face (Place2be, 2019), but with the growing interest in SSIs and further research this could change.

A systematic review was recently published exploring whom, how, and why growth mindset interventions might work and highlighted that it would be beneficial for future studies to focus on moderators and mediators of growth mindset to see who is benefitting from these interventions (Burnette et al., 2023). Given the high number of young people scoring above threshold for anxiety and depression symptoms it feels important to clarify this to make sure the interventions are aimed at the correct target group.

Conclusion

In summary, SSIs are emerging as a universal tool to promote mental health and a promising way to potentially meet the gap in mental health service provision. They have also been shown to be beneficial for young people already experiencing poor mental health difficulties (Schleider & Weisz, 2016) much like the sample recruited in the present study. Furthermore, small effects are also not uncommon for brief universal interventions (Mackenzie & Williams, 2018) and slight changes could have wide-reaching consequences over time at a population-level (Funder & Ozer, 2019). Given that most of the research in the field has been conducted in America where mental healthcare is not free and its demand is high, it will be beneficial to continue exploring within a UK population to better understand how young people engage with it. The present research hopefully paves the way for future low-cost RCTs to explore the efficacy of growth mindset SSIs for young people.

Key points and relevance

- Children and young people's mental health is a concern world-wide with social media becoming an increasingly popular way to reach young people en masse.
- Single Session Interventions (SSIs) are emerging as a promising way to overcome barriers associated with accessing mental health services.
- Research in America has shown that SSIs are effective at reducing symptoms of depression and promoting a growth mindset.
- The present RCT found promising effects for personality mindset, however, was underpowered. In contrast to previous research this study did not detect an effect on depression symptoms.
- The current research lays foundations for future digital SSI research in the UK.

References

Armstrong, R. A. (2014). When to use the Bonferroni correction. *Ophthalmic and Physiological Optics/Ophthalmic & Physiological Optics*, *34*(5), 502–508. https://doi.org/10.1111/opo.12131

Austin, P. C., White, I. R., Lee, D. S., & Van Buuren, S. (2021). Missing data in Clinical Research: A tutorial on Multiple imputation. *Canadian Journal of Cardiology*, *37*(9), 1322–1331. https://doi.org/10.1016/j.cjca.2020.11.010

Bennett, D. (2001). How can I deal with missing data in my study? *Australian and New Zealand Journal of Public Health*, *25*(5), 464–469. https://doi.org/10.1111/j.1467-842x.2001.tb00294.x

Burnette, J. L., Billingsley, J., Banks, G. C., Knouse, L. E., Hoyt, C. L., Pollack, J. M., & Simon, S. (2023). A systematic review and meta-analysis of growth mindset interventions: For whom, how, and why might such interventions work? *Psychological Bulletin*, *149*(3–4), 174–205. https://doi.org/10.1037/bul0000368

Burnette, J. L., Knouse, L. E., Vavra, D., O'Boyle, E. H., & Brooks, M. A. (2020). Growth mindsets and psychological distress: A meta-analysis. *Clinical Psychology Review*, *77*, 101816. https://doi.org/10.1016/j.cpr.2020.101816

Ching, B. C. F., Bennett, S., Morant, N., Heyman, I., Schleider, J. L., Fifield, K., Allen, S., & Shafran, R. (2022). Growth mindset in young people awaiting treatment in a paediatric mental health service: A mixed methods pilot of a digital single-session intervention. *Clinical Child Psychology and Psychiatry*, *28*(2), 637–653. https://doi.org/10.1177/13591045221105193

Chorpita, B. F., Yim, L., Moffitt, C., Umemoto, L. A., & Francis, S. E. (2000). Assessment of symptoms of DSM-IV anxiety and depression in children: a revised child anxiety and

depression scale. *Behaviour Research and Therapy*, *38*(8), 835–855. https://doi.org/10.1016/s0005-7967(99)00130-8

Department of Health and Social Care. (2015, March 17). *Future in Mind Improving mental health services for young people*. GOV.UK. https://www.gov.uk/government/publications/improving-mental-health-services-for-young-people

Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories: elaboration and extension of the model. *Psychological Inquiry*, *6*(4), 322–333. https://doi.org/10.1207/s15327965pli0604_12

Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. Perspectives on Psychological Science, 14, 481– 496. https://doi.org/10 .1177/1745691618804166

Fursland, A., Erceg-Hurn, D. M., Byrne, S., & McEvoy, P. M. (2018). A single session assessment and psychoeducational intervention for eating disorders: Impact on treatment waitlists and eating disorder symptoms. *International Journal of Eating Disorders*, *51*(12), 1373–1377. https://doi.org/10.1002/eat.22983

Funder, D. C., & Ozer, D. J. (2019). Evaluating Effect Size in Psychological Research: Sense and Nonsense. Advances in Methods and Practices in Psychological Science, 156–168. doi: 10.1177/2515245919847202

Gee, B., Wilson, J., Clarke, T., Farthing, S., Carroll, B., Jackson, C., King, K., Murdoch, J., Fonagy, P., & Notley, C. (2020). Review: Delivering mental health support within schools and colleges – a thematic synthesis of barriers and facilitators to implementation of indicated psychological interventions for adolescents. *Child and Adolescent Mental Health*, *26*(1), 34–46. https://doi.org/10.1111/camh.12381

Gelinas, L., Pierce, R., Winkler, S., Cohen, I. G., Lynch, H. F., & Bierer, B. E. (2017). Using Social Media as a Research Recruitment Tool: Ethical Issues and Recommendations.

The American Journal of Bioethics, *17*(3), 3–14. https://doi.org/10.1080/15265161.2016.1276644

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment*, *20*(2), 93–102. https://doi.org/10.1037/1040-3590.20.2.93

Harrer, M., Cuijpers, P., Schuurmans, L.K.J., Kaiser, T., Buntrock, C., van Straten, A. & Ebert, D. Evaluation of randomized controlled trials: a primer and tutorial for mental health researchers. Trials 24*, 562 (2023).* doi: 10.1186/s13063-023-07596-3.

Hatch, L. M., Widnall, E., Albers, P. N., Hopkins, G., Kidger, J., De Vocht, F., Kaner, E., Van Sluijs, E. M. F., Fairbrother, H., Jago, R., & Campbell, R. (2023). Conducting school-based health surveys with secondary schools in England: advice and recommendations from school staff, local authority professionals, and wider key stakeholders, a qualitative study. *BMC Medical Research Methodology*, *23*(1). https://doi.org/10.1186/s12874-023-01957-x

Hayes, L., Boyd, C. P., & Sewell, J. (2011). Acceptance and Commitment Therapy for the Treatment of Adolescent Depression: A Pilot Study in a Psychiatric Outpatient Setting. *Mindfulness*, *2*(2), 86–94. https://doi.org/10.1007/s12671-011-0046-5

Hoyt, C. L., & Burnette, J. L. (2020). Growth Mindset messaging in Stigma-Relevant contexts: Harnessing benefits without costs. *Policy Insights From the Behavioral and Brain Sciences*, *7*(2), 157–164. https://doi.org/10.1177/2372732220941216

Hülsheger, U. R., Alberts, H. J. E. M., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*, *98*(2), 310–325. https://doi.org/10.1037/a0031313

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *59*(1), 12–19. https://doi.org/10.1037/0022-006x.59.1.12

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 593. https://doi.org/10.1001/archpsyc.62.6.593

Kneeland, E. T., Nolen-Hoeksema, S., Dovidio, J. F., & Gruber, J. (2016). Beliefs about emotion's malleability influence state emotion regulation. *Motivation and Emotion*, *40*(5), 740–749. https://doi.org/10.1007/s11031-016-9566-6

Little, R. J. A. (1988). A Test of Missing Completely at Random for Multivariate Data with Missing Values. *Journal of the American Statistical Association*, *83*(404), 1198–1202. https://doi.org/10.1080/01621459.1988.10478722

Limeri, L. B., Carter, N. T., Choe, J., Harper, H. G., Martin, H. R., Benton, A., & Dolan, E. L. (2020). Growing a growth mindset: characterizing how and why undergraduate students' mindsets change. *International Journal of STEM Education*, *7*(1). https://doi.org/10.1186/s40594-020-00227-2

Mackenzie, K., & Williams, C. (2018). Universal, school-based interventions to promote mental and emotional well-being: what is being done in the UK and does it work? A systematic review. *BMJ Open*, *8*(9), e022560. https://doi.org/10.1136/bmjopen-2018-022560

McCoy, E. (2017). Understanding the Intention-to-treat Principle in Randomized Controlled Trials. *Western Journal of Emergency Medicine*, *18*(6), 1075–1078. https://doi.org/10.5811/westjem.2017.8.35985

Moffat, K., Shi, W., Cannon, P. J., & Sullivan, F. (2023). Factors associated with recruitment to randomised controlled trials in general practice: a systematic mixed studies review. *Trials*, *24*(1). https://doi.org/10.1186/s13063-022-06865-x

Neil, A., Batterham, P. J., Christensen, H., Bennett, K., & Griffiths, K. M. (2009). Predictors of Adherence by Adolescents to a Cognitive Behavior Therapy Website in School and Community-Based Settings. *Journal of Medical Internet Research*, *11*(1), e6. https://doi.org/10.2196/jmir.1050

Neff, K. (2003). Self-Compassion: An Alternative Conceptualization of a Healthy Attitude Toward Oneself. *Self and Identity*, *2*(2), 85–101. https://doi.org/10.1080/15298860309032

NHS Digital (2021). *Mental Health of Children and Young People in England 2021 - wave 2 follow up to the 2017 survey*. Retrieved June 12, 2022, from https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2021-follow-up-to-the-2017-survey

NHS Digital (2023). *Mental Health of Children and Young People in England, 2023 - wave 4 follow up to the 2017 survey.* Retrieved February 14, 2024, from https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2023-wave-4-follow-up#resources

Osborn, T. L., Rodríguez, M., Wasil, A. R., Venturo-Conerly, K. E., Gan, J., Alemu, R., Roe, E., G, S. A., Otieno, B. H., Wasanga, C., Shingleton, R., & Weisz, J. R. (2020). Single-session digital intervention for adolescent depression, anxiety, and well-being: Outcomes of a randomized controlled trial with Kenyan adolescents. *Journal of Consulting and Clinical Psychology*, *88*(7), 657–668. https://doi.org/10.1037/ccp0000505

Place2be. (2019). *Digital Direction Youth Consultation Report 2019*. Retrieved January 20, 2024, from https://participationpeople.infogram.com/p2b-or-place2be-online-mental-health-research-rep-2018-19-1h174908r5jq4zj

Public Health England & Children and Young People's Mental Health Coalition. (2015). Promoting children and young people's emotional health and wellbeing: A whole school and college approach. Crown Copyright.

Public Health England. (2019). *Universal Approaches to Improving Children and Young People's Mental Health and Wellbeing. Report of the Findings of a Special Interest Group.* London, UK: Crown Copyright

Perkins, A. M., Bowers, G., Cassidy, J., Meiser-Stedman, R., & Pass, L. (2021). An enhanced psychological mindset intervention to promote adolescent wellbeing within educational settings: A feasibility randomized controlled trial. *Journal of Clinical Psychology*, *77*(4), 946–967. https://doi.org/10.1002/jclp.23104

Radez, J., Waite, P., Chorpita, B., Creswell, C., Orchard, F., Percy, R., Spence, S. H., & Reardon, T. (2021). Using the 11-item Version of the RCADS to Identify Anxiety and Depressive Disorders in Adolescents. *Research on Child and Adolescent Psychopathology*, *49*(9), 1241–1257. https://doi.org/10.1007/s10802-021-00817-w

RStudio Team. (2015). *RStudio: Integrated Development Environment for R*. Boston, MA. Retrieved from http://www.rstudio.com/

Ryan, S., & Mercer, S. (2012). Implicit theories: Language learning mindsets. In S. Mercer, S. Ryan, & M. Williams (Eds.), Psychology for language learning (pp. 74–89). Palgrave Macmillan

Schleider, J. L., Dobias, M., Sung, J., Mumper, E., & Mullarkey, M. C. (2020). Acceptability and Utility of an Open-Access, Online Single-Session Intervention Platform for

Adolescent Mental Health. *JMIR Mental Health*, *7*(6), e20513. https://doi.org/10.2196/20513

Schleider, J. L., & Weisz, J. R. (2016). Reducing risk for anxiety and depression in adolescents: Effects of a single-session intervention teaching that personality can change. *Behaviour Research and Therapy*, *87*, 170–181. https://doi.org/10.1016/j.brat.2016.09.011

Schleider, J. L., & Weisz, J. R. (2017). Little Treatments, Promising Effects? Meta-Analysis of Single-Session Interventions for Youth Psychiatric Problems. *Journal of the American Academy of Child & Adolescent Psychiatry*, *56*(2), 107–115. https://doi.org/10.1016/j.jaac.2016.11.007

Schleider, J., & Weisz, J. (2018). A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial. *Journal of Child Psychology and Psychiatry*, *59*(2), 160–170. https://doi.org/10.1111/jcpp.12811

Schroder, H. S., Callahan, C. P., Gornik, A. E., & Moser, J. S. (2019). The Fixed Mindset of Anxiety Predicts Future Distress: A Longitudinal Study. *Behavior Therapy*, *50*(4), 710–717. https://doi.org/10.1016/j.beth.2018.11.001

Smith, M. V. A., Grohmann, D., & Trivedi, D. (2023). Use of social media in recruiting young people to mental health research: a scoping review. *BMJ Open*, *13*(11), e075290. https://doi.org/10.1136/bmjopen-2023-075290

Tamir, M., John, O. P., Srivastava, S., & Gross, J. J. (2007). Implicit theories of emotion: Affective and social outcomes across a major life transition. *Journal of Personality and Social Psychology*, *92*(4), 731–744. https://doi.org/10.1037/0022-3514.92.4.731

Team, V., Bugeja, L., & Weller, C. (2018). Barriers and facilitators to participant recruitment to randomised controlled trials: A qualitative perspective. *International Wound Journal*, *15*(6), 929–942. https://doi.org/10.1111/iwj.12950

Woods, A. D., Gerasimova, D., Van Dusen, B., Nissen, J., Bainter, S. A., Uzdavines, A., Davis-Kean, P. E., Halvorson, M. A., King, K. M., Logan, J., Xu, M., Vasilev, M. R., Clay, J. M., Moreau, D., Joyal-Desmarais, K., Cruz, R. A., Brown, D. H., Schmidt, K., & Elsherif, M. M. (2023). Best practices for addressing missing data through multiple imputation. *Infant and Child Development*. https://doi.org/10.1002/icd.2407

World Health Organization. (2003). Caring for children and adolescents with mental disorders: Setting WHO directions. WHO Document Production Services.

Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, *75*(9), 1269–1284. https://doi.org/10.1037/amp0000794

Yeager, D. S., Miu, A. S., Powers, J., & Dweck, C. S. (2013). Implicit Theories of Personality and Attributions of Hostile Intent: A Meta-Analysis, an Experiment, and a Longitudinal Intervention. *Child Development*, *84*(5), 1651–1667. https://doi.org/10.1111/cdev.12062

CHAPTER FIVE: Additional Methodology for Empirical Paper

This chapter contain information that could not be included in the empirical project's publication due to restrictions on word count, however the information is supplementary and not essential.

Ethical Considerations

When designing the study, a number of ethical considerations were taken into account. The intervention itself was deemed to be a feasible and acceptable tool to promote mental health (Perkins et al., 2021) and suggestions made in the feedback from the feasibility study were taken onboard and implemented where possible (e.g., reduction of measures, the move to online modal of delivery to reduce the burden to host sites, and time taken away from educational activities). The intervention also gained positive feedback with education staff and students reporting that "the intervention could help reduce stigma about mental health". Given that this study did not recruit a clinical population or involve the National Health Service (NHS) it was only required to obtain ethical approval through The Faculty of Medicine and Health Sciences Research Ethics Committee (FMH S-REC).

As the study recruited participants via social media the researchers made sure to abide by the terms and conditions of the platforms (UEA Research Ethics Guidance – Researching Involving Social Media Data, 2021). The researchers submitted posters, text and study material to the ethics committee for approval and amendments were sought when needed.

Consent & Coercion

For the present study, the researchers sought consent by electronic methods (eConsent) following the Health Research Authority (HRA; 2022) guidelines instead of the traditional method of face-to-face meetings and paper participant information and consent forms. Capacity to consent was assumed for all participants over the age of 16 (BPS, 2021) as it was recognised working solely online will make it harder to assess if individuals are able to

understand, retain, and weigh up all the relevant information, then communicate their decision to take part. Ongoing capacity was therefore assumed throughout the study.

Gaining consent for the 14–16-year-olds ethically presented a challenge as ideally parents/guardians' consent would also be sought, although 13-year-olds are able to create a social media account without parental consent. Gillick competence was used in the present study as it would be difficult to gain parental consent due to the nature of recruitment and the minimisation of collection of personal information (UEA Research Ethics Guidance – Researching Involving Children, 2021). Gillick Competence has been used widely in schools to allow 12–15-year-olds to consent to receiving the COVID-19 vaccination (UK Health Security Agency, 2021) and for medical procedures "competent minors can consent" (Shaw, 2001). Furthermore, giving young people the choice to participate in what could be a valuable universal preventative intervention was deemed important, and consultation with young people prior to the start of the study emphasised this (see PPI).

All participant information was written in a way that is accessible to adolescents, to allow optimum understanding (based on information tried and tested in the feasibility study), so they have all the information, allowing them to make an informed decision and not feel coerced into consenting. Having the participants complete the study online, in their own homes and not in a school setting also allowed for them to be in a context that does not exert power, and in turn feel more in control of their decision to participate (BPS, 2021a). Furthermore, by conducting the study online the researchers hoped it helped to shift the power imbalance as the researchers were not physically there exerting any unconscious obligation for them to take part. It was also made clear to participants that they can decline to take part or withdraw at any point up until the data is anonymised, where it would no longer be able to be removed. Participants were able to drop out of the study by closing the webpage on their devices.

There was a prize draw in which 15 participants who completed the follow-up were randomly selected at the end of the study to win an Amazon voucher (not cash) worth £10. The HRA (2014) and BPS (2021a) offer guidance on payments and incentives in research. Vouchers can be used as an incentive to take part in the research; however, it is not a large enough sum of money or number of vouchers to compromise a participant's reason for consenting to partake in the research (BPS, 2021a). Some other ethical considerations taken into account with the prize draw included the storage of personal information, however, these contact details were stored in a separate place to study data (see confidentiality for more information).

Confidentiality

Subject to the requirements of the law, including UK General Data Protection Regulation (GDPR; 2018) and the Data Protection Act (2018), the minimum amount of personally identifiable data was collected, and all information was treated as confidential, with only the research team being able to access it. Participants were made aware of all data the researchers were collecting and how they stored it. For example, data in digital media format was stored on a password-protected computer on OneDrive for Business (a secure cloud-based file storage system, approved by the university's data management policy [UEA, 2020]). Non-identifiable data was accessed off the university premises for the purpose of analyses via OneDrive. As per the policy, data will also be stored for at least 10 years following publication before being destroyed.

The BPS guidance for internet-mediated research (2021b) details the main ethical issues and considerations and highlights that some risks are not always as obvious. This is due to the nature of the online environment and reduced researcher control, for example, confidentiality of data. However, as the participants were only being recruited through online

means, with only basic demographic information being taken (age, gender, ethnicity) and all personal data was anonymised, the researchers hopefully minimised any ethical concerns.

Participants were also given an ID number so that their names were not recorded, however, they were made aware that email addresses were stored to allow them to be contacted for follow-ups and to send the prize draw to. Guidance suggested the storage of these separately from the study information, on a password protected code sheet that only the researcher has access to (BPS, 2021b), which OneDrive can do securely. As always participants were informed of this.

Deception & Debriefing

There was no deception involved in the present study, therefore no formal debrief with the researchers was offered, however, participants were able to opt in to receiving the results of the study and were informed of how the findings would be shared on their participant information sheet. There were also links to websites and services that can provide additional support throughout and at the end of the intervention. The contact details of the main researcher were also provided so participants could get in contact with them if they needed to.

No one contacted the researcher to alert them of any adverse events or for any queries regarding the research. However, one young person reached out to offer feedback regarding the use of questionnaires, and explained they would be more inclined to take part if there weren't any.

Distress

The feasibility study did not report any findings of distress from the participants (other than potential boredom due to time at the computer). Therefore, due to the nature of the intervention being low risk and its potential benefits as a universal tool to promote mental health (Perkins et al., 2021) the researchers did not anticipate it would cause harm; however,

this can never be certain, and therefore access to support via websites were provided throughout the intervention (available as a click link on every page of the online study) where participants can access support and information if they require. Again, the lead researcher's contact details were provided, and they were not informed of any harm as a result of the intervention. The NHS HRA guidelines along with the feasibility trials documentation were also used to inform the participant information sheet (Appendix 4.6).

Public and Patient Involvement (PPI)

PPI was used throughout the feasibility study to design the intervention and gain feedback on the feasibility and acceptability of the design, with changes being made accordingly. For the present study PPI from young people was sought where it could be meaningfully used, for example, gaining advice on how to advertise the study and the presentation of the information sheets. Edits to the language used were made where advised by PPI members before submitting to ethics for approval. Once recruitment went live PPI was further sought for advice from a youth advisory group on how to reach young people during a dip in recruitment, as well as meeting with schools. Themes that emerged from meetings suggested that YouTubers would be good to recruit/promote it; Instagram is better than Facebook; they would rather choose to take part themselves rather than having a parent share with them; questionnaires make taking part less appealing; they advised on how to make adverts more cohesive/stand out; expressed that it was a shame to not recruit via the NHS as an intervention they could access whilst waiting for assessment/treatment; schools did not have much capacity to support.

Sample Size Calculation

Prior to the start of recruitment, a power analysis was conducted to calculate an appropriate sample size, based on the 4-week follow up of the feasibility trial (Perkins et al., 2021) which found an effect size of g = -0.32 for depression and g = -0.44 for the anxiety

subscale, and although power to detect a smaller effect is ideal, to achieve an effect size of .3 the current study would need to recruit 352 participants, and given the timeframe constraints of the project this was deemed unlikely. Schleider and Weisz (2016) opted for a more conservative goal in their RCT due to logistical constraints and recruited 96 (which after attrition equalled 71 participants in total) which influenced the decision to aim for final 220 participants (effect size .38, power .8).

Amendments

Originally the study planned to only recruit via social media platforms but due to poor uptake, budget constraints and Meta changing the way in which you can advertise to anyone under the age of 16, ethics amendments were sought and approved to also allow for recruitment via schools and third sector charities and organisations (Appendix 5.1).

References

British Psychological Society (2021a, April). *BPS Code of Human Research Ethics.* Retrieved June 10, 2022, from https://www.bps.org.uk/sites/bps.org.uk/files/Policy/Policy%20-%20Files/BPS%20Code%20of%20Human%20Research%20Ethics.pdf

British Psychological Society. (2021b, June). *Ethics guidelines for internet mediated research*. https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Ethics%20Guidelines%20for%20Internet-mediated%20Research.pdf

Health Research Authority (2014). *Payments and Incentives in Research*. Retrieved from: https://s3.eu-west-2.amazonaws.com/www.hra.nhs.uk/media/documents/hra-guidance-payments-incentives-research.pdf

Health Research Authority (2022). *HRA and MHRA publish joint statement on seeking and documenting consent using electronic methods (eConsent)*. (2018). Retrieved June 11, 2022, from https://www.hra.nhs.uk/about-us/news-updates/hra-and-mhra-publish-joint-statement-seeking-and-documenting-consent-using-electronic-methods-econsent/

Information Commissioners Office (2018). *Guide to the UK General Data Protection Regulation (UK GDPR)*. Retrieved 7 July 2021, from https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/.

Perkins, A. M., Bowers, G., Cassidy, J., Meiser-Stedman, R., & Pass, L. (2021). An enhanced psychological mindset intervention to promote adolescent wellbeing within educational settings: A feasibility randomized controlled trial. *Journal of Clinical Psychology*, *77*(4), 946–967. https://doi.org/10.1002/jclp.23104

Shaw, M. (2001). Competence and consent to treatment in children and adolescents. *Advances in Psychiatric Treatment*, *7*(2), 150–159. https://doi.org/10.1192/apt.7.2.150

University of East Anglia (2021) *Research Ethics Guidance – Researching Involving Social Media Data, 2021.* Retrieved from https://my.uea.ac.uk/documents/20142/15431415/27.+Research+Involving+Social+Media+Data+-+FINAL+11+08+21.pdf/f634c943-4742-00fb-e947-49f3bb1293ea?t=1628850869157

UEA Research Ethics Guidance (2021) *Researching Involving Children*. Retrieved from: https://my.uea.ac.uk/documents/20142/15431415/14.+Research+Involving+Children+-+FINAL+06+08+21.pdf/cd12f28c-614d-b060-24aa-248a808241c6?t=1628505175362

UK Health Security Agency. (2021, June 18). *Consent: the green book, chapter 2*. GOV.UK. Retrieved June 20, 2022, from https://www.gov.uk/government/publications/consent-the-green-book-chapter-2

UEA data management policy (2020). Retrieved from: https://my.uea.ac.uk/documents/20142/9487190/Updated_Research_Data_Management_Policy_v1-8.pdf/6ba705a7-f595-5437-9692-9078719fd22f?t=1612875768156

CHAPTER SIX: Discussion and Critical Evaluation

Discussion and Critical Evaluation

The overall aim was to contribute to the growing evidence base for single session interventions (SSIs) as another way of meeting the treatment needs of young people given the barriers to currently accessing evidence-based interventions, as described in previous chapters. The research conducted for this thesis aimed to systematically review and synthesise current evidence from randomised controlled trials of self-administered SSIs for young people's mental health. Furthermore, it also examined the efficacy of a solely online, low-cost, SSI to explore whether outcomes were indicative of positive change in anxiety and depression symptoms, beliefs about growth in mindset and psychological flexibility. This chapter will detail an overview of the findings from each study and critically discuss how they contribute to theory, clinical practice, and research in the field of child and adolescent mental health.

Overview of findings

Systematic Review and Meta-Analysis

The systematic review identified 22 eligible studies, 19 of which were meta-analysed. The included studies exhibited either low risk of bias or some concerns, none were rated as high risk. There was a small pooled effect for anxiety symptoms (g = -0.22, 95% CI: -0.40, -0.04) which was similar to previous reviews. Furthermore, we found a small effect for depressive symptoms (g = -0.12, 95% CI: -0.23, -0.01) which contributed a new finding. The findings suggest that, on average, self-administered SSIs are efficacious in reducing anxiety and depressive symptoms, however, they do have wide prediction intervals. Promising effects were also observed in studies that focused on encouraging growth in personality mindset, although there were not enough to be pooled, therefore more research is warranted to explore further.

Empirical Study

The empirical paper detailed a randomised controlled trial (RCT) of a single-session growth mindset intervention video. In total, 104 young people aged 14-18 years old were recruited through advertisements on social media and schools, however the recruitment target of 220 participants was not reached, resulting in the study being underpowered. Following baseline assessment, participants were randomised to either intervention or waitlist control and followed up four weeks later. Missing data was handled via multiple imputation and an intention-to-treat (ITT) analysis was conducted, along with a secondary sensitivity analysis on case completer data. For the ITT analysis, no significant findings were reported for the primary target outcome (anxiety and depression), but a significant large effect ($p = .02$, $d = -.96$, 95% CI= -1.87, -0.04), was found for the secondary outcome of personality mindset, however this was non-significant following Bonferroni correction.

Strengths and Limitations

Systematic Review and Meta-Analysis

The systematic review and meta-analysis presented a comprehensive synthesis of the current evidence regarding self-administered SSIs, and to the authors knowledge, is the first to do so. Separate meta-analysis were also conducted for different outcomes (e.g. anxiety and depression) to increase homogeneity. Another strength of this review is its ability to bridge research and clinical practice with its direct clinical implications, which are a benefit of the scientist-practitioner role of clinical psychologists undertaking the review (Shapiro, 2002). The review was also pre-registered, and decisions were made *a priori* to increase transparency and reduce bias (Stewart et al., 2012).

Furthermore, the review highlighted the potential for SSIs to increase accessibility to interventions for those young people who are disproportionally falling through the gaps in services provision (e.g. ethnic minorities, LGBTQ+ youth) who are particularly vulnerable to experiencing depression (Deighton et al., 2019; Loades & Schleider, 2023). Therefore, the

research poses an important question for young people to consider regarding the payoff between multiple factors when considering which intervention they wish to engage with.

The systematic review highlighted the need for SSI research to be more culturally inclusive. Osborn et al. (2020) demonstrated that a culturally adapted growth mindset SSI significantly reduced depression symptoms ($d = 0.5$) at two weeks in a sample of Kenyan adolescents, and Wasil et al. (2020) was identified during screening (but did not meet inclusion criteria) but was the only other study noted that explored SSIs in lower-income countries, and different culture.

Reporting and commenting on prediction intervals are another strength of the present review, as Bornstein (2023) advises it is incorrect (as many meta-analyses do) to report only I^2 statistic, as this can only inform us of the proportion of variance, not how much they vary. By reporting prediction intervals, we can critically see that future RCTs of SSIs may find no effect as a result of their intervention.

In terms of limitations, the process of identifying a gap in the research to conduct a systematic review on was challenging and delayed the progress of the systematic review. However, this did allow the main author to immerse themselves more fully in the current literature surrounding SSIs. If the time constraint of the current project had been improved by quicker selection of a research focus, it would have been desirable to have the second reviewer screen all titles, abstracts and full texts (rather than a percentage) to create a more robust and comprehensive screening process as per PRISMA guidelines (Page et al., 2021). However, the use of a second reviewer was still a strength of this review.

The limited number of studies limited the opportunity for moderator analyses which reduced the option for exploring variables of interest. For example, some studies included in the review employed a no treatment control whereas other used an active therapy control. It would be valuable to explore this further as the research develops, since previous meta-

analyses highlight control type as an important moderator, suggesting that no treatment control often allows the treatment condition to appear stronger, compared to active controls (Weisz et al., 2017).

The quality assessment also revealed that some studies had more the 95% missing data at follow-up and although this was handled using various statistical methods, Cochrane outlines that this does not always account for the bias this introduces. Furthermore, the lack of pre-registered analysis plans in some studies meant the authors were unable to ascertain if the analysis was conducted based on finalised plans prior to outcome data becoming available

Another methodological limitation of the included studies in the review pertains to all the data being self-reported by young people, as this was also found to have a significant impact on the effects seen (Weisz et al., 2017).

Empirical Study

A strength of the empirical project was that it gained ethical approval to recruit 14–18-year-olds without parental consent. As detailed in Chapter Five, ethics regarding this were considered in detail, but it was an important step in empowering young people to take part in research, and the decision was supported by Public and Patient involvement (PPI). Given that there was no intrusive data collection and the low risk associated with the intervention, Gillick competence was employed as has been described in other public health and online research (e.g., Bonell et al., 2023; Shen et al., 2023). Employing targeted adverts and the use of schools to advertise the study to prospective participants hopefully also increased the likelihood that participants were the actual age they stated (and were required to be in order to be eligible for the study). However, as the researchers never encountered participants this is something to consider.

The empirical project was able to develop on the methodology in the feasibility trial and address comments made by participants on its accessibility, by moving to an online

method of delivery. It aimed to alleviate the burden on schools and allowed young people to engage with important research outside of the school setting. A limitation of using a solely online model of delivery is the assumption that you can target harder to reach young people, however, conversely, research suggests that targeting those with internet can inadvertently mean you only recruit samples from higher socioeconomic status (Smith et al., 2023). This is interesting to note as in the empirical paper, 75% of participants reported that their parents owned their own home, however, no further socioeconomic details were taken. The findings from the present study were however also consistent with the feasibility findings at four weeks, suggesting this intervention works well on attitudes towards mindset (which is its intended mechanism of action).

Another strength was the transparent reporting of the intention to treat analyses (ITT), alongside the case completer analyses. It is rare to obtain a full data set in real life and often researchers are at times not transparent with their analyses (Nich & Carroll, 2002), which this trial aimed to avoid. The current research also included the baseline data in the imputation model to allow for all available participant data to be taken into account (Woods et al., 2023), and followed comprehensive guidelines.

The main limitation of the empirical project was its challenges with recruitment which delayed progress and meant that the final sample was underpowered to detect a meaningful effect. A further limitation of the present study is its susceptibility to be seen as biased with regard to its analyses. Clinicaltrials.gov currently does not require researchers to provide their analytical plan during pre-registration (instead encourages you to upload along with results), which was the method this RCT followed. Although no changes were made to the primary outcome target based on findings in the present study, Schleider et al (2019) emphasises the importance of SSI research being more transparent to reduce bias when reporting results from future trials. Conducting multiple imputation when there is greater than 50% missing data (as

was the case in the empirical project) is also not recommended (Jakobsen et al., 2017). However, for the purpose of exploration, this was undertaken. Woods et al. (2023) detail the multiple and ever developing ways that researchers can handle missing data, and state that multiply imputed data has been shown to be more accurate and reduce bias, compared to listwise deletion (e.g. just looking at case completers data).

In terms of the outcome measures used, they were chosen to reduce burden following feedback from the feasibility trial. However, the RCADS-11 is a relatively new measure, which does not allow for t-scores (or age adjustment) and therefore there is no clinical interpretation possible beyond exploring the number of young people who score above a cut-off score (as described in Chapter Four). It is possible therefore that it could not be sensitive enough to detect reliable clinical change (McAleavey, 2022).

Finally, the current study deviated from the feasibility trials original methodology with the move to recruit via online methods. The researchers were also not very active social media users prior to the start of the study, so it is unclear how effective it was for them to share the study online, plus they are not particularly connected with the target demographic. Given more time, it would have been desirable to have created more of an online presence for the research project and used PPI to develop advertisement material in collaboration. Also, with a larger budget other promotional avenues could have been explored as suggested by PPI members (e.g., using YouTubers to promote the study).

Current Challenges

The empirical project and systematic review highlighted some of the current wider challenges faced in science. For example, a recent meta-analysis by Wang et al (2023) found that internet-based self-help interventions were more effective for mental health disorders compared to control groups (and the majority of studies described within the systematic review were conducted online). However, they also highlighted that therapist-delivered

interventions over eight weeks long yielded the greatest effects for anxiety and depression, demonstrating that therapist-guided interventions could be superior. Nevertheless, this introduces burdens associated with time, cost, and the need for professionally trained staff, which self-administered SSIs may be able to alleviate.

Furthermore, the empirical study was subject to a large number of bot responses which is a common occurrence in online studies (Storozuk et al., 2020). This was resolved using Qualtrics reCAPTCHA software, however added after the fact and earlier addition would have been beneficial. In future, potentially recruiting more schools and fostering relationships to enable better recruitment would be a more effective way of securing a larger sample. However, this does not diminish the strength of the empirical project which allowed the young people to actively choose autonomously if they would like to take part (as described earlier), which is a positive step forward in empowering young people to participate in research.

Finally, some school emails blocked contact so the lead researcher could not contact some participants for follow-ups, suggesting that Qualtrics emails may also not have been received by several participants, which could have potentially hindered the follow-up rate. Future studies should explore solutions to this problem, to make sure all young people who consent to take part get the opportunity to.

Clinical and Theoretical Implications

Research suggests that less severe mental health problems are incurring the greatest wait times (Edbrooke-childs & Deighton, 2020), and a previous meta-analysis found that self-help is better than no intervention but slightly worse than face-to-face treatment (Bennett et al., 2019). It is worth noting that the studies included in Bennett et al. (2019) were not SSIs, therefore it would be beneficial for future research to explore whether they could be a useful universal approach for those less severe mental health problems. This is important given that

research suggests SSIs are most effective when used as early intervention or prevention. Furthermore, there is evidence from a recent meta-analysis by Burnette et al. (2020) that suggests the link between mindsets and psychological distress impacts people similarly, irrespective of whether they are experiencing clinical or non-clinical symptoms of mental health difficulties. Given the positive link between growth mindsets and coping (Burnette et al., 2020) it further promotes growth mindset SSIs potential application as a universal tool that anyone could benefit from. Other research on SSIs has looked at incorporating parents to improve outcomes for young people. One study found that their SSI improved parents factors associated with a child's anxiety and depression (Cardamone-Breen et al., 2018), and although more research is needed, this highlights the protective impact parents can have on young people's mental health. Future research could also examine how long the effects of growth mindset interventions last given the likelihood that many participants in the empirical project surpassed the four-week follow-up. Also, several moderators were identified in the Systematic Review for future research to explore.

The empirical project highlighted that RCTs do not need to be costly to run and has hopefully paved the way for future trials to take forward the learning and continue producing high quality research without the need for expensive trials. Furthermore, the project highlighted that there is no consensus reported in the literature about the best way to recruit young people. Schleider et al., (2022) displayed an Instagram advertisement that gained over 2000 participants within hours therefore seemed like an effective way to recruit conversely, other studies such as Van Der Zanden et al (2012) took two years to recruit a similar sample size to the present study. A recent scoping review focused on how trials recruit young people via social media (i.e. what is effective) and retain young people in trials stated that studies often don't report on the effectiveness of online recruitment methods (Smith et al., 2023), therefore more transparent reporting is needed. If future studies look to recruit via schools, it

would be beneficial to initially email and follow up with a call as detailed by Hatch et al. (2023), who also advise it is best to contact following the summer exams to allow maximum time for staff to consider where research can fit with the following years' timetable to maximise involvement.

The present empirical project intervention could also potentially be improved on by removing the last five minutes (stories of how young people used the concepts from the video) and the follow-up questions and letter writing task. Instead replacing these with supportive messages. Given the research suggesting follow-up messages or emails could sustain the lasting effects of the SSI (Hecht et al., 2023), this could reduce commitment time to 10 minutes, making it more appealing to engage with. TikTok has also become increasingly popular with the target demographic, and future research could look to adapt SSIs to fit the algorithm. This could be beneficial especially since it is a place that young people often turn to for wellbeing support and can be helpful for promoting mental health awareness given its ability to facilitate psychoeducation (Talbot & Ramsden, 2024). The systematic review added support to the claim that SSIs have the potential to reach young people who often fall through the gaps of services, however the empirical project highlighted there is still some work to be done to achieve this given the majority higher economic status of those who took part. It is important to continue striving to improve access to mental health interventions so that they are more inclusive and accessible for young people, to reframe the responsibility to those who provide the care, rather than those seeking it (Darko, 2021; Flanagan & Hancock, 2010).

Furthermore, the IPTQ items used in the empirical project were only intended to assess mindset in relation to personality therefore a bespoke measure of 'growth mindset' would be useful to be able to reliably measure the concept in the future. A recent RCT of an online growth mindset by Zimmermann & Papa (2023) employed the 'emotion mindset'

(Tamir et al., 2007) measure which captures beliefs about malleability of emotions, which taken together with the IPTQ might better capture the concept of a growth mindset.

Finally, co-producing SSIs with young people in future stands out and is in line with co-production principles outlined in the NHS (NHS England, 2023) to improve the quality and experiences of interventions. This could be beneficial given research exploring the engagement with Child and Adolescent Mental Health Services (CAMHS) in the UK suggesting young people often disengage after one session, even though it is assumed that they require repeat use of available interventions to experience effectiveness (Edbrooke-Childs et al., 2021). In contrast, the active ingredient is delivered in the SSI, not requiring repeat use (Loades & Ching, 2022).

Conclusion

The meta-analysis and empirical project are complementary projects that explored the efficacy of self-administered SSIs for young people. The medium to large effect sizes for growth mindset interventions highlighted in the Systematic Review are also consistent with findings from the Empirical project. Taken together the research from this Thesis Portfolio suggests that SSIs can have positive effects on mental health and have contributed to the field of children and young people's mental health research. In particular, the projects have contributed evidence to the growing field of SSIs aimed at promoting a growth mindset and have hopefully paved the way for future RCTs based on the learning made from the current empirical project.

References

Bennett, S., Cuijpers, P., Ebert, D. D., Smith, M. M., Coughtrey, A., Heyman, I., Manzotti, G., & Shafran, R. (2019). Practitioner Review: Unguided and guided self-help interventions for common mental health disorders in children and adolescents: a systematic review and meta-analysis. *Journal of Child Psychology and Psychiatry*, *60*(8), 828–847. https://doi.org/10.1111/jcpp.13010

Bonell, C., Humphrey, N., Singh, I., Viner, R., & Ford, T. (2023). Approaches to consent in public health research in secondary schools. *BMJ Open*, *13*(6), e070277. https://doi.org/10.1136/bmjopen-2022-070277

Borenstein, M. (2023). How to understand and report heterogeneity in a meta-analysis: The difference between I-squared and prediction intervals. *Integrative Medicine Research*, *12*(4), 101014. https://doi.org/10.1016/j.imr.2023.101014

Burnette, J. L., Knouse, L. E., Vavra, D., O'Boyle, E. H., & Brooks, M. A. (2020). Growth mindsets and psychological distress: A meta-analysis. *Clinical Psychology Review*, *77*, 101816. https://doi.org/10.1016/j.cpr.2020.101816

Cardamone-Breen, M. C., Jorm, A. F., Lawrence, K., Rapee, R. M., Mackinnon, A., & Yap, M. B. H. (2018). A Single-Session, Web-Based Parenting Intervention to prevent adolescent depression and Anxiety Disorders: randomized controlled trial. *Journal of Medical Internet Research*, *20*(4), e148. https://doi.org/10.2196/jmir.9499

Darko, N. (2021). Engaging Black and minority ethnic groups in health research. In *Policy Press eBooks*. https://doi.org/10.1332/policypress/9781447359128.001.0001

Deighton, J., Lereya, S. T., Casey, P., Patalay, P., Humphrey, N., & Wolpert, M. (2019). Prevalence of mental health problems in schools: poverty and other risk factors among 28 000 adolescents in England. *The British Journal of Psychiatry*, *215*(3), 565–567. https://doi.org/10.1192/bjp.2019.19

Edbrooke-Childs, J., & Deighton, J. (2020). Problem severity and waiting times for young people accessing mental health services. *British Journal of Psychiatry Open*, *6*(6). https://doi.org/10.1192/bjo.2020.103

Edbrooke-Childs, J., Hayes, D., Lane, R., Liverpool, S., Jacob, J., & Deighton, J. (2021). Association between single session service attendance and clinical characteristics in administrative data. *Clinical Child Psychology and Psychiatry*, *26*(3), 770–782. https://doi.org/10.1177/13591045211002609

Flanagan, S. M., & Hancock, B. (2010). "Reaching the hard to reach" - lessons learned from the VCS (voluntary and community Sector). A qualitative study. *BMC Health Services Research*, *10*(1). https://doi.org/10.1186/1472-6963-10-92

Hatch, L. M., Widnall, E., Albers, P. N., Hopkins, G., Kidger, J., De Vocht, F., Kaner, E., Van Sluijs, E. M. F., Fairbrother, H., Jago, R., & Campbell, R. (2023). Conducting school-based health surveys with secondary schools in England: advice and recommendations from school staff, local authority professionals, and wider key stakeholders, a qualitative study. *BMC Medical Research Methodology*, *23*(1). https://doi.org/10.1186/s12874-023-01957-x

Hecht, C. A., Gosling, S. D., Bryan, C. J., Jamieson, J. P., Murray, J. S., & Yeager, D. S. (2023). When do the effects of single-session interventions persist? Testing the mindset + supportive context hypothesis in a longitudinal randomized trial. *JCPP Advances*, *3*(4). https://doi.org/10.1002/jcv2.12191

Jakobsen, J. C., Gluud, C., Wetterslev, J., & Winkel, P. (2017). When and how should multiple imputation be used for handling missing data in randomised clinical trials – a practical guide with flowcharts. *BMC Medical Research Methodology*, *17*(1). https://doi.org/10.1186/s12874-017-0442-1

Loades, M., & Ching, B. C. F. (2022). Closing the needs-access gap for young people with depression: Digital single session interventions as a promising innovation to extend existing provision. *Clinical Psychology Forum*, *1*(360), 59–65. https://doi.org/10.53841/bpscpf.2022.1.360.59

Loades, M., & Schleider, J. L. (2023). Technology Matters: Online, self-help single session interventions could expand current provision, improving early access to help for young people with depression symptoms, including minority groups. *Child and Adolescent Mental Health*, *28*(4), 559–561. https://doi.org/10.1111/camh.12659

McAleavey, A. (2021). When (not) to rely on the reliable change index. *American Psychological Association*. https://doi.org/10.1037/cps0000203

Nich, C., & Carroll, K. M. (2002). 'Intention-to-treat' meets 'missing data': implications of alternate strategies for analyzing clinical trials data. *Drug and Alcohol Dependence*, *68*(2), 121–130. https://doi.org/10.1016/s0376-8716(02)00111-4

NHS England. (2023, April 12). *How co-production is used to improve the quality of services and people's experience of care: A literature review*. Retrieved February 2, 2024, from https://www.england.nhs.uk/long-read/how-co-production-is-used-to-improve-the-quality-of-services-and-peoples-experience-of-care-a-literature-review/

Osborn, T. L., Rodríguez, M., Wasil, A. R., Venturo-Conerly, K. E., Gan, J., Alemu, R., Roe, E., G, S. A., Otieno, B. H., Wasanga, C., Shingleton, R., & Weisz, J. R. (2020). Single-session digital intervention for adolescent depression, anxiety, and well-being: Outcomes of a randomized controlled trial with Kenyan adolescents. *Journal of Consulting and Clinical Psychology*, *88*(7), 657–668. https://doi.org/10.1037/ccp0000505

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T., Mulrow, C. D., Shamseer, L., Tetzlaff, J., Akl, E. A., Brennan, S., Chou, R., Glanville, J., Grimshaw,

J., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *The BMJ*, n71. https://doi.org/10.1136/bmj.n71

Schleider, J. L., Dobias, M., Sung, J., & Mullarkey, M. C. (2019). Future Directions in Single-Session Youth Mental Health Interventions. *Journal of Clinical Child & Adolescent Psychology*, *49*(2), 264–278. https://doi.org/10.1080/15374416.2019.1683852

Schleider, J. L., Mullarkey, M. C., Fox, K., Dobias, M., Shroff, A., Hart, E. A., & Roulston, C. A. (2022). A randomized trial of online single-session interventions for adolescent depression during COVID-19. *Nature Human Behaviour*, *6*(2), 258–268. https://doi.org/10.1038/s41562-021-01235-0

Shapiro, D. (2002). Renewing the scientist-practitioner model. *ResearchGate*. https://www.researchgate.net/publication/291103900_Renewing_the_scientist-practitioner_model

Shen, J., Rubin, A., Cohen, K. E., Hart, E. A., Sung, J. E., McDanal, R., Roulston, C. A., Sotomayor, I., Fox, K., & Schleider, J. L. (2023). Randomized evaluation of an online single-session intervention for minority stress in LGBTQ+ adolescents. *Internet Interventions*, *33*, 100633. https://doi.org/10.1016/j.invent.2023.100633

Smith, M. V. A., Grohmann, D., & Trivedi, D. (2023). Use of social media in recruiting young people to mental health research: a scoping review. *BMJ Open*, *13*(11), e075290. https://doi.org/10.1136/bmjopen-2023-075290

Stewart, L. A., Moher, D., & Shekelle, P. G. (2012). Why prospective registration of systematic reviews makes sense. *Systematic Reviews*, *1*(1). https://doi.org/10.1186/2046-4053-1-7

Storozuk, A., Ashley, M., Delage, V., & Maloney, E. A. (2020). Got Bots? Practical Recommendations to Protect Online Survey Data from Bot Attacks. *the Quantitative Methods for Psychology*, *16*(5), 472–481. https://doi.org/10.20982/tqmp.16.5.p472

Tamir, M., John, O. P., Srivastava, S., & Gross, J. J. (2007). Implicit theories of emotion: Affective and social outcomes across a major life transition. *Journal of Personality and Social Psychology*, *92*(4), 731–744. https://doi.org/10.1037/0022-3514.92.4.731

Ramsden, E., & Talbot, C. V. (2024). The role of TikTok in students' health and wellbeing. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-023-01224-6

Van Der Zanden, R., Kramer, J., Gerrits, R. S., & Cuijpers, P. (2012). Effectiveness of an online group course for depression in adolescents and young adults: a randomized trial. *Journal of Medical Internet Research*, *14*(3), e86. https://doi.org/10.2196/jmir.2033

Wang, Q., Zhang, W., & An, S. (2023). A systematic review and meta-analysis of Internet-based self-help interventions for mental health among adolescents and college students. *Internet Interventions*, *34*, 100690. https://doi.org/10.1016/j.invent.2023.100690

Wasil, A. R., Park, S. J., Gillespie, S., Shingleton, R., Shinde, S., Natu, S., Weisz, J. R., Hollon, S. D., & DeRubeis, R. J. (2020). Harnessing single-session interventions to improve adolescent mental health and well-being in India: Development, adaptation, and pilot testing of online single-session interventions in Indian secondary schools. *Asian Journal of Psychiatry*, *50*, 101980. https://doi.org/10.1016/j.ajp.2020.101980

Woods, A. D., Gerasimova, D., Van Dusen, B., Nissen, J., Bainter, S. A., Uzdavines, A., Davis-Kean, P. E., Halvorson, M. A., King, K. M., Logan, J., Xu, M., Vasilev, M. R.,

Clay, J. M., Moreau, D., Joyal-Desmarais, K., Cruz, R. A., Brown, D. H., Schmidt, K., & Elsherif, M. M. (2023). Best practices for addressing missing data through multiple imputation. *Infant and Child Development*. https://doi.org/10.1002/icd.2407

Weisz, J. R., Kuppens, S., Ng, M. Y., Eckshtain, D., Ugueto, A. M., Vaughn-Coaxum, R. A., Jensen-Doss, A., Hawley, K. M., Marchette, L. S. K., Chu, B. C., Weersing, V. R., & Fordwood, S. R. (2017). What five decades of research tells us about the effects of youth psychological therapy: A multilevel meta-analysis and implications for science and practice. *American Psychologist*, *72*(2), 79–117. https://doi.org/10.1037/a0040360

Zimmermann, M., & Papa, A. (2023). A randomized controlled trial of a brief internet intervention to prevent anxiety and depression among college students. *Mental Health & Prevention*, *32*, 200298. https://doi.org/10.1016/j.mhp.2023.200298

Appendices

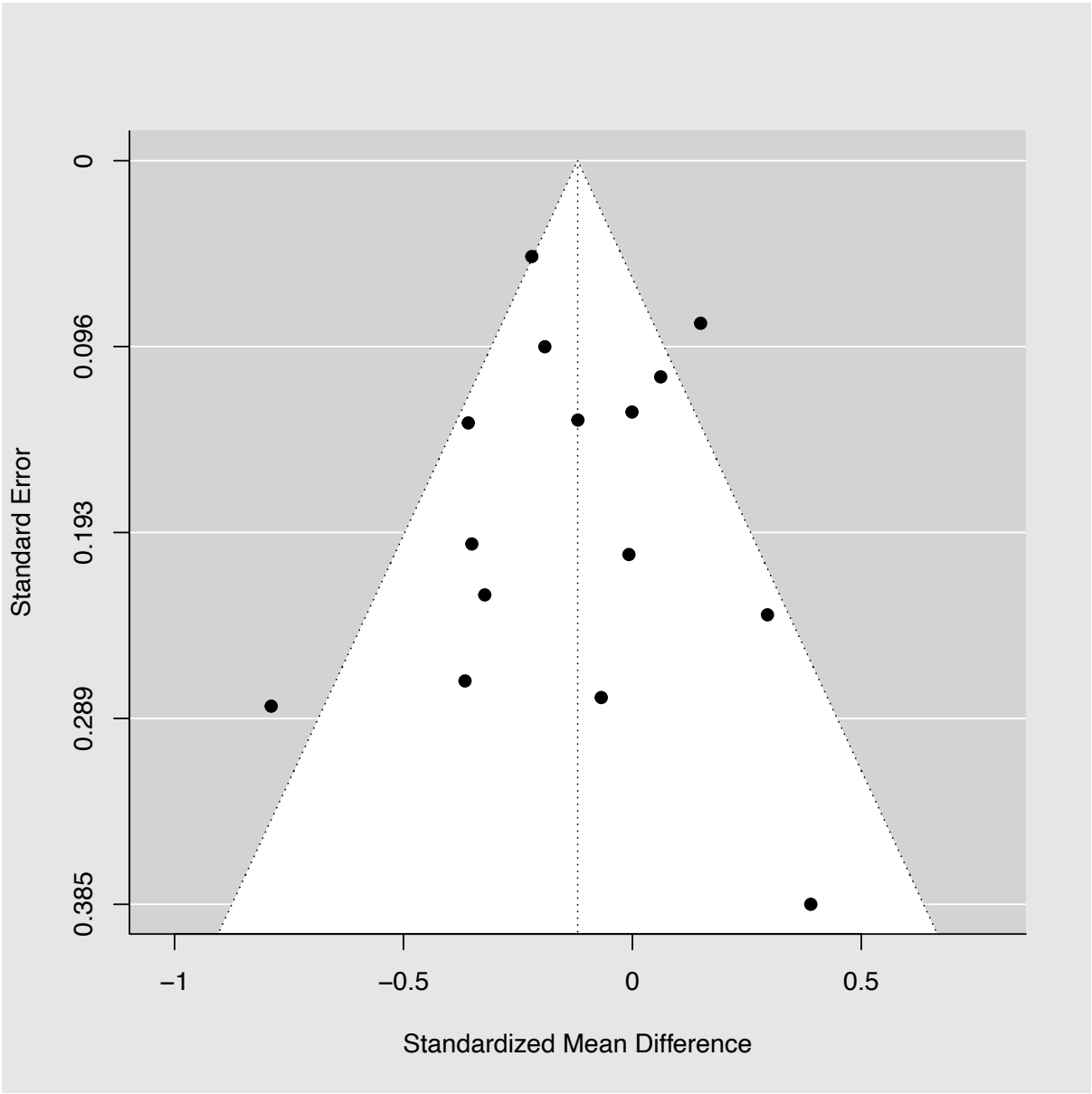
Appendix 2.1 PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 16
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 17
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 19
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 20
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 20
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 20-21
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 20-21
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 21
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 21
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 21
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Page 21
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 21
Effect	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Page 22

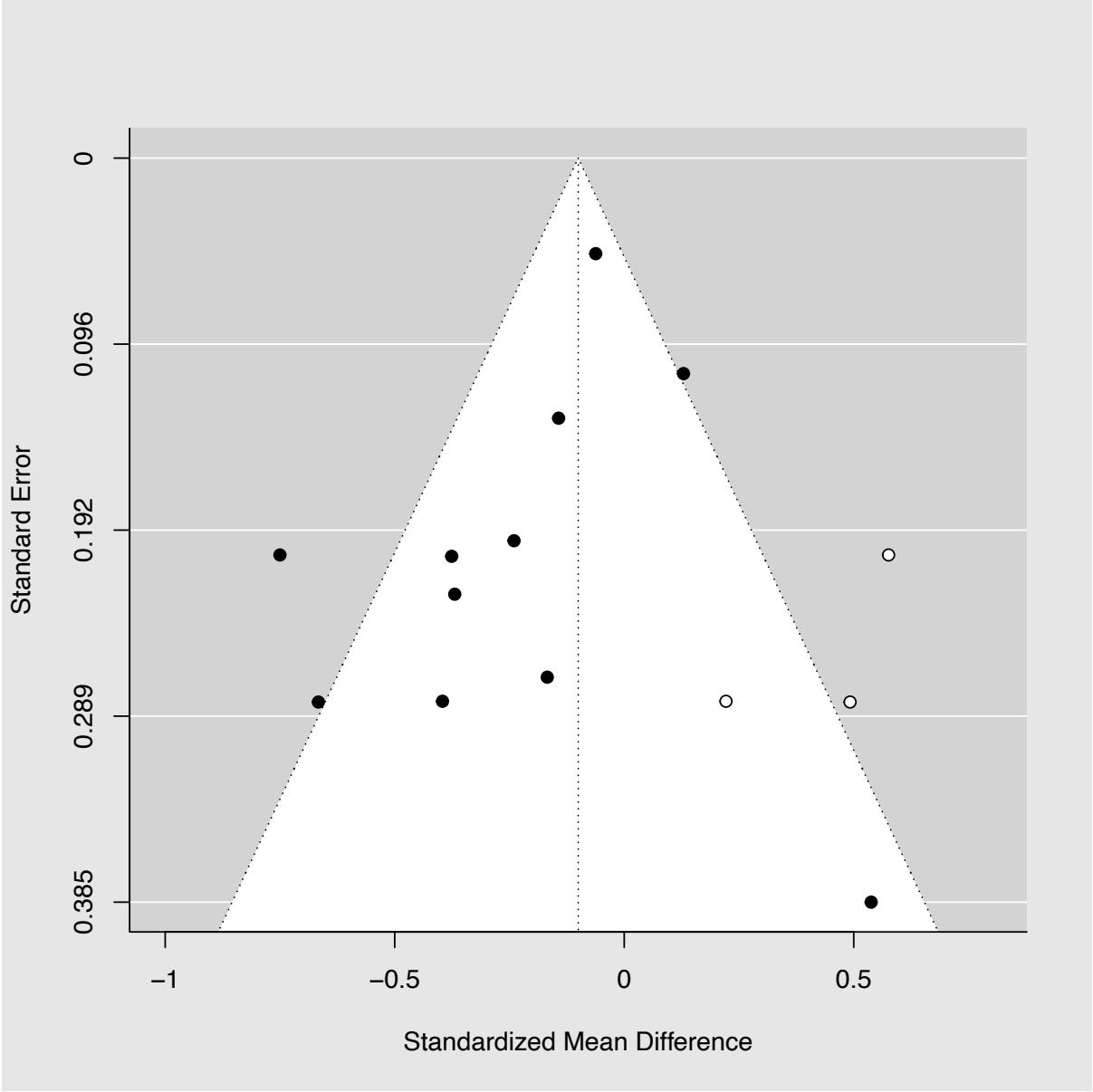
Section and Topic	Item #	Checklist item	Location where item is reported
measures			
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 20
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Page 20-22
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	N/A
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 22
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Page 22
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Page 22
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Page 21
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 24
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Page 24
Study characteristics	17	Cite each included study and present its characteristics.	Page 25-28
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Page 54
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Page 31-32
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Page 30
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Page 30-35
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Page 30-

Section and Topic	Item #	Checklist item	Location where item is reported
			33
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Page 33
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Page 30
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 36-36
	23b	Discuss any limitations of the evidence included in the review.	Page 35-37
	23c	Discuss any limitations of the review processes used.	Page 35-37
	23d	Discuss implications of the results for practice, policy, and future research.	Page 36-38
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 20
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Page 20
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Page 20
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	N/A
Competing interests	26	Declare any competing interests of review authors.	N/A
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

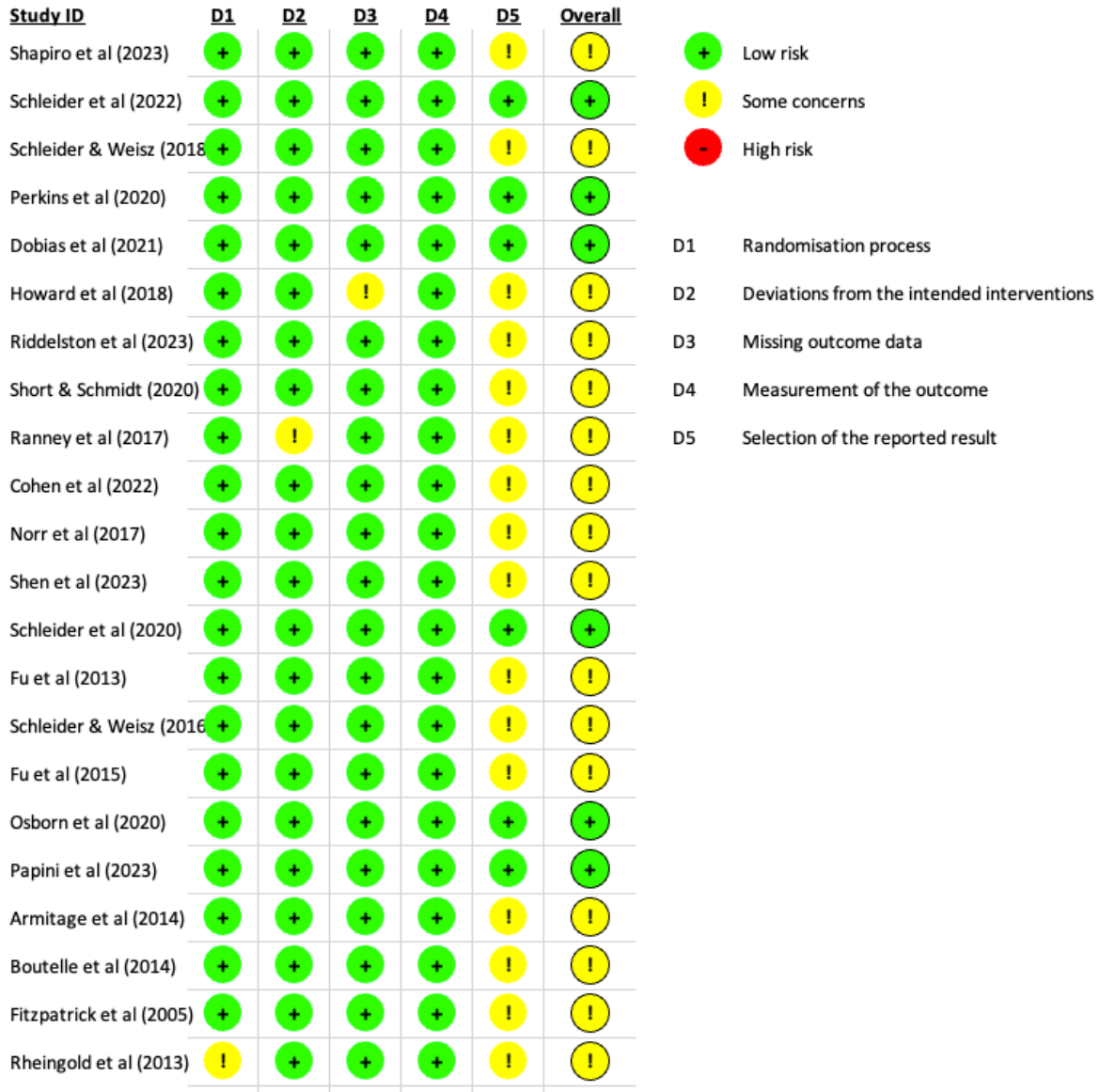
Appendix 2.2 Depression Funnel Plot



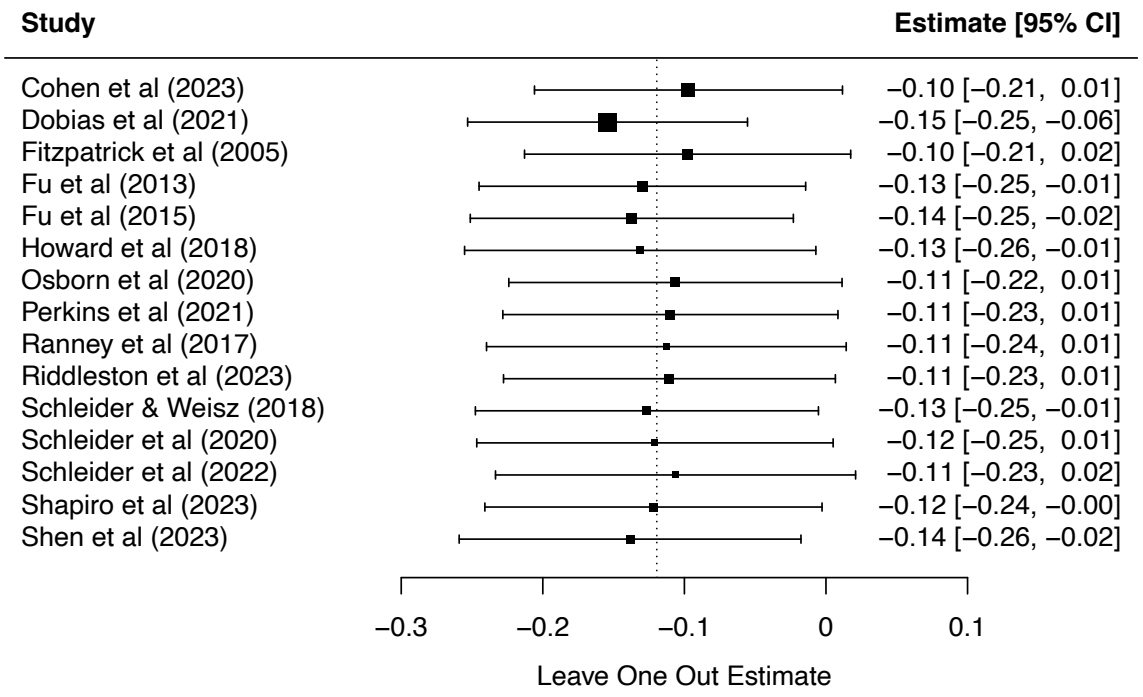
Appendix 2.3 Anxiety Funnel Plot with Trim-and-fill



Appendix 2.4 Risk of Bias Summary per Study



Appendix 2.5 Leave-One-Out Sensitivity Analysis for Depression



Appendix 4.1 CONSORT Checklist

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	54
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	55
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	57
	2b	Specific objectives or hypotheses	58
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	59
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	59
Participants	4a	Eligibility criteria for participants	59-60
	4b	Settings and locations where the data were collected	60
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	62
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	65-66
	6b	Any changes to trial outcomes after the trial commenced, with reasons	N/A
Sample size	7a	How sample size was determined	60
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	62
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	62
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	62

Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	62
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	62
	11b	If relevant, description of the similarity of interventions	N/A
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	66-67
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	66-67
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	61
	13b	For each group, losses and exclusions after randomisation, together with reasons	61
Recruitment	14a	Dates defining the periods of recruitment and follow-up	61
	14b	Why the trial ended or was stopped	N/A
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	69
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	70-72
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	70-72
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	N/A
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	70-72
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	N/A
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	74
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	72
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	72
Other information			
Registration	23	Registration number and name of trial registry	59
Protocol	24	Where the full trial protocol can be accessed, if available	59
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	N/A

Appendix 4.2 Ethics Approval

University of East Anglia
Norwich Research Park
Norwich. NR4 7TJ

Email: ethicsmonitor@uea.ac.uk
Web: www.uea.ac.uk

Study title: The Efficacy of a Growth-Mindset Intervention for Adolescents: A Randomised Controlled Trial

Application ID: ETH2223-0067

Dear Jessica,

Your application was considered on 17th October 2022 by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee).

The decision is: **approved**.

You are therefore able to start your project subject to any other necessary approvals being given.

If your study involves NHS staff and facilities, you will require Health Research Authority (HRA) governance approval before you can start this project (even though you did not require NHS-REC ethics approval). Please consult the HRA webpage about the application required, which is submitted through the IRAS system.

This approval will expire on **1st October 2024**.

Please note that your project is granted ethics approval only for the length of time identified above. Any extension to a project must obtain ethics approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) before continuing.

It is a requirement of this ethics approval that you should report any adverse events which occur during your project to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) as soon as possible. An adverse event is one which was not anticipated in the research design, and which could potentially cause risk or harm to the participants or the researcher, or which reveals potential risks in the treatment under evaluation. For research involving animals, it may be the unintended death of an animal after trapping or carrying out a procedure.

Any amendments to your submitted project in terms of design, sample, data collection, focus etc. should be notified to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) in advance to ensure ethical compliance. If the amendments are substantial a new application may be required.

Approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) should not be taken as evidence that your study is compliant with the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018. If you need guidance on how to make your study UK GDPR compliant, please contact the UEA Data Protection Officer (dataprotection@uea.ac.uk).

Please can you send your report once your project is completed to the FMH S-REC (fmh.ethics@uea.ac.uk).

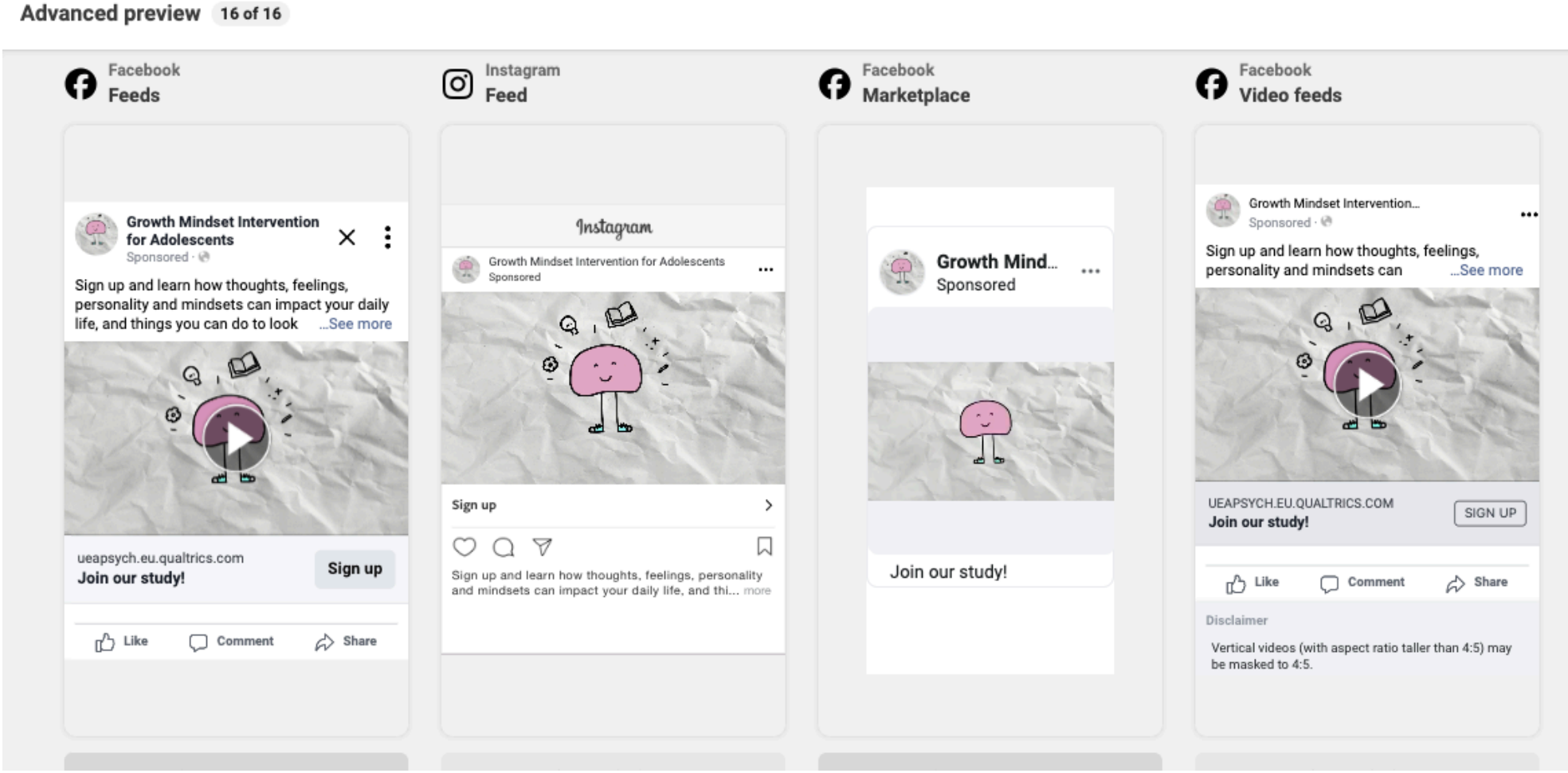
I would like to wish you every success with your project.

On behalf of the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee)

Yours sincerely,

Paul Linsley

Appendix 4.3 Example Advert

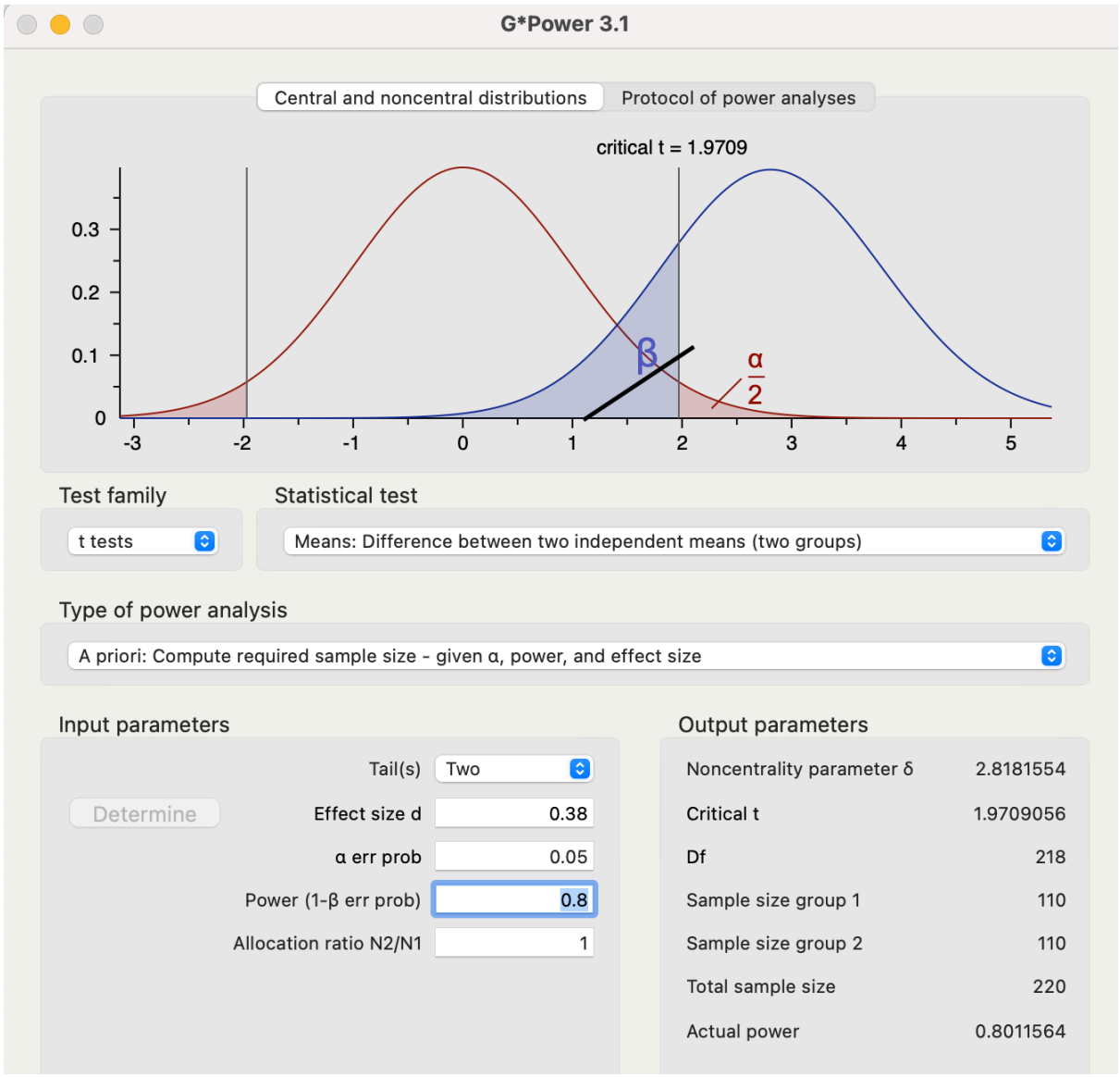


Appendix 4.4 Advert Results

Growth Mindset Ad Results Jan-1-2023 to Dec-28- Report Period: Jan 1, 2023 - Dec 28, 2023

Campaign name	Age	Reach	Impressions	Result type	Results	Cost per result	Amount spent (GBP)	Link clicks	Start	End
Growth Mindset RCT	All	18816	35828	Link clicks	99.00	0.51	50.00	99.00	01/02/2023	28/02/2023
	18-24	9015	12030	Link clicks	55.00	0.51	28.05	55.00		
	13-17	9801	23798	Link clicks	44.00	0.50	21.95	44.00		
Post: "Join our growth mindset study!"	All	2337	3723	Post engagements	103.00	0.09	9.60	5.00	01/03/2023	31/03/2023
	18-24	6	6	Post engagements	1.00	0.15	0.15		01/04/2023	30/04/2023
	13-17	2331	3717	Post engagements	102.00	0.09	9.45	5.00		
[02/07/2023] Promoting https://ueapsych.eu.qualtrics.com/jfe/form/SV_8k	All	15086	23150	Link clicks	34.00	0.30	10.10	34.00	01/02/2023	28/02/2023
	18-24	0	4				0.02			
	13-17	15086	23146	Link clicks	34.00	0.30	10.08	34.00		
Growth Mindset RCT - Copy	All	6746	13004	Link clicks	16.00	0.60	9.61	16.00	01/02/2023	28/02/2023
	13-17	6470	12661	Link clicks	15.00	0.55	8.29	15.00		
	18-24	276	343	Link clicks	1.00	1.32	1.32	1.00		
Ongoing website promotion https://ueapsych.eu.qualtrics.com/jfe/form/SV_	All	49819	88849	Link clicks	160.00	0.17	27.20	160.00	01/02/2023	28/02/2023
	18-24	48	54				0.09			
	13-17	49770	88795	Link clicks	160.00	0.17	27.11	160.00		
[03/29/2023] Promoting https://ueapsych.eu.qualtrics.com/jfe/form/SV_8k	All	36924	87793	Link clicks	224.00	0.23	51.50	224.00	01/02/2023	28/02/2023
	18-24	56	100	Link clicks	1.00	0.23	0.23	1.00		
	13-17	36868	87693	Link clicks	223.00	0.23	51.27	223.00		
		110087	252347	mixed			158.01	538		

Appendix 4.5 Screenshot of G*Power 3.1 Output



Appendix 4.6 Participant Information Sheet (with PPI Input) and Consent Form

PARTICIPANT INFORMATION SHEET

Study Title: The Efficacy of a Growth Mindset Intervention for Adolescents: a Randomised Controlled Trial

Why have I been provided with this information sheet?

We would like to invite you to take part in our research study. Please read this information carefully and talk to your parent or guardian about the study if you wish. Feel free to ask us anything that is not clear or if you want to know more. Take time to decide if you want to take part.

Why are we doing this research?

This study is exploring a new animated learning resource that could be used online to promote mental health. It is computer based and delivered in a single session, lasting 30 minutes. It teaches young people about thoughts, feelings, personality and the brain, it includes ideas about "mindsets" - or beliefs about the brain – which may be helpful in day-to-day life.

Who is organising and funding the research?

Our research team is made up of 7 people
Jessica Bridges – Trainee Clinical Psychologist at the UEA, employed by the NHS
Dr Kenny Chiu – Clinical Lecturer, employed by UEA
Professor Richard Meiser-Stedman – Professor of Clinical Psychology, employed by UEA
Dr Laura Pass – Clinical Associate Professor, employed by UEA
Dr Amorette Perkins – Clinical Psychologist, employed by the NHS
Dr Joseph Cassidy - Clinical Psychologist, employed by the NHS
Dr Gemma Bowers - Clinical Psychologist, employed by the NHS

Jessica Bridges will be leading the research as part of her training to be a clinical psychologist. The project is paid for by the training programme.

Who has checked the study?

The study has been checked by the UEA Faculty of Medicine and Health Sciences Research Ethics Committee and approved for meeting ethical and legal rules.

Do I have to take part?

No – it is entirely up to you! Taking part is completely voluntary and we do not want you to feel any pressure to take part. You do not need to give a reason if you wish to not take part.

What will happen if I decide to take part?

You will need to tick 'yes' on the consent form saying that you understand what the study involves. If you do consent to take part you will then be asked to complete some short questionnaires related to mental health.

Next, you will be randomly put into one of two groups – either a group who receive the online session first or a group who receive the session later (at the end of the study). After the first group has finished, both groups will be asked to fill out some short questionnaires again.

The researchers will contact you again 4 weeks later to ask for the questionnaires to be completed again. Doing the questionnaires shouldn't take more than around 15 minutes.

Where and when will the study be done?

All the things you will do during the study (e.g. the computer task and filling out the questionnaires) will be done online when you agree to take part.

How much of my time will it take?

We expect that doing the consent form, questionnaires (including follow up) and the one-off computer session will take a maximum of 1.5 hours.

What information will be collected and how will it be used?

- Your age, gender, ethnicity and "do your parents own their home" will be recorded so we know the characteristics of who took part.
- Your email to allow us to contact you with the study information
- If you withdraw part way through the study, we will ask the reason why in case this can help us reduce dropout in the future (although you do not have to tell us if you don't want to)
- We will record your responses on the mental health questionnaires.

You have the right to access any personal data we collect – you can ask us via email.

What if I agree to take part then do not want to do the research anymore?

You are free to stop doing the research without giving a reason. One you have started redoing questionnaires and have submitted them, everyone's data will be put together for analysis, meaning it would not be possible to withdraw any information you have given before that point.

Will anyone else know I'm doing this?

As you will be completing the study online and anonymously, only people you tell will know. We advise discussing this information with your parents or guardians as we will not be contacting them.

Who will see the information collected about me?

All information collected during the study (e.g. your answers on the questionnaires) will be treated as strictly confidential and only members of the research team will be able to look at it.

The researchers will follow the UK General Data Protection Regulations 2018. All information stored on a computer will be password protected. To further protect anonymity, you will be given a number when completing questionnaires rather than using your name.

Is there anything I should be worried about if I take part?

We do not expect the study to have any risks to your wellbeing. A previous study was carried out and they did not find any risks, but it is always possible that you might find something in the computer session or measures sensitive or upsetting. If you feel this way, please speak to your parent/guardian and use the helplines detailed below.

Will taking part help me?

The animated learning resource aims to promote and protect mental health. We predict it might have some benefits for your emotional wellbeing, though we do not know for certain. You might learn something new or find it rewarding to know you have been part of research which could be used to help promote mental health.

It is important to know that this is a research study and not a form of treatment for mental health problems. Therefore, if you are worried about your mental health or wellbeing, please speak to your parent/guardian and/or your GP. Or you can contact either:

MAP www.map.uk/net
Samaritans Tel: 116 123
Young Minds Text Line (and SHOUT) text YM to 85258

What happens when the study finishes?

At the end when all the questionnaires are finished and both groups have done the computer task there will be a prize draw for taking part and the researchers will be in contact. 15 winners out of a maximum of 300 people taking part will win a £10 amazon voucher.

What happens to the results of the research?

We plan to share the results of this study in presentations, publications and using media. On the consent form you will be asked if you would like us to share a copy of the findings with you. If you select “yes”, we will send this to you as soon as it is done. We aim for this to be within a year after you have finished taking part. Other researchers working on similar topics might ask to look at the results of our study as it could help them with their research.

However we share results, it would always be anonymous and unidentifiable so no one would know you took part.

What if there is a problem or something goes wrong?

If you are worried about anything related to the research, please speak to someone from the research team and we will try our best to help you.

If you have a complaint about the research or researchers, please contact the Head of Clinical Psychology Doctoral Programme at clinpsyd@uea.ac.uk. This person is separate from this research study so you can speak confidently.

How can I find out more?

You can contact Jessica Bridges via Email: jessica.bridges@uea.ac.uk

What happens next?

Read this information and select consent, you will then be randomly allocated to one of the two groups. You will then be contacted by email for the follow up.

Thank you very much for considering this research,
The Research Team

Consent

Consent

I confirm that I have read the information for this study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

- Yes
- No

Consent

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.

- Yes
- No

Consent

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

- Yes
- No

Consent

I consent to the storage and processing of personal information and data for the purpose of this study

- Yes
- No

Consent

I understand that the information gathered during the study will be treated as strictly confidential and handled in accordance with the EU General Data Protection Regulations 2018.

- Yes
- No

Consent

I would like to receive the results of the study upon completion

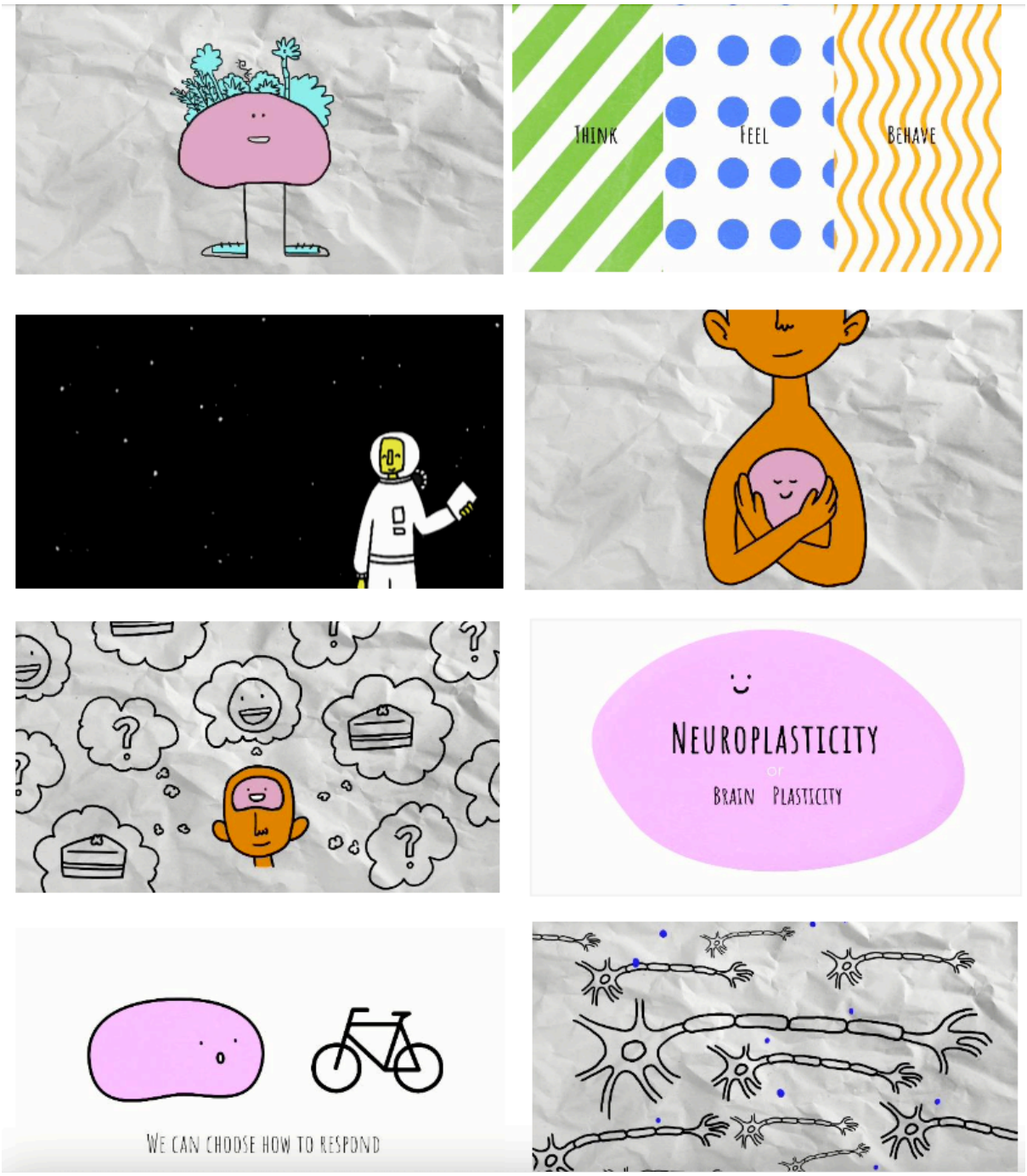
- Yes
- No

Consent *

I agree to take part in the study

- Yes
- No

Appendix 4.7 Screenshots of Intervention



Appendix 4.8 Revised Children's Anxiety and Depression Scale – Short Version (11 items)

Brief 11-item version of the RCADS for Adolescents
(adolescent-report)

Please put a circle around the word that shows how often each of these things happens to you. There are no right or wrong answers.

1. I have trouble going to school in the mornings because I feel nervous or afraid	Never	Sometimes	Often	Always
2. I have no energy for things	Never	Sometimes	Often	Always
3. I worry when I go to bed at night	Never	Sometimes	Often	Always
4. I worry about what is going to happen	Never	Sometimes	Often	Always
5. Nothing is much fun anymore	Never	Sometimes	Often	Always
6. All of a sudden I feel really scared for no reason at all	Never	Sometimes	Often	Always
7. I feel worthless	Never	Sometimes	Often	Always
8. I feel sad or empty	Never	Sometimes	Often	Always
9. When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
10. I am tired a lot	Never	Sometimes	Often	Always
11. I worry I might look foolish	Never	Sometimes	Often	Always

Appendix 4.9 The Implicit Personality Theory Questionnaire

1) You have a certain personality, and it is something that you can't do much about.

1	2	3	4	5	6
Really disagree					**Really agree**

2) Your personality is something about you that you can't change very much.

1	2	3	4	5	6
Really disagree					**Really agree**

3) Either you have a good personality or you don't, and there is really very little you can do about it.

1	2	3	4	5	6
Really disagree					**Really agree**

Appendix 4.10 Acceptance and Fusion Questionnaire for Youth-Short Form

We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle a number between 0-4 that tells how true each sentence is for you.

	Not at all True	A little True	Pretty True	True	Very True
1. My life won't be good until I feel happy.	0	1	2	3	4
2. My thoughts and feelings mess up my life.	0	1	2	3	4
3. The bad things I think about myself must be true.	0	1	2	3	4
4. If my heart beats fast, there must be something wrong with me.	0	1	2	3	4
5. I stop doing things that are important to me whenever I feel bad.	0	1	2	3	4
6. I do worse in school when I have thoughts that make me feel sad.	0	1	2	3	4
7. I am afraid of my feelings.	0	1	2	3	4
8. I can't be a good friend when I feel upset.	0	1	2	3	4

Appendix 5.1 Amendments to ethics

University of East Anglia
Norwich Research Park
Norwich. NR4 7TJ

Email: ethicsmonitor@uea.ac.uk
Web: www.uea.ac.uk

Study title: The Efficacy of a Growth-Mindset Intervention for Adolescents: A Randomised Controlled Trial

Application ID: ETH2324-0940 (significant amendments)

Dear Jessica,

Your application was considered on 20th November 2023 by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee).

The decision is: **approved**.

You are therefore able to start your project subject to any other necessary approvals being given.

If your study involves NHS staff and facilities, you will require Health Research Authority (HRA) governance approval before you can start this project (even though you did not require NHS-REC ethics approval). Please consult the HRA webpage about the application required, which is submitted through the IRAS system.

This approval will expire on **1st October 2024**.

Please note that your project is granted ethics approval only for the length of time identified above. Any extension to a project must obtain ethics approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) before continuing.

It is a requirement of this ethics approval that you should report any adverse events which occur during your project to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) as soon as possible. An adverse event is one which was not anticipated in the research design, and which could potentially cause risk or harm to the participants or the researcher, or which reveals potential risks in the treatment under evaluation. For research involving animals, it may be the unintended death of an animal after trapping or carrying out a procedure.

Any amendments to your submitted project in terms of design, sample, data collection, focus etc. should be notified to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) in advance to ensure ethical compliance. If the amendments are substantial a new application may be required.

Approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) should not be taken as evidence that your study is compliant with the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018. If you need guidance on how to make your study UK GDPR compliant, please contact the UEA Data Protection Officer (dataprotection@uea.ac.uk).

Please can you send your report once your project is completed to the FMH S-REC (fmh.ethics@uea.ac.uk).

I would like to wish you every success with your project.

On behalf of the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee)

Yours sincerely,

Dr Paul Linsley

Appendix A. ACAMH JCPP Author Guidelines

Author Guidelines

Please read the Notes for Contributors guidance below for all types of contributions and styles of manuscript.

Notes for Contributors

General
Contributions from any discipline that further knowledge of the mental health and behaviour of children and adolescents are welcomed. Papers are published in English, but submissions are welcomed from any country. Contributions should be of a standard that merits presentation before an international readership.

Papers may assume either of the following forms:

- *Original articles*
  These should make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice. Adult data are not usually accepted for publication unless they bear directly on developmental issues in childhood and adolescence or the transition from adolescence to adulthood. Original articles should not exceed 5000 words, (including title page and abstract, not including references and tables); the total word count should be given on the title page of the manuscript. There is a limit of 5 tables and 5 figures in the manuscript. It is possible to submit additional tables or figures as an Appendix for an online-only version. We strongly encourage you to keep the length of the manuscript within the word limit. As a guideline, we recommend 500 words for the introduction and 750 words for the discussion and using the rest of the allowance for methods and results. If you would like to make an exceptional

request to extend the length of your submission contact the editorial office. (publications@acamh.org).

- *Review articles*
  Papers for this section can include systematic reviews, meta-analysis or theoretical formulations. There are three types of reviews: Annual Research Reviews, Research Reviews and Practitioners Reviews. These papers are usually commissioned. However, we also welcome proposals for Research Reviews from authors which our specialist editors will review before inviting a submission. The papers should survey an important area of interest within a general field and, where appropriate, closely follow PRISMA guidelines. Given the limitations in assessing the potential of the paper based on just the abstract, we cannot guarantee upon submission that the paper will be sent out for peer review. Practitioner Reviews and Research Reviews should normally be no more than 5000 words long (as original articles). Annual Research Reviews can be considerably longer with the length negotiated at the time of commission.

back

Authors' professional and ethical responsibilities
Submission of a paper to JCPP will be held to imply that it represents an original contribution not previously published (except in the form of an abstract or preliminary report); that it is not being considered for publication elsewhere; and that, if accepted by the Journal, it will not be published elsewhere in the same form, in any language, without the consent of the Editors. When submitting a manuscript, authors should state in a covering letter whether they have currently in press, submitted or in preparation any other papers that are based on the same data set, and, if so, provide details for the Editors.

Access to data and Data sharing
If the study includes original data, at least one author must confirm that they had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

The journal expects all authors to share the data and other artefacts supporting the results in the paper by archiving it in an appropriate public repository. Authors may provide a data availability statement, including a link to the repository they have used, in order that this statement can be published in their paper. Shared data should be cited.

More information is available here

All data must be made available on request of the editor-in-chief either before or after submission. Failure to do so before acceptance will result in rejection of the paper and after acceptance in retraction of the paper.

Preprints

The JCPP will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server, such as ArXiv, bioRxiv,

psyArXiv, SocArXiv, engrXiv etc., at any time. Authors are requested to update any pre-publication versions with a link to the final published article. Please find the Wiley preprint policy here.

Ethics
Authors are reminded that the Journal adheres to the ethics of scientific publication as detailed in the *Ethical principles of psychologists and code of conduct* (American Psychological Association, 2010). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable. The Journal also generally conforms to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (ICJME) and is also a member and subscribes to the principles of the Committee on Publication Ethics (COPE).

Authorship
Authorship credit should be given only if substantial contribution has been made to the following:

· Conception and design, or collection, analysis and interpretation of data

· Drafting the article or revising it critically for important intellectual content, and final approval of the version to be published

The corresponding author must ensure that there is no one else who fulfils the criteria who is not included as an author. Each author is required to have participated sufficiently in the work to take public responsibility for the content.

Conflict of interest
The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company, in the past 5 years. The existence of a conflict of interest does not preclude publication. If the authors have no conflict of interest to declare, they must also state this at submission. It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.

Note to NIH Grantees
Pursuant to NIH mandate, Wiley-Blackwell will post the accepted version of contributions authored by NIH grant-holders to PubMed Central upon acceptance. This accepted version will be made publicly available 12 months after publication. For further information, click here.

Informed consent and ethics approval
Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study county. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

back

Recommended guidelines and standards
Randomised controlled trials
The Journal requires authors to conform to CONSORT 2010 (see CONSORT Statement) in relation to the reporting of randomised controlled clinical trials; also recommended is the Extensions of the CONSORT Statement with regard to cluster randomised controlled trials.In particular, authors of RCTs must include in their paper a flow chart illustrating the progress of subjects through the trial (CONSORT diagram) and the CONSORT checklist. The flow diagram should appear in the main paper, the checklist in the online Appendix. Trial registry name, registration identification number, and the URL for the registry should also be included at the end of the methods section of the Abstract and again in the Methods section of the main text, and in the online manuscript submission. The manuscript should include sample size calculation and should specify primary and secondary trial outcomes/endpoints.

Trials should be registered in one of the ICJME-recognised trial registries such as:

Australian New Zealand Clinical Trials Registry https://www.anzctr.org.au/
Clinical Trials http://www.clinicaltrials.gov
ISRCTN Register http://isrctn.org
Nederlands Trial Register http://www.trialregister.nl/trialreg/index.asp
UMIN Clinical Trials Registry http://www.umin.ac.jp/ctr

Trial registration must include a pre-registered, date stamped, publicly available protocol setting out, at least, the research question, hypotheses, primary outcome and statistics plan. These requirements apply to all trials whatever their academic provenance (i.e., including trials of educational and social work interventions) or whether they include a clinical outcome (i.e., those trials that focus on a mechanism of action rather than symptoms or functional impairment retain the requirement for pre-registration). Authors must state whether the primary trial report is referenced and if they have identified the study as a secondary analysis of existing trial data.

Systematic Reviews
Systematic reviews should conform to the PRISMA guidelines. The journal strongly encourages the pre-registration of review protocols on publicly accessible platforms. From 2021 this will be mandatory.

Other submissions
Pre-registration of studies with all other types of designs on publicly available platforms is encouraged. All pre-registered studies accepted for publication will be flagged following publication.

At this time the JCPP does not publish study protocols itself but actively encourages the practice to increase transparency and reproducibility of findings. This situation is under active review. Please click here for more details on our position.

CrossCheck
The journal employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

back

Manuscript preparation and submission
Papers should be submitted online. For detailed instructions please go to: http://mc.manuscriptcentral.com/jcpp_journal. Previous users can check for an existing account. New users should create a new account. Help with submitting online can be obtained from the Editorial Office at publications@acamh.org

1. The manuscript should be double spaced throughout, including references and tables. Pages should be numbered consecutively. The preferred file formats are MS Word or WordPerfect, and should be PC compatible. If using other packages the file should be saved as Rich Text Format or Text only.

2. Papers should be concise and written in English in a readily understandable style. Care should be taken to avoid racist or sexist language, and statistical presentation should be clear and unambiguous. The Journal follows the style recommendations given in the *Publication manual of the American Psychological Association* (5th edn., 2001).

3. The Journal is not able to offer a translation service, but, authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found here. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

Layout
Title: The first page of the manuscript should give the title, name(s) and short address(es) of author(s), and an abbreviated title (for use as a running head) of up to 60 characters.

Abstract
The abstract should not exceed 300 words and should be structured in the following way with bold marked headings: Background; Methods; Results; Conclusions; Keywords; Abbreviations. The abbreviations will apply where authors are using acronyms for tests or

abbreviations not in common usage.

Key points and relevance
All papers should include a text box at the end of the manuscript outlining the four or five key (bullet) points of the paper. These should briefly (80-120 words) outline what's known, what's new, and what's relevant.

Under the 'what's relevant' section we ask authors to describe the relevance of their work in one or more of the following domains - policy, clinical practice, educational practice, service development/delivery or recommendations for further science.

Headings
Articles and research reports should be set out in the conventional format: Methods, Results, Discussion and Conclusion. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

Acknowledgements
These should appear at the end of the main text, before the References.

Correspondence to
Full name, address, phone, fax and email details of the corresponding author should appear at the end of the main text, before the References.

References
The *JCPP* follows the text referencing style and reference list style detailed in the *Publication manual of the American Psychological Association* (5th edn.)i.

References in text
References in running text should be quoted as follows:
Smith and Brown (1990), or (Smith, 1990), or (Smith, 1980, 1981a, b), or (Smith & Brown, 1982), or (Brown & Green, 1983; Smith, 1982).

For up to five authors, all surnames should be cited in the first instance, with subsequent occurrences cited as et al., e.g. Smith et al. (1981) or (Smith et al., 1981). For six or more authors, cite only the surname of the first author followed by et al. However, all authors should be listed in the Reference List. Join the names in a multiple author citation in running text by the word ‘and’. In parenthetical material, in tables, and in the References List, join the names by an ampersand (&). References to unpublished material should be avoided.

Reference list
Full references should be given at the end of the article in alphabetical order, and not in footnotes. Double spacing must be used.

References to journals should include the authors’ surnames and initials, the year of publication, the full title of the paper, the full name of the journal, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated and should be italicised.

References to books should include the authors' surnames and initials, the year of publication, the full title of the book, the place of publication, and the publisher's name.

References to articles, chapters and symposia contributions should be cited as per the examples below:

Kiernan, C. (1981). Sign language in autistic children. *Journal of Child Psychology and Psychiatry*, *22*, 215-220.

Thompson, A. (1981). *Early experience: The new evidence*. Oxford: Pergamon Press.

Jones, C.C., & Brown, A. (1981). Disorders of perception. In K. Thompson (Ed.), *Problems in early childhood* (pp. 23-84). Oxford: Pergamon Press.

Use Ed.(s) for Editor(s); edn. for edition; p.(pp.) for page(s); Vol. 2 for Volume 2.

Tables and Figures
All Tables and Figures should appear at the end of main text and references, but have their intended position clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text. Any lettering or line work should be able to sustain reduction to the final size of reproduction. Tints and complex shading should be avoided and colour should not be used unless essential. Authors are encouraged to use patterns as opposed to tints in graphs. Authors will be able to access their proofs via Wiley Online Library. Figures should be originated in a drawing package and saved as TIFF, EPS, or PDF files. Further information about supplying electronic artwork can be found in the Wiley electronic artwork guidelines here.

Nomenclature and symbols
Each paper should be consistent within itself as to nomenclature, symbols and units. When referring to drugs, give generic names, not trade names. Greek characters should be clearly indicated.

Supporting Information
Examples of possible supporting material include intervention manuals, statistical analysis syntax, and experimental materials and qualitative transcripts.
1. If uploading with your manuscript please call the file 'Supporting Information' and reference it in the manuscript.
2. Include only those items that are relevant and ensure that all appendices, figures, tables etc included are referenced in the manuscript in chronological order.
3. Label and cite the items presented in the Supporting Information as – Appendix S1, Figure S1, and Table S1 etc in the order of their appearance.
4. Please note supporting files are uploaded with the final published manuscript as supplied, they are not typeset and not copy edited for style etc. Make sure you submit the most updated and corrected files after revision.
5. On publication, your Supporting Information will be available alongside the final version of the manuscript online.
6. If uploading to a public repository, please provide a link to the Supporting Information and reference it in the manuscript. The materials must be original and not previously

published. If previously published, please provide the necessary permissions. You may also display your Supporting Information on your own or an institutional website. Such posting is not subject to the journal's embargo data as specified in the copyright agreement. Supporting Information is made free to access on publication.

Full guidance on Supporting Information including file types, size and format is available on the Wiley Author Service website.

For information on Sharing and Citing your Research Data see the Author Services website here.

Correction to Authorship

In accordance with Wiley's Best Practice Guidelines on Research Integrity and Publishing Ethics and the Committee on Publication Ethics' guidance, *JCPP* will allow authors to correct authorship on a submitted, accepted, or published article if a valid reason exists to do so. All authors – including those to be added or removed – must agree to any proposed change. To request a change to the author list, please complete the Request for Changes to a Journal Article Author List Form and contact either the journal's editorial or production office, depending on the status of the article. Authorship changes will not be considered without a fully completed Author Change form. Correcting the authorship is different from changing an author's name; the relevant policy for that can be found in Wiley's Best Practice Guidelines under "Author name changes after publication."

Wiley's Author Name Change Policy

In cases where authors wish to change their name following publication, Wiley will update and republish the paper and redeliver the updated metadata to indexing services. Our editorial and production teams will use discretion in recognizing that name changes may be of a sensitive and private nature for various reasons including (but not limited to) alignment with gender identity, or as a result of marriage, divorce, or religious conversion. Accordingly, to protect the author's privacy, we will not publish a correction notice to the paper, and we will not notify co-authors of the change. Authors should contact the journal's Editorial Office with their name change request.

Article Preparation Support

Wiley Editing Services offers expert help with English Language Editing, as well as translation, manuscript formatting, figure illustration, figure formatting, and graphical abstract design – so you can submit your manuscript with confidence. Also, check out our resources for Preparing Your Article for general guidance about writing and preparing your manuscript.

Article Promotion Support

back

Manuscript processing

Editorial decisions

Our editorial processes and priorities are described here.

The JCPP has an active triage system and approximately 50% of papers are rejected without review by either the editor-in-chief or a specialist editor - normally within the first week following submission.

Other papers are subject to single blind peer review by multiple referees. Our goal is to deliver the initial decision within 60 days of submission. Most manuscripts will require some revision by the authors before final acceptance.

Appeals process:
1. If your manuscript is rejected, and if you believe a pertinent point was overlooked or misunderstood by the decision Editor or reviewers, you may appeal the editorial decision by contacting the decision Editor through the Editorial Office at publications@acamh.org with "Appeal against rejection decision Ms Ref: JCPP-XX-20YY-00###" in the email subject line.
2. If you appeal to the decision Editor and are not satisfied with the Editor's response, a second-step appeal may be considered by the Editor-in-Chief, whose decision will be final.

Proofs

Authors will receive an e-mail notification with a link and instructions for accessing HTML page proofs online. Page proofs should be carefully proofread for any copyediting or typesetting errors. Online guidelines are provided within the system. No special software is required, all common browsers are supported. Authors should also make sure that any renumbered tables, figures, or references match text citations and that figure legends correspond with text citations and actual figures. Proofs must be returned within 48 hours of receipt of the email. Return of proofs via e-mail is possible in the event that the online system cannot be used or accessed.

Offprints

Free access to the final PDF offprint of your article will be available via Wiley's Author Services only. Please therefore sign up for Author Services if you would like to access your article PDF offprint and enjoy the many other benefits the service offers. Should you wish to purchase additional copies of your article, please visit http://offprint.cosprinters.com/cos/bw/ and follow the instructions provided. If you have queries about offprints please email: offprint@cosprinters.com.

Copyright

If your paper is accepted, the author identified as the corresponding author for the paper will receive an email prompting them to log into Author Services where, via the Wiley Author

Licensing Service (WALS), they will be able to complete a license agreement on behalf of all co-authors of the paper.

For authors who do not choose open access
If the open access option is not selected, the corresponding author will be presented with the Copyright Transfer Agreement (CTA) to sign. The terms and conditions of the CTA can be previewed in the Copyright FAQs here.

back

For authors choosing open access
If the open access option is selected, the corresponding author will have a choice of the following Creative Commons License Open Access Agreemenets (OAA):

Creative Commons Attribution License OAA

Creative Commons Attribution Non-Commercial License OAA

Creative Commons Attribution Non-Commercial-NoDervivs License OAA

To preview the terms and conditions of these Open Access Agreements please visit the Copyright FAQs here and click here for more information.

If you select the open access option and your research is funded by certain Funders [e.g. The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Science Fund (FWF)] you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with your Funder requirements.

For more information on this policy and the journal's compliant self-archiving policy please click here.

Liability
Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors, and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.