METACOGNITION AND SOCIAL ANXIETY

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Thesis Abstract

Social anxiety disorder is a common, debilitating condition involving fear of scrutiny and/or negative evaluation in social situations. Two prominent models, namely Clark and Wells' (1995) cognitive model of social anxiety and Wells and Matthews' (1994, 1996) transdiagnostic metacognitive model, offer competing explanations regarding the processes hypothesised to underlie this condition. While the former prioritises maladaptive cognitive beliefs about the social self (e.g. "I'm boring"), the latter suggests metacognitive beliefs (e.g. "I cannot control my worrying") are the key factor. Subsequently, both models have different implications regarding the conceptualisation and treatment of social anxiety disorder. This body of work aimed to investigate the cognitive and metacognitive beliefs relevant to this condition, in addition to providing preliminary exploration of the use of Metacognitive Therapy (MCT) for adolescents presenting with social anxiety.

Paper One aimed to quantify the associations between social anxiety and both cognitive beliefs (high standards, conditional and unconditional beliefs) and metacognitive beliefs (including positive and negative beliefs about thinking). Findings from nine random effects meta-analyses suggest that metacognitive beliefs, particularly negative beliefs about uncontrollability and danger of thoughts and need to control thoughts, may be as relevant as cognitive beliefs in social anxiety. However, results should be interpreted with caution given the considerable statistical heterogeneity apparent and the small number studies identified investigating metacognitive beliefs. Recommendations for future research and clinical implications are discussed.

Paper Two aimed to investigate the feasibility and acceptability of MCT for socially anxious adolescents and explore the effects associated with this treatment using an A-B case replication design with follow-up. Six adolescents were offered eight weekly sessions of MCT. Preliminary findings support the use of MCT as a feasible and acceptable intervention with this client group. Furthermore, MCT was associated with reliable improvements in social anxiety symptoms in four out of five patients at follow-up. A reduction in the mechanisms implicated in the maintenance of social anxiety was also seen in most cases. Results support more rigorous exploration via appropriately powered controlled trials.

Paper Three provides a critical appraisal of both papers, as well as providing further information and justification regarding the planning and implementation of both the empirical and meta-analytic studies. Reflections on the overall research process are also discussed.

Declaration

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Paper One: Systematic Review

Cognitive Beliefs and Metacognitive Beliefs in Social Anxiety: A Meta-Analysis

Written for Publication in: Clinical Psychology Review (see Appendix A for author guidelines)

Word Count: 7,929 (excluding abstract, figures, tables and references)

Abstract

Maladaptive beliefs are widely recognised as playing a key role in the aetiology and maintenance of social anxiety disorder. However, cognitive and metacognitive models offer competing explanations regarding the belief domains deemed crucial in understanding social anxiety. While the former prioritises beliefs regarding thought-content, the latter implicates beliefs regarding thought-processes. This review aimed to quantify the associations between social anxiety and both disorder-specific cognitive beliefs (namely, high standards, conditional beliefs and unconditional beliefs) and transdiagnostic metacognitive beliefs (including positive and negative beliefs about thinking). 35 eligible articles were identified, comprising of 10,109 participants. Nine random-effects meta-analyses were conducted to integrate effect sizes depicting the relationship between social anxiety and the cognitive and metacognitive beliefs of interest. Findings suggest that metacognitive beliefs, particularly negative beliefs about uncontrollability and danger of thoughts (r=0.48) and need to control thoughts (r=0.38), are as relevant and important as cognitive beliefs (r=0.38-0.51) in social anxiety. However, the small number of eligible studies combined with presence of considerable statistical heterogeneity suggests results should be interpreted with caution. Furthermore, the cross-sectional nature of most research does not allow causality to be addressed. Recommendations for future research alongside implications for conceptualisation and treatment of social anxiety disorder are discussed.

Keywords: Social anxiety, cognitive beliefs, metacognitive beliefs

Introduction

Social anxiety disorder (SAD) has been defined as a persistent and excessive fear of being negatively evaluated, judged or scrutinised by others in social situations (American Psychiatric Association, 2013). As a result, sufferers will often avoid feared situations or endure these with distress. A large body of evidence suggests that, beyond affecting quality of life (Stein & Kean, 2000), SAD is also associated with poor employment performance (Davidson, Hughes, George & Blazer, 1993) and educational attainment, substantially decreased wages, and higher health service utilisation (Katzelnick et al., 2001). Furthermore, SAD is associated with increased risk for subsequent depression (Beesdo, Bittner, Pine et al., 2007), cannabis use and alcohol dependence (Buckner et al., 2008).

While estimates of prevalence vary, recent findings from the World Mental Health Survey Initiative estimates cross-national lifetime prevalence at 4.0% (Stein et al., 2017). SAD appears particularly prevalent in Western, high-income countries (Stein et al., 2017), where it is one of the most common psychiatric disorders (Kessler et al., 2005).

Cognitive Beliefs

Cognitive models of SAD, such as those developed by Clark and Wells (1995) and Rapee and Heimberg (1997), have generated a wealth of research informing our understanding of both the conceptual nature of this disorder and treatment approaches. These models give precedence to the role of negative and distorted beliefs about the social self, performance failure and showing anxiety (Wells, 1997). Maladaptive cognitive beliefs are hypothesised to drive information processing biases, safety behaviour and repetitive, extended cognitive responses to distressing thoughts in the form of worry and rumination. Although intended to reduce distress and avoid feared catastrophe, cognitive models propose

that these processes inadvertently perpetuate negative beliefs and associated distress by interfering with social performance and/or exacerbating somatic symptoms of anxiety.

Clark and Wells (1995) implicate three categories of cognitive beliefs in the aetiology and maintenance of SAD: high standards, conditional beliefs and unconditional beliefs. High standards are defined as statements outlining rigid rules regarding 'acceptable' social performance or social evaluation, often taking the form of 'must' or 'should' statements (e.g. "I must get everyone's approval", "I must never show signs of anxiety" or "I have to appear intelligent"). These are hypothesised to result in anxiety as "*they are difficult, if not impossible to achieve*" (Clark & Wells, 1995, p. 75). In contrast, conditional beliefs are defined as assumptions relating to perceived social evaluation, consequences of actions or showing anxiety. Such assumptions often include cognitive distortions such as 'mind reading' or 'fortune telling' (e.g. "If I get my words wrong, everyone will laugh at me"). Finally, unconditional beliefs refer to beliefs regarding stable attributes of the social self and/or perception by others in social evaluative situations (e.g. "I'm different" or "People think I'm weird").

Positive correlations between these cognitive beliefs and social anxiety have been identified in a large number of studies within both clinical (e.g. Norton & Abbott, 2017; Wells, Clark, Stopa & Papageorgiou, 2000; Wong, Moulds & Rapee, 2014; Wong et al., 2017) and non-clinical populations (e.g. Gregory & Peters, 2017; Kissell, Rodriguez, Lucas & Fisak, 2016; Maeda, Shimata & Sato, 2018).

Cognitive Behaviour Therapy (CBT) based on the Clark and Wells model is currently the recommended treatment for SAD (NICE Guidelines, 2013), with meta-analytic evidence suggesting that this is more effective than pharmaceutical interventions and other psychological therapies (including psychodynamic and interpersonal psychotherapies, mindfulness and supportive therapy; Mayo-Wilson et al., 2014). However, a growing body of

evidence has suggested that clinically meaningful improvement in social anxiety symptoms can be achieved without directly addressing cognitive beliefs (e.g. Nordahl & Wells, 2017, 2018). This provides a challenge to the key premise of the cognitive model, calling into question the centrality of cognitive beliefs in explaining SAD and the need to target these directly during treatment.

Metacognitive Beliefs

The transdiagnostic metacognitive model (Wells & Matthews, 1994, 1996) proposes that maladaptive metacognitive beliefs (the beliefs we have about thinking) are central in the development of psychological disorders. These beliefs are hypothesized to give rise to an unhelpful style of responding to inner experiences called the cognitive attentional syndrome (CAS). This perseverative pattern of responding consists of sustained verbal thinking (i.e. worry, rumination), threat-monitoring and maladaptive coping strategies, ultimately resulting in psychological disorder via maintenance of individuals' negative thoughts and sense of threat.

Points of overlap between the Clark and Wells (1995) and metacognitive (Wells & Matthews, 1994, 1996) models are evident. For example, both recognise the role of worry, rumination, attentional biases and safety behaviours in maintaining SAD. However, the Clark and Wells model, although informed by the metacognitive model in some respects, proposes that social schemas (e.g. "I am boring") drive these processes and are targets for modification in CBT derived from this approach. In contrast, the metacognitive model omits social schemas about the self and social performance and instead replaces these with the positive and negative metacognitive beliefs about cognition (e.g. "I cannot control my worrying"). Metacognitive beliefs are not included within the Clark and Wells model. Therefore, the two models offer competing explanations regarding the beliefs hypothesised to contribute to

processes such as worry, rumination and attentional biases. In contrast to the cognitive model, the metacognitive model proposes that it is how we think rather than what we think that is the key factor in the development and maintenance of psychological disorder and this is guided by metacognition.

According to the metacognitive model, two broad categories of metacognitive beliefs (positive and negative) are implicated in the CAS (Wells, 2009), and thus are deemed to play a role in psychological disorder. Positive metacognitions have largely been investigated in relation to positive beliefs about worry, which are defined as statements concerning the perceived benefits or necessity of worrying or anticipating danger (e.g. "Worrying helps me cope"). Recent evidence from Hoffart, Johnson, Nordahl and Wells (2018) suggest that improvements in treatment resistant anxiety can be achieved via a reduction of positive metacognitive beliefs.

Negative metacognitive beliefs are of most importance in the model and can be further split into four subcategories: (i) negative beliefs about uncontrollability and danger of thoughts (perceived negative consequences or uncontrollability of certain thoughts, e.g. "Worrying is dangerous"), (ii) cognitive self-consciousness (the tendency or perceived need to monitor thought processes), (iii) cognitive confidence (beliefs regarding the efficacy of our cognitive skills, such as memory), and (iv) need to control thoughts (beliefs about the need to control thoughts and the consequences of not doing so) (Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004).

Positive and negative metacognitive beliefs have been found to correlate with social anxiety symptoms (e.g. Fisak & Hammond, 2013; Shihata, McEvoy & Mullan, 2017; Vassilopoulos, Brouzos, & Moberly, 2015) and explain variance over and above social cognitions (Nordahl & Wells, 2017). Preliminary evidence also suggests that metacognitive beliefs have greater predictive value than cognitive beliefs in symptom improvement

following treatment of SAD within a clinical sample of socially anxious patients (Nordahl, Nordahl, Hjemdal & Wells, 2017; Nordahl, Nordahl, Vogel & Wells 2018). Furthermore, Nordahl and Wells (2018) found that MCT was associated with substantial improvements in a small clinical sample of socially anxious patients (*n*=3). As treatment targeted underlying cognitive style and metacognition, this calls into question the necessity of targeting beliefs at a cognitive level in the treatment.

However, important questions remain concerning the level of contribution made by cognitive beliefs and metacognitive beliefs to social anxiety symptoms. Findings from a narrative systematic review by Gkika, Wittkowski and Wells (2017) suggest that while cognitive beliefs are positively associated with social anxiety, the relationship appears to be mediated by specific cognitive processes such as worry, rumination and self-focused attention. Therefore, cognitive beliefs may act as either triggers or outputs of these cognitive processes, which is consistent with the metacognitive model of psychological disorder. Preliminary evidence of both the direct and indirect contributions (via cognitive processes) of metacognitive beliefs in social anxiety was also identified. However, as Gkika et al.'s (2017) review did not attempt any meta-analytic integration of findings, the relationships between these different belief domains and social anxiety have yet to be quantified.

Aims

The publication of further studies since Gkika et al.'s (2017) review means that a meta-analysis is now feasible, allowing for the combination of results from multiple studies to obtain a clearer picture of findings in this area and permit more robust conclusions to be drawn about the magnitude of associations between social anxiety and both cognitive and metacognitive beliefs, respectively.

A series of meta-analyses were conducted to summarise and quantify relevant findings in order to address the following questions:

(1) To what extent is social anxiety associated with different domains of cognitive beliefs (high standards, conditional beliefs, unconditional beliefs, both individually and cumulatively)?

(2) To what extent is social anxiety associated with metacognitive beliefs (positive beliefs about worry, negative beliefs about uncontrollability and danger of thoughts, need to control thoughts, cognitive self-consciousness and/or cognitive confidence)?

Methodological factors which may have influenced results observed in individual studies were also examined via separate subgroup analyses where possible, considering effects such as variations in the population and measures (of beliefs and social anxiety) utilised.

Method

Search Strategy

The current meta-analysis was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Moher, Liberati, Tetzlaff, Altman & Prisma Group, 2009) and the study's PROSPERO review protocol (Williams, Knowles, Wells & Varese, 2019). Search strategy and selection criteria were adapted from those employed by Gkika et al. (2017). Relevant papers were identified via PsychINFO, Web of Science and PubMed, with searches conducted using the combined terms (*belief** OR *metacog** OR *SBSA* OR *SCQ* OR *CBQ* OR *MCQ*) AND (*social anxiety* OR *social phobia*). Acronyms refer to instruments identified as measuring the beliefs of interest; namely, the Self-Beliefs related to Social Anxiety Scale (SBSA; Wong & Moulds, 2009), Social Cognitions Questionnaire (SCQ; Wells, Stopa, & Clark, 1993), Core Beliefs Questionnaire (CBQ; Wong et al., 2017) and Metacognitions Questionnaire (MCQ; Cartwright-Hatton &

Wells, 1997; Wells & Cartwright-Hatton, 2004). The final search was conducted on 19 October 2018. Once identified, the reference lists of relevant studies were inspected to identify any further potentially eligible papers not retrieved via database searches. Evidence suggests that excluding findings within grey literature from meta-analyses can lead to inflated estimates of effect sizes (e.g. Hopewell, McDonald, Clarke & Egger, 2003). Therefore, the authors of all identified, eligible papers were contacted regarding any relevant grey literature or unpublished data (e.g. in the form of unpublished theses, conference presentations) in the hope of reducing file drawer effects.

Inclusion and Exclusion Criteria

In order to be eligible for inclusion, studies were required to use one of the following quantitative methodologies to investigate the association between social anxiety and cognitive beliefs and/or metacognitive beliefs: (1) within-group designs, (2) longitudinal/prospective designs or (3) between-group designs (e.g. studies comparing non-clinical individuals obtaining high vs low scores on measures of social anxiety; studies comparing participants with SAD against non-clinical controls). Relevant data from intervention studies were included where sufficient information was available to estimate the association between social anxiety and the beliefs of interest at baseline. As social anxiety can be viewed on a severity continuum (Rapee & Heimberg, 1997), studies utilising clinical participants meeting criteria for SAD or non-clinical participants were eligible for inclusion.

Furthermore, studies were required to meet the following criteria: (1) published in English; (2) include only participants aged 17 or above; (3) use of at least one validated measure of social anxiety (diagnostic interview or self-report measure); and (4) use of at least one valid self-report measure of the cognitive beliefs of interest and/or the metacognitive

beliefs of interest (such as the SBSA, SCQ, CBQ, MCQ or related instruments assessing comparable constructs).

Inclusion of sufficient statistical information to allow computation of effect sizes was also required. In cases where relevant information was reported, but not in a form allowing for integration via meta-analysis, authors were contacted regarding provision of suitable statistical information.

Following the above, studies were excluded if: (1) the focus was not on social anxiety or was on constructs not clearly defined as social anxiety (e.g. stuttering, generalised anxiety); (2) the beliefs measured were not relevant to either the Clark and Wells (1995) model of SAD or the Wells and Matthews (1994, 1996) transdiagnostic metacognitive model of disorder; and (3) measures of cognitive beliefs were comprised of items measuring symptoms, perceptions and negative automatic thoughts as opposed to beliefs, or the content of beliefs were not specific to social situations.

Eligibility Assessment

Eligibility of studies was assessed in two stages. All identified articles were initially screened by the first author (RW). 10% of titles and abstracts (*n*=532) and 20% of full text papers (*n*=49) were then also screened by an independent reviewer. Substantial agreement between raters was apparent, as assessed using the kappa coefficient for both titles and abstracts (agreement rating = 99.4%; kappa = 0.89) and full text papers (agreement rating = 100%; kappa = 1.00). Once identified, all potentially eligible full-text papers were also screened by a second rater. Any disagreements were resolved via discussion and arbitration by other members of the research team where necessary.

Quality Assessment

Due to the variety of methodologies employed, the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh, Lawton, Gardner, & Armitage, 2012) was selected as the most appropriate tool for reviewing the quality of eligible studies. This tool enables studies to be rated against 16 criteria, assessing areas such as transparency and justification of decision-making, and appropriateness of design and data analysis (see Appendix B). Each criterion is scored on a scale of 0-3, with scores summed to provide an overall rating of quality. Higher scores are indicative of higher methodological quality. Two of the 16 items within this tool are only applicable to studies using qualitative designs and thus were excluded for the purposes of this review. As a result, possible scores ranged from 0-42. Studies were not excluded based on quality.

Quality of eligible papers (*n*=32) were reviewed independently by two raters to examine potential assessment bias. Where full-text papers were not provided (i.e. in instances where authors provided partial papers in the process of submitting for publication), studies were unable to be assessed for quality (*n*=3).

Effect Size Computation

Statistical information concerning the relationship between social anxiety and the beliefs of interest was extracted in order to calculate effect sizes. Pearson's *r* was selected as the metric of choice due to the majority of eligible studies reporting correlation coefficients. All remaining studies (*n*=7) reported between-group effects in terms of means and standard deviations. In these cases, direct calculation of correlation coefficients was not possible. Therefore, following extraction of the relevant statistical information (i.e. group means, standard deviations and sample sizes), effect sizes were initially generated using Cohen's *d*

before being subsequently converted into *r* following the approach outlined in Borenstein, Hedges, Higgins and Rothstein (2009).

To ensure consistency of approach and independence of samples, the following guidelines were used for extraction of statistical information: (1) When studies reported multiple effect sizes (e.g. those reporting correlations between social anxiety and multiple measures of positive beliefs about worry), measures were considered hierarchically based on psychometric properties. Where one measure had favourable psychometric properties, this data was prioritised for inclusion. When the psychometric properties of measures appeared largely equal, all measures of the same construct were integrated to form a composite summary effect size; (2) When between-group studies classifying participants according to social anxiety severity (e.g. high and low; clinical and control) were further split into subgroups (e.g. post-event processing, distraction; Makkar & Grisham, 2013), subgroups were integrated according to social anxiety severity (e.g. all 'high' subgroups merged) to provide a composite summary effect size; (3) When the relationship between social anxiety and the beliefs of interest were investigated at different time points, only baseline results were utilised; (4) When between and within-group analyses were reported within the same study, statistics pertaining to the largest sample size were selected. When sample size was equal, within-group statistics (i.e. correlations) were prioritised to maximise comparability with other eligible studies; (5) When studies utilised overlapping participant samples, the study comprising the largest independent sample size was included to avoid bias from sample dependence and increase precision. Where participant overlap was unclear, clarification was sought from the relevant authors.

Statistical Analyses

A series of meta-analyses were performed, with effect sizes from different studies integrated using Comprehensive Meta-Analysis software (version 2; Borenstein, Hedges, Higgins & Rothstein, 2005). The random effects model was used; this provides an appropriate integration method where studies have considerable statistical heterogeneity, providing a more conservative estimate and greater generalisability of findings (Borenstein et al., 2009).

Primary analyses considered the strength of relationship between social anxiety and the cognitive and metacognitive beliefs of interest. To analyse the relationship between social anxiety and cognitive beliefs, separate meta-analyses were conducted addressing the following belief domains in order to avoid violating the assumption of independent observations: (1) high standards; (2) conditional beliefs; (3) unconditional beliefs and (4) high standards, conditional and unconditional beliefs combined (as assessed by 'SBSA total score').

Similarly, to investigate the relationship between social anxiety and metacognitive beliefs, independent meta-analyses were conducted for the following metacognitive beliefs: (1) positive beliefs about worry; (2) negative beliefs about uncontrollability and dangerousness of thoughts; (3) need to control thoughts; (4) cognitive self-consciousness and (5) cognitive confidence.

Where possible, separate subgroup analyses were subsequently conducted to explore systematic differences emerging from potential diversity in population (i.e. clinical/non-clinical participants) and construct measurements (of both social anxiety and beliefs of interest).

The Q-test was used to examine statistical heterogeneity among studies within each analysis. However, as evidence suggests that the Q statistic has low statistical power when

the number of studies is small (e.g. Gavaghan, Moore & McQuay, 2000), degree of heterogeneity present was quantified using the I^2 statistic (Higgins & Thompson, 2002; Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006).

Visual inspection of funnel plots (Light & Pillemer, 1984) and use of Egger's test (Egger, Davey-Smith, Schneider & Minder, 1997) allowed for the examination of publication and other selection biases. Where appropriate, effect size imputation methods ("trim and fill" analyses; Duval & Tweedie, 2000) were used to correct for the impact of these biases on findings.

Lastly, One Study Removed Sensitivity Analysis was used to examine the effect of each study on the summary results within each analysis, and thus determine whether any studies exerted undue influence on the meta-analytic findings.

Results

Search Results

Searches of the computerised databases yielded 5,317 studies. Following title and abstract screening, 244 full papers were screened for eligibility. 30 studies were subsequently identified as eligible. Five further papers were identified via private correspondence with the authors of eligible papers identified via electronic searches. Additional statistical information was obtained from the authors of three identified studies (Gkika & Wells, 2016; Nordahl & Wells, 2017, 2019), enabling these to be included within this analysis.

35 studies were deemed eligible for inclusion following this process, comprising of 24 studies concerning social beliefs and 11 concerning metacognitive beliefs (see Figure 1).

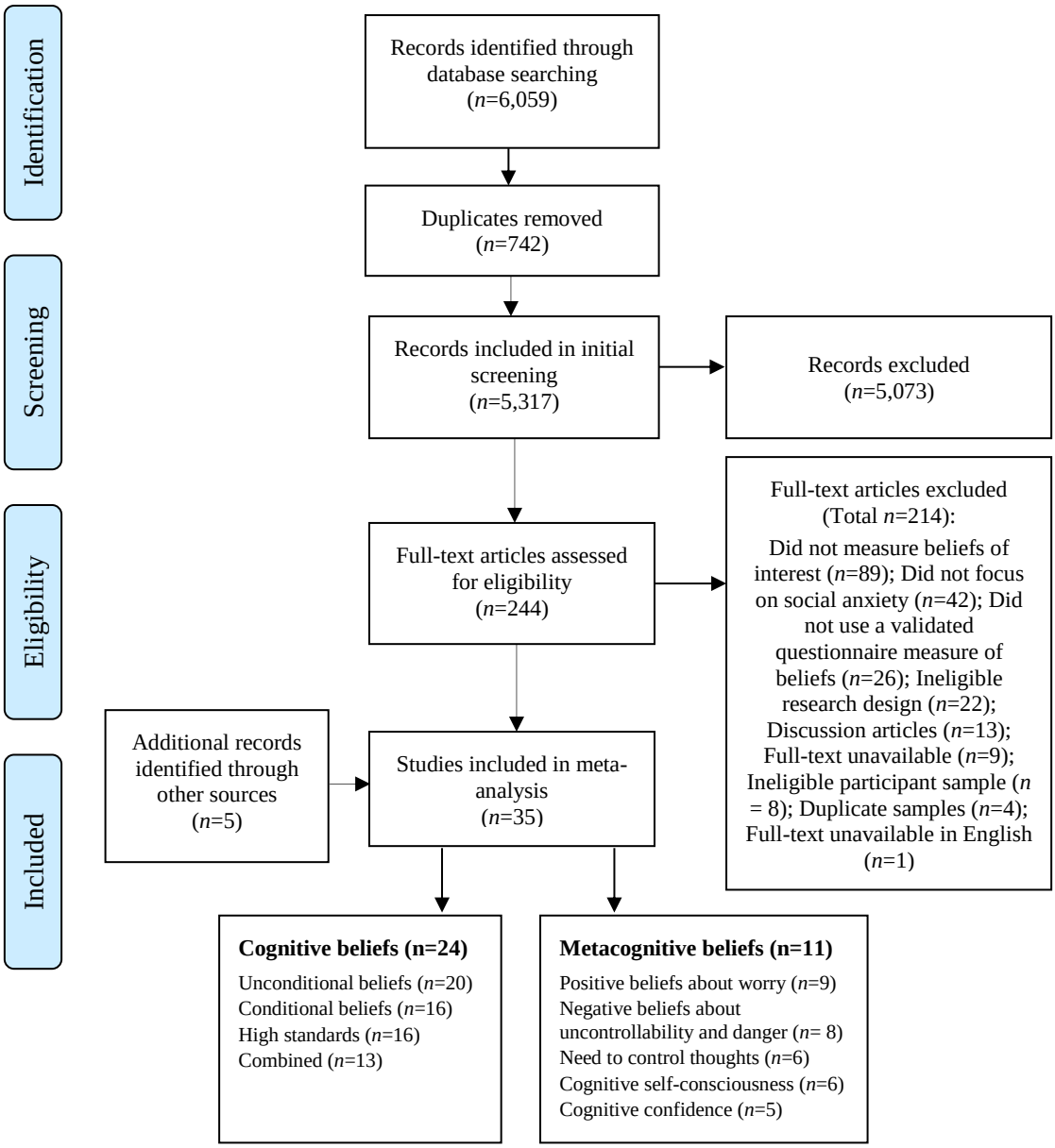

Figure 1. Flow chart depicting stages of search strategy

Demographic Characteristics

The number of participants included in this meta-analysis totaled 10,109 (966 from clinical studies and 9,143 from non-clinical studies). Within clinical studies, the mean age of participants was 29.67 and 57.45% were female. Within non-clinical studies, the mean age of participants was 22.96 and 73.36% were female. Information regarding age and gender were not available in *n*=6 and *n*=1 studies, respectively. Participants were recruited from the

following countries: Australia (*n*=3,176), Norway (*n*=2,232), USA (*n*=1,946), Japan (*n*=947), Belgium and/or Switzerland (*n*=718), Greece (*n*=526), England (*n*=409) and China (*n*=155) (see Table 1).

Quality Scores

Quality scores ranged from 23-32 (out of a possible 42), suggesting that the majority of the studies were of moderate to high quality (see Table 1). Initial interrater agreement across scoring on individual items was high (93.1%). However, due to the high proportion of studies across which rater discrepancies were detected (31 occasions across 15 studies, with each study assessed against 14 criteria), this meant that interrater agreement regarding overall quality scores for individual studies was poor (53.1%). All instances of disparity in scoring between raters were resolved via discussion. Final scores suggest that studies examining the cognitive beliefs (*M*=27.0, *SD*=2.77) were not of significantly different methodological rigour to those examining metacognitive beliefs (*M*=26.91, *SD*=2.52; $t(30)=0.09$, $p=0.93$).

Most papers provided detailed information regarding study aims and the theoretical framework underpinning research. Statistical assessment of data collection tools was also assessed appropriately in many studies and most employed appropriate analytical methods. However, consideration of sample size and associated information regarding power appeared widely lacking, as was service user involvement in the research design. Many studies also scored poorly when representativeness of participant samples was considered (given the widespread use of non-clinical, student samples) and did not provide detailed recruitment data (see Appendices C-D).

Table 1. Summary of Study Characteristics

Author (date)	Country	Design	Population	Sample size (N of Females)	Mean age	Social anxiety Measure(s)	Belief(s) examined	Belief measure	Quality Score
Social Beliefs									
Carter (2012)	USA	Correlational	Non-Clinical	465 (Not reported)	19.5	SIAS, SPS	UCB	SCQ	31
Gregory & Peters (2017)	Australia	Correlational	Non-Clinical	522 (441)	20.06	SIAS	HS, CB, UCB, SBSA total score	SBSA	24
Heeren et al. (2014)	Belgium & Switzerland	Correlational	Non-Clinical	611 (410)	31.16	FNE, LSAS	HS, CB, UCB, SBSA total score	SBSA	28
Holzman et al. (2014)	USA	Correlational	Non-Clinical	101 (72)	19.9	SIAS, SPS	HS, CB, UCB	SBSA	23
Kissell et al. (2016)	USA	Correlational	Non-Clinical	515 (373)	21.61	SPIN	HS, CB, UCB	SBSA	28
Maeda et al. (2017)	Japan	Correlational	Non-Clinical	401 (237)	19.9	Short FNE, SIAS, SPS	HS, CB, UCB, SBSA total score	SBSA	26
Maeda et al. (2018)	Japan	Correlational	Non-Clinical	510 (323)	20.8	SIAS, SPS	HS, CB, UCB, SBSA total score	SBSA	24
Maeda et al. (under review)	Japan	Correlational	Non-Clinical	36 (20)	21.7	SIAS, SPS	HS, CB, UCB	SBSA	N/A
Makkar & Grisham (2011)	Australia	Correlational	Non-Clinical	40 (14)	24.6	FNE, SIAS, SPS	SBSA total score	SBSA	25
Makkar & Grisham (2013)	Australia	Between groups (High vs. Low SAD)	Non-Clinical	91 (59)	Not reported	Brief FNE & SIAS composite	HS, CB, UCB, SBSA total score	SBSA	30
Nordahl & Wells (under review)	Norway	Correlational	Non-Clinical	773 (582)	34.16	LSAS	HS, CB, UCB, SBSA total score	SBSA	28
Norton & Abbott (2017)	Australia	Correlational	Clinical	40 (35)	20.25	Brief FNE & SIAS composite	HS, CB, UCB	SBSA	26
Parsons et al. (2017)	USA	Correlational	Non-Clinical	127 (95)	18.96	SIAS - 17 item version	HS, CB, UCB, SBSA total score	SBSA	28
Parsons & Clerkin (2018)	USA	Correlational	Non-Clinical	284 (193)	19	LSAS	HS, CB, UCB, SBSA total score	SBSA	N/A

Author (date)	Country	Design	Population	Sample size (N of Females)	Mean age	Social anxiety Measure(s)	Belief(s) examined	Belief measure	Quality Score
Peschard & Philipott (2017)	Belgium	Between groups (High vs. Low SAD)	Non-Clinical	54 (46)	Not reported	LSAS	SBSA total score	SBSA	24
Peschard et al. (2017)	Belgium	Between groups (High vs. Low SAD)	Non-Clinical	53 (43)	Not reported	LSAS	HS, CB, UCB, SBSA total score	SBSA	23
Tang et al. (2015)	China	Correlational	Non-Clinical	155 (111)	21.45	LSAS	HS, CB, UCB, SBSA total score	NSBI (short form of the SBSA)	27
Taylor & Stopa (2013)	England	Between groups (SAD vs. Non-Clinical Control)	Clinical	23 (15)	35.8	Structured Clinical Interview for DSM-IV-TR	UCB	SCQ	24
Wells et al. (2000)	England	Study 1: Correlational	Non-Clinical	Study 1: 190 (107)	Study 1: 22.9	FNE, SADS, SIAS, SPS	UCB	Study 1: SCQ	N/A
		Study 2: Correlational	Clinical	Study 2: 68 (31)	Study 2: Not reported	FNE, SADS	UCB	Study 2: SCQ	N/A
Wong & Moulds (2011a)	Australia	Correlational	Non-Clinical	600 (369)	20.52	FNE, SIAS, SPS	HS, CB, UCB, SBSA total score	SBSA	28
Wong & Moulds (2011b)	Australia	Correlational	Non-Clinical	361 (222)	20.63	FNE	HS, CB, UCB	SBSA	27
Wong et al. (2014)	Australia	Between groups (SAD vs. Undergraduate Control)	Clinical	268 (206)	Not reported	Structured Clinical Interview for DSM-IV	SBSA total score	SBSA	31
Wong et al. (2016)	Australia	Correlational	Non-Clinical	331 (253)	22.37	SPS	HS, CB, UCB	SBSA	30
Wong et al. (2017)	Australia	Between groups (SAD vs. Non-Clinical Control)	Clinical	336 (163)	Not reported	SIAS/SPS composite (reverse scored items from SIAS omitted)	Unconditional Beliefs	CBQ - Trait Version; CBQ Other Version	32

Author (date)	Country	Design	Population	Sample size (N of Females)	Mean age	Social anxiety Measure(s)	Belief(s) examined	Belief measure	Quality Score
Metacognitive Beliefs									
Fisak & Hammond (2013)	USA	Correlational	Non-Clinical	300 (223)	23.43	SPIN	PB, NB	MCQ-30	25
Gkika & Wells (2016)	England	Correlational	Non-Clinical	80 (68)	21.8	FNE	PB, NB, NC, CSC, CC	MCQ-30	27
Hosey (2012)	USA	Correlational	Non-Clinical	154 (121)	20.83	SPAI	CSC	MCQ-65	31
McEvoy & Perini (2009)	Australia	Correlational	Clinical	81 (30)	30.68	SIAS, SPS	PB, NB, NC, CSC, CC	MCQ-30	23
Nordahl & Wells (2017)	Norway	Correlational	Non-Clinical	712 (582)	30.5	SADS, SIAS	PB, NB, NC, CSC, CC	MCQ-30	27
Nordahl et al. (2018)	Norway	Correlational	Clinical	102 (47)	29.8	FNE	PB, NB, NC, CSC, CC	MCQ-30	27
Nordahl et al. (under review)	Norway	Correlational	Non-Clinical	645 (533)	36.26	FNE	PB, NB, NC, CSC, CC	MCQ-30	28
Shihata et al. (2017)	Australia	Correlational	Non-Clinical	506 (406)	21	Brief FNE (Straightforward items), SIPS	NB	MCQ-30	31
Vassilopoulos et al. (2015)	Greece	Correlational	Non-Clinical	301 (261)	20	SIAS	PB	MCQ-30	26
Vassilopoulos et al. (2017)	Greece	Correlational	Non-Clinical	225 (202)	21	SIAS	PB	PB-APQ	24
Wells & Carter (2001)	England	Between groups (SAD vs. Non-Clinical Control)	Clinical	48 (28)	31.8	Structured Clinical Interview for DSM-III-R	PB, NB, NC	MCQ-65	27

Social anxiety measures: Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969; Leary, 1983), Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987), Social Avoidance and Distress Scale (SAD; Watson & Friend, 1969), Social Interaction and Anxiety Scale (SIAS; Mattick & Clark,1998), Social Interaction Phobia Scale (SIPS; Carleton et al., 2009), Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989), Social Phobia Scale (SPS; Mattick & Clark, 1998). *Beliefs examined*: High Standards (HS), Conditional Beliefs (CB), Unconditional Beliefs (UCB), Self-Beliefs related to Social Anxiety Scale (SBSA) Total Score – refers to high standards, conditional beliefs and unconditional beliefs combined score, Positive Beliefs about Worry (PB), Negative Beliefs about Uncontrollability and Danger of Thoughts (NB), Need to Control Thoughts (NC), Cognitive Self-Consciousness (CSC), Cognitive Confidence (CC). *Belief measures*: Core Beliefs Questionnaire (CBQ), Self-Beliefs related to Social Anxiety Scale (SBSA), Social Cognitions Questionnaire (SCQ), Metacognitions Questionnaire-30 (MCQ-30), Metacognitions Questionnaire-65 (MCQ-65), Negative Self-Beliefs Inventory (NSBI; Tang, Duan, Wang & Guo, 2015), Positive Beliefs about Anticipatory Processing Questionnaire (PB-APQ; Vassilopoulos, Brouzos & Moberly 2015).

Cognitive Beliefs and Social Anxiety

Four separate random effects meta-analyses were performed across a total of 71 individual effect sizes obtained from 24 studies considering the relationship between cognitive beliefs and social anxiety (high standards: *k*=17; conditional beliefs: *k*=17; unconditional beliefs: *k*=22; SBSA total score: *k*=15). Table 2 displays further information regarding effect size estimates from the four cognitive belief analyses (described in further detail below), alongside associated 95% confidence intervals, Q-test, I^2 and Egger's test statistics.

Visual inspection of funnel plots for each of the four analyses did not depict a skewed or asymmetrical spread of results around the mean effect size. Combined with non-significant Egger's test results, this indicates that publication bias is unlikely to have influenced results. Furthermore, sensitivity analyses utilising a one study removed model indicated that the summary effect estimates for each of the four primary analyses were not unduly influenced by any one study.

However, the Q-test was statistically significant for each of the four analyses, indicating the presence of significant heterogeneity among effect estimates (all *p* values <0.001). I^2 statistics were interpreted using criteria outlined by Higgins, Thompson, Deeks, and Altman (2003) whereby I^2 values of 25%, 50% and 75% correspond with low, moderate and high heterogeneity, respectively. On this basis, observed inconsistency of the effects fell within the moderate-large range for all analyses, indicating that results should be interpreted with caution.

For forest plots for each of the four cognitive beliefs analyses, see Appendix E.

Table 2. The relationship between social anxiety and the cognitive and metacognitive beliefs of interest.

	k	*r* (95% CI), *p* value	*Q* Statistic	I^2 (%)	Egger's Test (*p* value)
Social Beliefs					
SBSA Total Score	15	$r = 0.55$ (0.46-0.63), $p < 0.001$	$Q = 210.50$, $p < 0.001$	93.35	$p = 0.829$
High Standards	17	$r = 0.38$ (0.32-0.43), $p < 0.001$	$Q = 61.78$, $p < 0.001$	74.10	$p = 0.335$
Conditional Beliefs	17	$r = 0.51$ (0.43-0.59), $p < 0.001$	$Q = 178.62$, $p < 0.001$	91.04	$p = 0.607$
Unconditional Beliefs	22	$r = 0.51$ (0.43-0.58), $p < 0.001$	$Q = 269.87$, $p < 0.001$	92.22	$p = 0.583$
Metacognitive Beliefs					
PB	9	$r = 0.24$ (0.15-0.32), $p < 0.001$	$Q = 32.93$, $p < 0.001$	75.71	$p = 0.049$
NB	8	r = 0.48 (0.36-0.58), $p < 0.001$	$Q = 70.88$, $p < 0.001$	90.13	$p = 0.001$
NC	6	$r = 0.38$ (0.23-0.51), $p < 0.001$	$Q = 40.56$, $p < 0.001$	87.67	$p < 0.001$
CSC	6	$r = 0.23$ (0.12-0.35), $p < 0.001$	$Q = 25.06$, $p < 0.001$	80.05	$p = 0.008$
CC	5	$r = 0.30$ (0.19-0.40), $p < 0.001$	$Q = 16.33$, $p = 0.003$	75.51	$p = 0.012$

Cognitive Beliefs: Self-Beliefs Related to Social Anxiety (SBSA) Total Score refers to high standards, conditional beliefs and unconditional beliefs combined score

Metacognitive Beliefs: Positive Beliefs about Worry (PB), Negative Beliefs about Uncontrollability and Danger of Thoughts (NB), Need to Control Thoughts (NC), Cognitive Self-Consciousness (CSC), Cognitive Confidence (CC)

SBSA Total

The first set of analyses examined the relationship between social anxiety and SBSA Total Score, which reflects the combined measurement of high standards, conditional beliefs and unconditional beliefs as assessed by the SBSA. Results indicate a robust association between SBSA Total Score and social anxiety (r=.55, 95% CI[.46-.63], p<.001). When interpreted in-line with Cohen's (1992) criteria (r≤0.10 signifies a small effect, r≤0.30 a moderate effect and r≤0.50 a large effect), this corresponds to a large effect size.

High Standards

The second set of analyses investigated the relationship between high standards and social anxiety. Results indicate that high standards show a significant positive relationship with social anxiety (r=0.38, 95% CI[0.32-0.43], p<0.001), corresponding to a moderate strength of association.

Conditional Beliefs

The third set of analyses examined the relationship between conditional beliefs and social anxiety. Results indicate a large and significant relationship (r=0.51, 95% CI[0.43-0.59], p<0.001) between these constructs, corresponding to a large effect size.

Unconditional Beliefs

The fourth set of analyses investigated the relationship between unconditional beliefs and social anxiety. Results indicate a robust and significant relationship (r=0.51, 95% CI[0.43-0.58], p<0.001), suggestive of a large association between unconditional beliefs and social anxiety.

Subgroup analyses by Social Anxiety Measure

A series of subgroup analyses were conducted to investigate the association between social anxiety and the cognitive beliefs of interest, stratified by social anxiety measure used (Table 3). All associations were significant (p<0.03) and appeared largely consistent across both belief-type and social anxiety measure. In all instances, associations fell within the moderate to large range, barring the association between social anxiety as measured by the Liebowitz Social Anxiety Scale (LSAS) and high standards which was identified as small.

Statistical contrasts of the summary effects estimated within these subgroup analyses were not appropriate due to analyses utilising dependent effects (i.e. the same studies often used multiple measures of social anxiety symptoms with the same participant sample). As the Social Phobia Inventory (SPIN) and the Structured Clinical Interview for DSM-IV-TR were each only used in one study (Fisak & Hammond, 2013; Wells & Carter, 2001), results pertaining to use of these measures were unable to be meaningfully included in these subgroup analyses.

Table 3. The relationship between specific social anxiety measures and each of the cognitive beliefs (high standards, conditional beliefs, unconditional beliefs and SBSA total score)

	k	*r*	95% CI	*p* value
SBSA Total Score				
Brief FNE/SIAS	2	0.48	[0.10-0.73]	0.015
FNE	4	0.60	[0.45-0.72]	<0.001
LSAS	6	0.52	[0.22-0.73]	0.002
SIAS	6	0.59	[0.52-0.65]	<0.001
SPS	4	0.52	[0.47-0.58]	<0.001
High Standards				
Brief FNE/SIAS	3	0.41	[0.21-0.58]	<0.001
FNE	4	0.54	[0.47-0.60]	<0.001
LSAS	5	0.26	[0.03-0.46]	0.026
SIAS	6	0.30	[0.25-0.35]	<0.001
SPS	6	0.36	[0.32-0.40]	<0.001
Conditional Beliefs				
Brief FNE/SIAS	3	0.42	[0.17-0.62]	0.001
FNE	4	0.55	[0.42-0.65]	<0.001
LSAS	5	0.45	[0.11-0.70]	0.001
SIAS	6	0.54	[0.50-0.57]	<0.001
SPS	6	0.52	[0.48-0.55]	<0.001
Unconditional Beliefs				
Brief FNE/SIAS	3	0.43	[0.21-0.60]	<0.001
FNE	6	0.43	[0.27-0.57]	<0.001
LSAS	5	0.45	[0.13-0.69]	0.008
SIAS	8	0.59	[0.56-0.63]	<0.001
SPS	8	0.54	[0.46-0.61]	<0.001

Brief Fear of Negative Evaluation Scale and Social Interaction Anxiety Scale Composite Score (Brief FNE/SIAS), Fear of Negative Evaluation Scale (FNE), Liebowitz Social Anxiety Scale (LSAS), Self-Beliefs Related to Social Anxiety (SBSA) Total Score refers to high standards, conditional beliefs and unconditional beliefs combined score, Social Interaction and Anxiety Scale (SIAS), (Social Interaction Phobia Scale (SIPS), Social Phobia Scale (SPS)

Subgroup analyses by Measure of Beliefs

Subgroup analysis contrasting effect sizes across studies using different measures of unconditional beliefs were conducted. Studies reporting separate rather than cumulative scores for SCQ subscales were collapsed into a single variable due to analysis suggesting the similarity of effect sizes. The association between social anxiety and unconditional beliefs

appears both large and significant (p<0.001) when unconditional beliefs are measured by the SCQ (k=4; r=0.53, 95% CI[0.35-0.67]) and the SBSA (k=16, r=0.52, 95% CI[0.42-0.60]), with no significant difference found between groups (Q=0.02, df=1, p=0.90). However, this finding should be interpreted with caution due to the limited number of studies utilising the SCQ within this analysis.

As the Negative Self-Beliefs Inventory (NSBI) and CBQ were each only used in one study (Tang, Duan, Wang & Guo, 2015; Wong et al., 2017), these measures were unable to be meaningfully included in these analyses. Similarly, subgroup analysis by varying measures of high standards and conditional beliefs were unable to be meaningfully included in these analyses due to minimal variation in belief measures used.

Subgroup analyses contrasting clinical and non-clinical studies

Subgroup analysis contrasting effect sizes from different participant groups (i.e. clinical vs non-clinical) was also conducted. Due to the small number of studies utilising clinical samples to examine high standards (k=1) and conditional beliefs (k=1), only effect sizes from studies investigating unconditional beliefs were examined. The association between social anxiety and unconditional beliefs appears large and significant (p<0.001) in both clinical (k=4; r=0.55, 95% CI[0.49-0.61]) and non-clinical samples (k=18, r=0.51, 95% CI[0.42-0.59]). While the magnitude of the association appears marginally larger in clinical samples, the differences between the groups were not significant (Q=0.81, df=1, p=0.37). However, this finding should be interpreted with caution due to the limited number of studies of clinical samples.

Metacognitive Beliefs and Social Anxiety

Five separate random effects meta-analyses were performed across a total of 34 individual effect sizes obtained from 11 studies (positive beliefs about worry: *k*=9; negative beliefs about uncontrollability and danger of thoughts: *k*=8; need to control thoughts: *k*=6; cognitive self-consciousness: *k*=6; cognitive confidence: *k*=5). The relationship between social anxiety and the total scores of self-report measures assessing these five metacognitive beliefs (the MCQ) were not included in this meta-analysis due to only three identified eligible studies reporting relevant data (Gavric, Moscovitch, Rowa & McCabe, 2017; Hosey, 2012; Nordahl & Wells, 2017).

Table 2 provides further information regarding effect size estimates from the five metacognitive beliefs analyses, alongside associated 95% confidence intervals, Q-test, I^2 and Egger's test statistics. Forest plots for each of the five analyses are contained within Appendix E.

Visual inspection of funnel plots indicates a somewhat asymmetrical spread of results around the mean effect size for each of the five analyses. When combined with significant Egger's test results, this indicates that publication bias may have influenced results. However, due to the small number of studies included and the clustering of effects apparent in most analyses, the trim and fill method was unable to be reliably used to correct for potential bias in all but one analysis (concerning positive beliefs about worry – see below).

Q and I^2 statistics indicated that significantly large heterogeneity existed across effect estimates for all five analyses (all p values $\leq$0.003), indicating that results should be interpreted with caution. Subgroup analyses to investigate possible sources of heterogeneity, including variations in population and measures, were not conducted due to the small number of studies within each analysis.

Positive Beliefs about Worry

The first set of analyses examined the relationship between positive beliefs about worry and social anxiety. Results indicate a small but significant association (r=0.24, 95% CI[0.15-0.32], p<0.001).

Following identification of significant heterogeneity across effect estimates, Duval and Tweedie's (2000) trim-and-fill procedure indicated two missing studies. When these hypothetical studies were included in the analysis, the summary effect size increased slightly (r=0.29, 95% CI[0.20-0.37], Q=47.48), indicating that these hypothetical studies reported larger effects than those identified within this review.

One study removed analysis did not indicate the presence of significant outliers. It is noted that although most studies found a small-moderate positive association (k=7), one study found a negative association between social anxiety and positive beliefs about worry (r=-0.16; Wells & Carter, 2001). Furthermore, one-third of studies found non-significant associations between the constructs (Gkika & Wells, 2016; McEvoy & Perini, 2009; Wells & Carter, 2001). However, none of these studies appeared to substantially influence the meta-analytic results.

Negative Beliefs about Uncontrollability and Danger of Thoughts

The second set of analyses examined the relationship between social anxiety and negative beliefs about uncontrollability and danger of thoughts. Results indicate a significant association of moderate strength (r=0.48, 95% CI[0.36-0.58], p<0.001).

One study removed analysis did not indicate the presence of significant outliers. However, it is noted that while most studies (k=5) found small to moderate effects (r=0.22-0.47), three studies (Nordahl & Wells, 2017; Nordahl, Ødegaard, Hjemdal & Wells, 2018; Shihata et al., 2017) found large effects (r=0.64-0.65). Although not exerting a large

influence on overall findings, when each was individually removed the summary effect became slightly smaller and less precise. Therefore, it appears that distribution of effects depicting the association between social anxiety and negative beliefs about uncontrollability and danger of thoughts varies.

Need to Control Thoughts

The third set of analyses examined the relationship between social anxiety and need to control thoughts. Results indicate a significant association of moderate strength (r=0.38, 95% CI[0.23-0.51], p<0.001).

One study removed analysis did not indicate the presence of significant outliers. However, it is noted that three studies found small associations, two found large associations and one found no significant association between social anxiety and need to control thoughts. Studies which found large associations (Nordahl & Wells, 2017; Nordahl, Ødegaard, Hjemdal & Wells, 2018) reported more precise effects, likely influenced by larger sample sizes. Therefore, confidence in the results of this sensitivity analysis are limited due to the small number of studies available investigating the constructs of interest and the significant variation in effect sizes across studies.

Cognitive Self-Consciousness

The fourth set of analyses examined the relationship between social anxiety and cognitive self-consciousness. Results indicate a small but significant association (r=0.23, 95% CI[0.12-0.35], p<0.001).

One study removed analysis did not indicate the presence of significant outliers. However, half of the studies analysed found no significant association between social anxiety and cognitive self-consciousness (Gkika & Wells, 2016; Hosey, 2012; McEvoy & Perini,

2009). The remaining three studies found small to moderate effects. Studies which found moderate associations (Nordahl & Wells, 2017; Nordahl, Ødegaard, Hjemdal & Wells, 2018) reported more precise effects, likely influenced by larger sample sizes. Variation in effect size across studies suggests that meta-analytic results should be interpreted cautiously.

Cognitive Confidence

The fifth set of analyses examined the relationship between social anxiety and cognitive confidence. Results indicate a significant association of moderate strength (r=0.30, 95% CI[0.19-0.40], p<0.001).

One study removed analysis did not indicate the presence of significant outliers. However, three of the studies analysed found no significant association between social anxiety and cognitive confidence (Gkika & Wells, 2016; McEvoy & Perini, 2009; Nordahl, Nordahl, Vogel & Wells, 2018). As in the aforementioned analyses, the two remaining studies (Nordahl & Wells, 2017; Nordahl, Ødegaard, Hjemdal & Wells, 2018) found moderate and more precise effects, likely influenced by their large sample sizes. Confidence in the results of this sensitivity analysis are limited due to the small number of studies available investigating the constructs of interest and the significant variation in effect sizes across studies.

Discussion

This meta-analysis aimed to summarise and quantify the relationships between social anxiety and both cognitive beliefs and metacognitive beliefs. Findings suggest that a significant relationship of moderate to large magnitude exists between social anxiety and each of the cognitive beliefs of interest. This supports the assumptions made by the Clark and Wells (1995) model, which proposes that each of these three cognitive beliefs are important

domains to identify when assessing and treating SAD. The significant associations evident across a variety of different social anxiety measures further strengthen the robustness of findings. In particular, our findings suggest that conditional and unconditional beliefs may be the most relevant and important cognitive beliefs to consider when assessing and treating social anxiety, as demonstrated by their larger association with social anxiety in comparison to high standards. However, as the current meta-analysis concerned only the existence and magnitude of the proposed associations between different belief domains and social anxiety symptoms, the results do not address the causal significance of these belief domains in social anxiety.

The possibility of overlap between the constructs assessed by measures of both social anxiety and cognitive beliefs should be considered in assessing these findings. For example, the SBSA and Fear of Negative Evaluation Scale both contain items discussing conveying a favourable impression ("I have to convey a favourable impression" / "I rarely worry about what kind of impression I am making on someone"). Similarly, the SCQ, SPIN and Social Phobia Scale all contain items relating to blushing, trembling and shaking. It is therefore possible that both social anxiety and cognitive belief measures reflect social anxiety symptoms to an extent, potentially accounting from some shared variance and thus inflating the effect sizes estimated within this review.

Meta-analytic findings revealed significant associations between social anxiety and each of the five metacognitive beliefs measured. Across these domains the magnitude of relationship varied from small to moderate, with the strongest association found for negative metacognitive beliefs concerning uncontrollability and danger. This is notable as this specific metacognitive domain is predicted to have the strongest and most reliable association with psychopathology symptoms within the metacognitive model (Wells, 2009). This supports the findings of Nordahl and Wells (2017) who, using structural equation modelling to explore the

fit of the metacognitive model, found that negative beliefs about uncontrollability and danger appeared of particular relevance in social anxiety. Evidence from the broader literature also implicates negative beliefs about uncontrollability and danger of thoughts and need to control thoughts as the metacognitive beliefs most strongly associated with psychopathology across a range of emotional, psychotic and eating disorders (Sun, Zho & So, 2017).

Although not statistically contrasted, differences between negative beliefs about uncontrollability and danger of thoughts in comparison with conditional and unconditional beliefs (in terms of the extent to which each relates to social anxiety) appear negligible ($r \leq 0.03$). This suggests that the magnitude of these associations may be comparable. Similarly, high standards and need to control thoughts both appear to demonstrate a moderate degree of association with social anxiety ($r=0.38$ in both instances). This suggests that these particular metacognitive beliefs may be as relevant to social anxiety as the cognitive belief domains prioritised within the Clark and Wells (1995) model. At face value, measures of metacognitive beliefs do not appear to have overt links with measures of social worries or physiological symptoms of social anxiety. Therefore, in contrast with cognitive beliefs, the association between metacognitive beliefs and social anxiety is less likely to have been influenced by overlapping measurement items. However, the correlations cannot provide clear evidence of causal associations and this must be considered in the interpretation of findings.

The significant statistical heterogeneity apparent in all nine meta-analyses investigating both cognitive and metacognitive beliefs will likely have affected the quality and accuracy of results within this review (Borenstein et al., 2009). Therefore, results should be interpreted with caution. Subgroup analyses were conducted in an attempt to explain statistical heterogeneity where possible. While some disparity in the magnitude of effect sizes was apparent across different social anxiety measures, all associations fell within the

moderate-large range. Consequently, this is unlikely to have significantly influenced findings. Similarly, no significant differences were detected across belief measures or study populations (although this could only be examined in relation to unconditional beliefs). Subgroup analyses were unable to be employed in relation to metacognitive beliefs due to the small number of studies exploring each belief domain. As research within this domain increases, future studies and systemic reviews may be able to examine the influence of variations in methods, populations and measures across studies more precisely.

Variables not accounted for within the current review likely explain some of the heterogeneity detected. For example, diversity during the assessment process related to administration of the SBSA and other measures across studies, such as in the case of Makkar & Grisham (2011, 2013) where cognitive beliefs were only assessed following 'activation manipulations' (i.e. speech and conversation tasks) – a procedural step not undertaken in other studies. Although one study removed analyses indicated that such studies did not exert an undue influence on results, it is likely that these methodological variations contribute towards the heterogeneity apparent within findings.

Studies were also conducted across numerous different countries encompassing participants from both Eastern and Western cultures. Evidence suggests that sociodemographic factors including culture, ethnicity and gender can all influence the expression of social anxiety (e.g. Hofmann, Asnaani & Hinton, 2010). Furthermore, use of translated measures of both social anxiety and the beliefs of interest apparent within some studies (e.g. Heeren, Wong, Ceschi, Moulds & Philippot, 2014; Maeda et al., 2017, 2018; Tang et al. 2015; Vassilopoulos et al., 2015, 2017) potentially introduces issues relating to bias and/or equivalence to original measures (Ægisdóttir, Gerstein & Çinarbas, 2008), particularly where translated measures had not been psychometrically evaluated or used in

previous studies. Therefore, it is possible that these factors may also have increased statistical diversity.

Methodological Limitations of Reviewed Studies

The cross-sectional, correlational nature of most studies means that inferences regarding causality and direction of effects are limited. While not examined within the current meta-analysis, Gkika et al.'s (2017) narrative review of the literature suggest that the relationships between social anxiety and each of the three cognitive beliefs may be mediated by specific cognitive processes such as worry and rumination. Conversely, evidence from Kissell, Rodriguez, Lucas & Fisak (2016) suggest that the association between cognitive processes such as post-event processing and social anxiety are mediated by the cognitive beliefs of interest, although Holzman, Valentiner & McCraw's (2014) findings fail to support this conclusion. In the small number of studies where longitudinal designs have been utilised, findings suggest that reductions in negative metacognitive beliefs are associated with improvements in social anxiety symptoms (McEvoy & Perini, 2009) and may show greater predictive validity than cognitive beliefs (Nordahl et al., 2017). However, the limited and somewhat contradictory information presented within the available literature is difficult to interpret. Therefore, more research is required to further investigate specific causal relationships between the beliefs of interest and social anxiety.

Non-clinical samples commonly comprised of mostly female participants, student samples and individuals from Western countries provided the majority of data across studies. In studies directly comparing clinical and non-clinical participants, evidence suggests stronger associations between social anxiety and the beliefs of interest are seen amongst participants meeting diagnostic criteria for SAD (e.g. Wells & Carter, 2001; Wong et al., 2014). This implies that the summary effects obtained within this review may underestimate

the ‘true’ association between constructs due to the paucity of data from clinical samples available within the literature. Therefore, caution when generalising findings to more varied populations in terms of education, age, culture, gender and clinical severity of social anxiety is advised.

Although most studies within this review demonstrate moderate-high quality as assessed by the QATSDD, statistical power and explicit justification for the analytic methods employed were not widely reported. A lack of service user consultation regarding research aims and/or design was also evident in all except two cases (Peschard & Philipott, 2017; Tang et al., 2015). Therefore, the overall findings of this body of research should be interpreted with these caveats in mind. Consideration of these factors during the design and reporting of studies will likely improve the quality of future research.

Most studies did not involve manipulation or activation of perceived social-threat via social interaction or performance tasks prior to measuring the constructs of interest. It has been suggested that cognitive biases and/or maladaptive beliefs are often state-dependent, remaining latent until activated by relevant stimuli including perceived threat (Beck, Emery & Greenberg, 1985); namely, social evaluation in SAD (Clark & Wells, 1995). Thus, participant responses may have been reliant on recall or anticipation of social anxiety and/or the beliefs of interest, potentially affecting the accuracy of measurement via under or over-estimation of symptoms and belief conviction.

The SBSA and MCQ were the measures largely used across studies to measure cognitive and metacognitive beliefs, respectively. While both measures have a strong theoretical basis and demonstrate good psychometric properties (e.g. McEvoy, Moulds & Mahoney, 2013; Wells & Cartwright-Hatton, 2004; Wong et al., 2014), the lack of diversity in measures used raises the possibility that associations found are partly accounted for by specific measurement factors rather than being representative entirely of the constructs of

interest, potentially limiting the generalisability of findings. Replication across a broader range of measures (such as the SCQ, CBQ, NSBI and Positive Beliefs about Anticipatory Processing Questionnaire) would strengthen confidence in the conclusions drawn.

Limitations of the Current Review

Within the current meta-analysis, a number of limitations should be acknowledged. Firstly, studies published in languages other than English were not included within this review. Furthermore, nine papers identified during the search process were unable to be obtained. Therefore, relevant data may have been missed – introducing potential bias into the results. However, attempts to combat selection and publication bias were made by including grey literature and unpublished data (obtained via personal correspondence with authors).

Secondly, the beliefs examined within this review only relate to two models; namely, Clark and Wells' (1995) cognitive model of SAD and Wells and Matthews (1994, 1996) transdiagnostic metacognitive model. Although prioritised due to being the most widely researched models of SAD and metacognitive processes within psychological disorder, respectively, key tenets of other models may have been overlooked. For example, beliefs about the meaning of being positively evaluated by others (Hofmann, 2007) and beliefs about the perceived benefits of obtaining social rewards and avoiding social dangers (Kimbrel, 2008; Kimbrel, Nelson-Gray, & Mitchell, 2012) were not incorporated within the present review. Future research may benefit from exploring the beliefs outlined within other theoretical models to ensure associations of importance have not been neglected.

Thirdly, bivariate meta-analyses were employed to investigate associations between the constructs of interest. While results advance our understanding of the strength of associations between social anxiety and both cognitive and metacognitive beliefs by synthesising and quantifying findings from the relevant literature, the relative contributions of

the beliefs in question were unable to be directly compared or explored further using this method of analysis. A multivariate analysis would have permitted greater elaboration of the specific contributions of and interplay between cognitive beliefs, metacognitive beliefs and social anxiety, including direct, mediated and moderated effects (Donaldson, 2001), allowing greater precision of and confidence in conclusions drawn (Jackson, Riley & White, 2011). With the anticipated expansion of research exploring the constructs of interest, more complex meta-analytic methods could be attempted by reviewers in the future. This may include the use of techniques such as meta-analytic structural equation modelling to allow for further testing of the consistency of theoretical models with integrated meta-analytic data.

Within this review statements such as "I am foolish" are categorised as a cognitive belief as, at face value, these refer to the self as a social object rather than explicitly referring to beliefs about cognitive processes. However, links with metacognitive beliefs cannot be entirely ruled out. For example, someone may believe that they are foolish due to an inability to control their thinking – in this case it would indicate that this belief has a metacognitive underpinning. At present, there is no way of identifying this potential link via the measures of cognitive beliefs currently available within the field. However, attempts to reduce any overlap in the measurement of both belief domains were made in the present analysis by selecting measures of cognitive beliefs that did not include explicit mention of metacognitive beliefs and vice versa, but it is acknowledged that further empirical work to clarify any potential overlap between both cognitive and metacognitive belief domains and explore the interplay between these constructs is required.

Future Research

Future research may wish to replicate and extend our findings across clinical populations, as well as utilising more heterogeneous participant samples (in terms of gender,

culture, age and level of education) and belief measures. Ecological validity of findings may also be improved by the more widespread use of social-threat manipulation within future studies, resulting in activation of the relevant beliefs. Furthermore, employing longitudinal designs and/or manipulation of the constructs of interest would allow for inferences regarding causality and direction of effects to be made.

As this review only included studies utilising adult samples, future research should consider the extent to which findings extend to a child and adolescent population. Investigation of the degree to which findings are replicated across different forms of social anxiety is also warranted, including generalised SAD, specific SAD and avoidant personality disorder (which has been characterised by some as an extreme form of SAD; Heimberg, 1996).

Clinical Implications

Despite the aforementioned limitations, this review suggests that social anxiety is not only positively associated with beliefs concerning social performance and showing signs of anxiety as predicted by cognitive models, but is also associated with metacognitive beliefs – especially those concerning the uncontrollability and danger of thoughts. Metacognitive beliefs have not been formulated in the most widely recognised models of SAD (e.g. Clark & Wells, 1995; Rapee & Heimberg, 1997; Hofmann, 2007) and recommended assessment tools (including the Liebowitz Social Anxiety Scale and SPIN; NICE Guidelines, 2013). Therefore, our findings imply that current models of SAD may benefit from revision in order to contain metacognitive belief domains. Whether there is a need to capture both the cognitive and metacognitive domains requires further investigation.

Consequently, it may be advisable for clinicians to routinely enquire about metacognitive beliefs during the assessment of SAD and incorporate these, in addition to

cognitive beliefs, when formulating clients' presenting difficulties. Although much evidence supports the efficacy of CBT based on the Clark and Wells (1995) model (Gil, Carrillo & Meca, 2001), incorporation of MCT techniques within SAD treatment may be beneficial. This may include techniques such as detached mindfulness and worry postponement (Wells, 2009) which target how we think (metacognition) rather than what we think (cognition). Preliminary research suggests that targeting thoughts and beliefs at the metacognitive level is associated with reductions in SAD symptoms and hypothesised maintaining factors, as well as negative self-beliefs (Nordahl & Wells, 2018; Williams, Knowles, Varese & Wells, 2019). Furthermore, evidence from Gkika & Wells (2015) suggests that intervening at the metacognitive level via detached mindfulness may prove more advantages than techniques aimed at challenging cognitive thought-content among socially anxious individuals. However, further research and replication of findings is required.

Conclusions

The results of this meta-analysis support and extend the findings of Gkika et al. (2017) concerning the presence of significant positive associations between social anxiety and both cognitive and metacognitive beliefs. Our findings tentatively suggest that certain domains of metacognitive beliefs, particularly negative beliefs about uncontrollability and danger of thoughts and need to control thoughts, may be as important as cognitive beliefs in social anxiety. This study contributes to an expanding area of research suggesting that metacognitive beliefs are a key contributor to social anxiety, and thus should be studied further in both the conceptualisation and treatment of SAD.

References

Ægisdóttir, S., Gerstein, L. H., & Çinarbas, D. C. (2008). Methodological issues in cross-cultural counseling research. *The Counseling Psychologist*, *36*, 188-219. https://doi.org/10.1177/0011000007305384

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author. https://doi.org/10.1176/appi.books.9780890425596

Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: a cognitive perspective*. New York: Harper Collins. https://doi.org/10.1176/ps.37.4.405

Beesdo, K., Bittner, A., Pine, D. S., Stein, M. B., Höfler, M., Lieb, R., & Wittchen, H. U. (2007). Incidence of social anxiety disorder and the consistent risk for secondary depression in the first three decades of life. *Archives of general psychiatry*, *64*(8), 903-912. https://doi.org/10.1001/archpsyc.64.8.903

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2005). Comprehensive meta-analysis version 2. *Englewood, NJ: Biostat*.

Borenstein, M., Hedges, L. V., Higgins, J., & Rothstein, H R. (2009). *Introduction to meta-analysis*. Chichester, UK: John Wiley & Sons Ltd. http://doi.org/10.1002/9780470743386

Buckner, J. D., Schmidt, N. B., Lang, A. R., Small, J. W., Schlauch, R. C., & Lewinsohn, P. M. (2008). Specificity of social anxiety disorder as a risk factor for alcohol and cannabis dependence. *Journal of psychiatric research*, *42*(3), 230-239. https://doi.org/10.1016/j.jpsychires.2007.01.002

Carleton, R. N., Collimore, K. C., Asmundson, G. J., McCabe, R. E., Rowa, K., & Antony, M. M. (2009). Refining and validating the social interaction anxiety scale and the

social phobia scale. *Depression and Anxiety*, *26*, E71–E81. http://dx.doi.org/10.1002/da.20480

Carter, S. A. (2012). *Further examination of the cognitive conceptualizations of the social phobia subtypes and avoidant personality disorder* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3552278)

Cartwright-Hatton, S., & Wells, A. (1997). Beliefs about worry and intrusions: The meta-cognitions questionnaire and its correlates. *Journal of Anxiety Disorders*, *11*(3), 279-296. https://doi.org/10.1016/S0887-6185(97)00011-X

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, F. R. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment and treatment* (pp. 69-93). New York, NY: Guilford.

Cohen J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155–159. http://dx.doi.org/10.1037/0033-2909.112.1.155

Davidson, J. R., Hughes, D. L., George, L. K., & Blazer, D. G. (1993). The epidemiology of social phobia: findings from the Duke Epidemiological Catchment Area Study. *Psychological medicine*, *23*(3), 709-718. https://doi.org/10.1017/s0033291700025484

Donaldson, S. I. (2001). Mediator and moderator analysis in program development In S. Sussman (Ed.), *Handbook of Program Development in Health Behavior Research and Practice* (pp. 470-496). Thousand Oaks, CA: Sage. https://dx.doi.org/10.4135/9781412991445.n1

Duval, S., & Tweedie, R. (2000). A nonparametric “trim and fill” method of accounting for publication bias in meta-analysis. *Journal of the American Statistical Association*, *95*(449), 89-98. https://doi.org/10.1080/01621459.2000.10473905

Egger, M., Davey-Smith, D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal*, *315*(7109), 629-634. https://doi.org/10.1136/bmj.315.7109.629

Fisak, B., & Hammond, A. N. (2013). Are positive beliefs about post-event processing related to social anxiety? *Behaviour Change*, *30*(1), 36-47. https://doi.org/10.1017/bec.2013.4

Gavaghan, D. J., Moore, R. A., & McQuay, H. J. (2000). An evaluation of homogeneity tests in meta-analyses in pain using simulations of individual patient data. *Pain*, *85*(3), 415-424. http://dx.doi.org/10.1016/S0304-3959(99)00302-4

Gavric, D., Moscovitch, D. A., Rowa, K., & McCabe, R. E. (2017). Post-event processing in social anxiety disorder: Examining the mediating roles of positive metacognitive beliefs and perceptions of performance. *Behaviour research and therapy*, *91*, 1-12. https://doi.org/10.1016/j.brat.2017.01.002

Gkika, S., & Wells, A. (2015). How to deal with negative thoughts? A preliminary comparison of detached mindfulness and thought evaluation in socially anxious individuals. *Cognitive Therapy and Research*, *39*(1), 23-30. http://doi.org/10.1007/s10608-014-9637-5

Gkika, S., & Wells, A. (2016). The impact of metacognitive beliefs and anticipatory processing on state anxiety in high socially anxious individuals in a speech task. *Journal of Experimental Psychopathology*, *7*(4), 588-600. https://doi.org/10.5127/jep.054916

Gkika, S., Wittkowski, A., & Wells, A. (2017). Social cognition and metacognition in social anxiety: a systematic review. *Clinical psychology & psychotherapy*, *25*(1), 10-30. https://doi.org/10.1002/cpp.2127

Gil, P. J. M., Carrillo, F. X. M., & Meca, J. S. (2001). Effectiveness of cognitive-behavioural treatment in social phobia: A meta-analytic review. *Psychology in Spain, 5*(1), 17-25.

Gregory, B., & Peters, L. (2017). Unique relationships between self-related constructs, social anxiety, and depression in a non-clinical sample. *Behaviour Change*, *34*(2), 117-133. https://doi.org/10.1017/bec.2017.9

Heeren, A., Wong, Q. J. J., Ceschi, G., Moulds, M. L., & Philippot, P. (2014). Probing the structural validity of the Self-Beliefs in Social Anxiety Scale (SBSA): Adaptation and validation in a French‐speaking community sample. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement, 46*(4), 506-513. https://doi.org/10.1037/a0035295

Heimberg, R. G. (1996). Social phobia, avoidant personality disorder and the multiaxial conceptualization of interpersonal anxiety. In P. Salkovskis (Ed.), *Trends in cognitive and behavioural therapies*, (Vol. 1, pp. 43-62). Sussex, England: John Wiley & Sons. https://doi.org/10.1017/S1352465800018786

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

Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British Medical Journal*, *327*, 557–560. https://doi.org/10.1136/bmj.327.7414.557

Hoffart, A., Johnson, S. U., Nordahl, H. M., & Wells, A. (2018). Mechanisms of change in metacognitive and cognitive behavioral therapy for treatment-resistant anxiety: The role of metacognitive beliefs and coping strategies. *Journal of Experimental Psychopathology*, *9*(3), 1-10. https://doi.org/10.1177/2043808718787414

Hofmann, S. G. (2007). Cognitive factors that maintain social anxiety disorder: A comprehensive model and its treatment implications. *Cognitive Behaviour Therapy*, *36*, 193–209. http://dx.doi.org/10.1080/16506070701421313

Hofmann, S. G., Asnaani, A., Hinton, D. E. (2010). Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety, 27*(12), 1117-1127. https://doi.org/10.1002/da.20759

Holzman, J. B., Valentiner, D. P., & McCraw, K. S. (2014). Self-focused attention and post-event processing: Relevance to social performance anxiety and social interaction anxiety. *Journal of Cognitive Psychotherapy*, *28*(1), 72–82. https://doi.org/10.1891/0889-8391.28.1.7

Hopewell, S., McDonald, S., Clarke, M. & Egger, M. (2003). Grey literature in meta-analyses of randomized trials of health care interventions (Cochrane Methodology Review). In *The Cochrane Library, Issue 4*. Chichester: John Wiley & Sons, Ltd. http://doi.org/10.1002/14651858.MR000010.pub3

Hosey, R. P. (2012). Metacognitive processes in social anxiety: a path analysis (Doctoral Dissertation). *The University of Louisville's Institutional Repository: Electronic Theses and Dissertations*. Paper 637. https://doi.org/10.18297/etd/637

Huedo-Medina, T. B., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I^2 index? *Psychological Methods*, *11*, 193–206. http://doi.org/10.1037/1082-989X.11.2.193

Jackson, D., Riley, R., & White, I. R. (2011). Multivariate meta-analysis: potential and promise. *Statistics in medicine*, *30*(20), 2481-2498. https://doi.org/10.1002/sim.4172

Katzelnick, D. J., Kobak, K. A., DeLeire, T., Henk, H. J., Greist, J. H., Davidson, J. R., ... & Helstad, C. P. (2001). Impact of generalized social anxiety disorder in managed care. *American Journal of Psychiatry*, *158*(12), 1999-2007. https://doi.org/10.1176/appi.ajp.158.12.1999

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*, 593-602. http://doi.org/10.1001/archpsyc.62.6.593

Kimbrel, N. A. (2008). A model of the development and maintenance of generalized social phobia. *Clinical Psychology Review*, *28*, 592–612. http://doi.org/10.1016/j.cpr.2007.08.003

Kimbrel, N. A., Nelson-Gray, R. O., & Mitchell, J. T. (2012). BIS, BAS, and bias: The role of personality and cognitive bias in social anxiety. *Personality and Individual Differences*, *52*, 395–400. http://doi.org/10.1016/j.paid.2011.10.041

Kissell, K., Rodriguez, H., Lucas, L., & Fisak, B. (2016). Examination of the Contribution of Ruminative Thinking and Maladaptive Self-beliefs to Social Anxiety. *Journal of Cognitive Psychotherapy*, *30*(4), 253-262. http://doi.org/10.1891/0889-8391.30.4.253

Leary, M. R. (1983). A brief version of the Fear of Negative Evaluation Scale. *Personality and Social Psychology Bulletin*, *9*, 371-376. https://doi.org/10.1177/0146167283093007

Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry, 22,* 141–173. http://dx.doi.org/10.1159/000414022

Light, R., & Pillemer, D. B. (1984). *Summing up: the science of reviewing research*. Harvard University Press. https://doi.org/10.3102/0013189X015008016

Maeda, S., Ogishima, H., & Shimada, H. (2018). *Acute cortisol response to a psychosocial stressor is associated with heartbeat perception*. Manuscript submitted for publication.

Maeda, S., Shimada, H., & Sato, T. (2018). Cognitive Reappraisal Moderates the Effect of Post-event Processing on Social Anxiety: A Short-Term Prospective Study. *International Journal of Cognitive Therapy*, *11*(4), 359-373. http://doi.org/10.1007/s41811-018-0031-z

Maeda, S., Shimada, H., Sato, T., Tashiro, K., & Tanaka, Y. (2017). Translation and initial validation of the Japanese version of the self-beliefs related to social anxiety scale. *Psychological reports*, *120*(2), 305-318. https://doi.org/10.1177/0033294116686037

Makkar, S. R., & Grisham, J. R. (2011). The predictors and contents of post-event processing in social anxiety. *Cognitive Therapy and Research*, *35*(2), 118 – 133. https://doi.org/10.1007/s10608-011-9357-z

Makkar, S. R., & Grisham, J. R. (2013). The effect of post-event processing on mood, self-beliefs, and interpretive biases. *Journal of Experimental Psychopathology*, *4*(4), 368–386. https://doi.org/10.5127/jep.030912

Mattick, R. P., & Clark, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*(4), 455–470. https://doi.org/10.1016/S0005-7967(97)10031-6

Mayo-Wilson, E., Dias, S., Mavranezouli, I., Kew, K., Clark, D. M., Ades, A. E., & Pilling, S. (2014). Psychological and pharmacological interventions for social anxiety disorder in adults: a systematic review and network meta-analysis. *The Lancet Psychiatry*, *1*(5), 368-376. https://doi.org/10.1016/S2215-0366(14)70329-3

McEvoy, P. M., Moulds, M. L., & Mahoney, A. E. (2013). Mechanisms driving pre-and post-stressor repetitive negative thinking: Metacognitions, cognitive avoidance, and thought control. Journal of *Behaviour Therapy and Experimental Psychiatry*, *44*(1), 84-93. http://dx.doi.org/10.1016/j.jbtep.2012.07.011

McEvoy, P. M., & Perini, S. J. (2009). Cognitive behavioral group therapy for social phobia with or without attention training: A controlled trial. *Journal of Anxiety Disorders*, *23*(4), 519–528. https://doi.org/10.1016/j.janxdis.2008.10.008

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS medicine*, *6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

National Institute for Health and Care Excellence (2013). *Social Anxiety Disorder: Recognition, Assessment and Treatment of Social Anxiety Disorder*. London: Clinical Guideline, No. 159. Available at: http://guidance.nice.org.uk/CG159

Nordahl, H., & Wells, A. (2017). Testing the metacognitive model against the benchmark CBT model of social anxiety disorder: Is it time to move beyond cognition? *PloS one*, *12*(5), e0177109. https://doi.org/10.1371/journal.pone.0177109

Nordahl, H., & Wells, A. (2018). Metacognitive Therapy for Social Anxiety Disorder: An A–B Replication Series Across Social Anxiety Subtypes. *Frontiers in psychology*, *9*, 540. https://doi.org/10.3389/fpsyg.2018.00540

Nordahl, H., & Wells, A. (2019). *Measuring the Cognitive Attentional Syndrome associated with anxiety and depression: Psychometric properties and predictive validity of the CAS-1*. Manuscript submitted for publication

Nordahl, H., Nordahl, H. M., Hjemdal, O., & Wells, A. (2017). Cognitive and metacognitive predictors of symptom improvement following treatment for social anxiety disorder: A secondary analysis from a randomized controlled trial. *Clinical psychology & psychotherapy*, *24*(6), 1221-1227. https://doi.org/10.1002/cpp.2083

Nordahl, H., Nordahl, H. M., Vogel, P. A., & Wells, A. (2018). Explaining depression symptoms in patients with social anxiety disorder: Do maladaptive metacognitive beliefs play a role? *Clinical psychology & psychotherapy*, *25*(3), 457-464. https://doi.org/10.1002/cpp.2181

Nordahl, H., Ødegaard, I. H., Hjemdal, O., & Wells, A. (2018). *Can a simplified metacognitive model account for anxiety- and depression comorbidity? A preliminary test of the generic metacognitive model in a non-selected sample*. Manuscript submitted for publication.

Norton, A. R., & Abbott, M. J. (2017). Bridging the Gap between Aetiological and Maintaining Factors in Social Anxiety Disorder: The Impact of Socially Traumatic Experiences on Beliefs, Imagery and Symptomatology. *Clinical psychology & psychotherapy*, *24*(3), 747-765. https://doi.org/10.1002/cpp.2044

Parsons, E. M., & Clerkin, E. M. (2018). *The Value of Shame as a Predictor of Social Anxiety Disorder Symptom Severity*. Poster presented at Association for Behavioural and Cognitive Therapies, Annual Convention, Washington DC, 15-18 November, 2018.

Parsons, E. M., Straub, K. T., Smith, A. R., & Clerkin, E. M. (2017). Body dysmorphic, obsessive-compulsive, and social anxiety disorder beliefs as predictors of in vivo stressor responding. *The Journal of nervous and mental disease*, *205*(6), 471-479. http://doi.org/10.1097/NMD.0000000000000656

Peschard, V., & Philippot, P. (2017). Overestimation of threat from neutral faces and voices in social anxiety. *Journal of behavior therapy and experimental psychiatry*, *57*, 206-211. https://doi.org/10.1016/j.jbtep.2017.06.003

Peschard, V., Gilboa-Schechtman, E., & Philippot, P. (2017). Selective attention to emotional prosody in social anxiety: a dichotic listening study. *Cognition and Emotion*, *31*(8), 1749-1756. https://doi.org/10.1080/02699931.2016.1261012

Rapee, R. N., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy, 35*(8), 741-756. http://dx.doi.org/10.1016/s0005-7967(97)00022-3.

Shihata, S., McEvoy, P. M., & Mullan, B. A. (2017). Pathways from uncertainty to anxiety: An evaluation of a hierarchical model of trait and disorder-specific intolerance of uncertainty on anxiety disorder symptoms. *Journal of anxiety disorders*, *45*, 72-79. https://doi.org/10.1016/j.janxdis.2016.12.001

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse designs: The development and evaluation of a new tool. *Journal of Evaluation in Clinical Practice*, *18*(4), 746–752. https://doi.org/10.1111/j.1365-2753.2011.01662.x

Stein, M. B., & Kean, Y. M. (2000). Disability and quality of life in social phobia: epidemiologic findings. *American Journal of Psychiatry*, *157*(10), 1606-1613. https://doi.org/10.1176/appi.ajp.157.10.1606

Stein, D. J., Lim, C. C., Roest, A. M., De Jonge, P., Aguilar-Gaxiola, S., Al-Hamzawi, A., ... & De Girolamo, G. (2017). The cross-national epidemiology of social anxiety disorder: Data from the World Mental Health Survey Initiative. *BMC medicine*, *15*(1), 143. http://doi.org/10.1186/s12916-017-0889-2

Sun, X., Zhu, C., & So, S. H. W. (2017). Dysfunctional metacognition across psychopathologies: a meta-analytic review. *European Psychiatry*, *45*, 139-153. https://doi.org/10.1016/j.eurpsy.2017.05.029

Tang, X., Duan, W., Wang, Y., & Guo, P. (2015). The development of Negative Self-Beliefs Inventory (NSBI): cultural adaptation and psychometric validation. *PeerJ*, *3*, e1312. http://doi.org/10.7717/peerj.1312

Taylor, K. N., & Stopa, L. (2013). The fear of others: a pilot study of social anxiety processes in paranoia. *Behavioural and cognitive psychotherapy*, *41*(1), 66-88. https://doi.org/10.1017/S1352465812000690

Turner, S. M., Beidel, D. C., Dancu, C. V., & Stanley, M. A. (1989). An empirically derived inventory to measure social fears and anxiety: The Social Phobia and Anxiety

Inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1*(1), 35-40. http://doi.org/10.1037/1040-3590.1.1.35

Vassilopoulos, S. P., Brouzos, A., & Moberly, N. J. (2015). The relationships between metacognition, anticipatory processing, and social anxiety. *Behaviour Change*, *32*(2), 114-126. https://doi.org/10.1017/bec.2015.4

Vassilopoulos, S. P., Brouzos, A., & Moberly, N. J. (2017). The predictors of anticipatory processing before a social-evaluative situation. *Journal of Experimental Psychopathology*, *8*(4), 443-454. https://doi.org/10.5127/jep.061116

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33,* 448–457. http://dx.doi.org/10.1037/h0027806

Wells, A. (1997). *Cognitive Therapy of Anxiety Disorders: A Practice Manual and Conceptual Guide*. John Wiley & Sons Ltd.

Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York, NY: Guilford.

Wells, A., & Carter, K. (2001). Further tests of a cognitive model of generalized anxiety disorder: Metacognitions and worry in GAD, panic disorder, social phobia, depression, and nonpatients. *Behavior Therapy*, *32*(1), 85–102. https://doi.org/10.1016/S0005-7894(01)80045-9

Wells, A., & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: Properties of the MCQ-30. *Behaviour Research and Therapy, 42*(4), 385 ‑ 396. https://doi.org/10.1016/ s0005-7967(03)00147-5

Wells, A., Clark, D. M., Stopa, L., & Papageorgiou, C. (2000). *Assessment of Thoughts and Beliefs in Social Phobia: Development And Properties Of The Social Cognitions Questionnaire (SCQ).* Paper presented at Association for Advancement of Behavior Therapy, Annual Convention, New Orleans, 16-19 November, 2000.

Wells, A., & Matthews, G. (1994). *Attention and emotion: A clinical perspective*. Hove, UK: Psychology Press.

Wells, A., & Matthews, G. (1996). Modelling cognition in emotional disorder: The S-REF model. *Behaviour Research and Therapy*, 34(11-12), 881-888. https://doi.org/10.1016/S0005-7967(96)00050-2

Wells, A., Stopa, L., & Clark, D. M. (1993). *Social cognitions questionnaire*. Unpublished manuscript, Department of Psychiatry, Oxford University, Oxford, UK.

Williams, R., Knowles. M., Wells, A., & Varese, F. (2019). Cognitive beliefs and metacognitive beliefs in social anxiety: a meta-analysis. PROSPERO: Int Prospect Reg Syst Rev 2016; CRD42019110893. Available from: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=110893

Williams, R., Knowles, M., Varese, F., & Wells, A. (2019). *Metacognitive therapy for social anxiety in adolescents: a systematic case replication series*. Manuscript in preparation.

Wong, Q. J. J., Gregory, B., Gaston, J. E., Rapee, R. M., Wilson, J. K., & Abbott, M. J. (2017). Development and validation of the Core Beliefs Questionnaire in a sample of individuals with social anxiety disorder. *Journal of Affective Disorders*, *207*, 121–127. https://doi.org/10.1016/j.jad.2016.09.020

Wong, Q. J., McEvoy, P. M., & Rapee, R. M. (2016). A comparison of repetitive negative thinking and post-event processing in the prediction of maladaptive social-evaluative beliefs: a short-term prospective study. *Journal of Psychopathology and Behavioral Assessment*, *38*(2), 230-241. http://doi.org/ 10.1007/s10862-015-9506-x

Wong, Q. J. J., & Moulds, M. L. (2009). Impact of rumination versus distraction on anxiety and maladaptive self‐beliefs in socially anxious individuals. *Behaviour Research and Therapy*, *47*(10), 861‐867. https://doi.org/10.1016/j.brat.2009.06.014

Wong, Q. J. J., & Moulds, M. L. (2011a). A new measure of the maladaptive self-beliefs in social anxiety: Psychometric properties in a non-clinical sample. *Journal of Psychopathology and Behavioral* Assessment, *33*(2), 273–284. https://doi.org/10.1007/s10862-010-9208-3

Wong, Q. J. J., & Moulds, M. L. (2011b). The relationship between the maladaptive self-beliefs characteristic of social anxiety and avoidance. *Journal of Behavior Therapy and Experimental Psychiatry*, *42*(2), 171-178. https://doi.org/10.1016/j.jbtep.2010.11.004

Wong, Q. J. J., Moulds, M. L., & Rapee, R. M. (2014). Validation of the self-beliefs related to social anxiety scale: A replication and extension. *Assessment, 21*(3), 300 – 311. https://doi.org/10.1177/1073191113485120

Paper Two: Empirical Study

Metacognitive Therapy for Social Anxiety in Adolescents: A Systematic Case Replication Series

Written for Publication in: Behaviour Research and Therapy (see Appendix F for Author Guidelines)

Word Count: 8,099 words (excluding abstract, figures, tables and references)

Abstract

Social anxiety disorder is a common, debilitating condition which can be chronic if not effectively treated. Onset is common during adolescence; therefore, developing interventions which can be delivered effectively with this age group is crucial. Although Cognitive Behavioural Therapy (CBT) is the current recommended treatment, evidence regarding the efficacy of CBT for socially anxious adolescents is mixed. Preliminary research in adults suggests that Metacognitive Therapy (MCT) may be an acceptable and efficacious alternative to CBT. This study aimed to investigate the feasibility and acceptability of MCT for adolescents and explore the effects associated with this treatment using a case replication design. Six socially anxious adolescents aged 13-17 were offered eight weekly sessions of MCT. Attendance was excellent and all individuals who began treatment completed this. Three patients demonstrated reliable change in social anxiety from baseline to post-intervention, which had increased to four out of five at follow-up. Mechanisms implicated in the maintenance of social anxiety also appeared to reduce during treatment in most cases, including metacognitive beliefs, negative self-beliefs, threat-monitoring and use of safety behaviours. Preliminary findings suggest MCT is an acceptable and feasible treatment for adolescents experiencing social anxiety, and support more rigorous exploration via appropriately powered controlled trials.

Keywords: social anxiety, adolescent, metacognitive therapy, case-series

Introduction

Social anxiety disorder (SAD) is a persistent and intense fear of social situations in which the possibility of scrutiny or evaluation by others is overestimated and perceived as threatening (American Psychiatric Association, 2013). Onset is common during childhood and adolescence (Grant et al., 2005; Kessler et al., 2005), with estimated lifetime prevalence rates of between 7-10% among young people aged 13-18 (Merikangas et al., 2010). SAD frequently affects development of social skills and predicts further psychopathology (Kessler, 2003). Furthermore, SAD is commonly associated with school refusal (Last & Straus, 1990), which in itself is linked to a variety of negative outcomes, including loss of peer relationships, academic underachievement and decreased income (Katzelnick et al., 2001; Van Ameringen, Mancini & Farvolden, 2003). When untreated, SAD is often chronic and unremitting. Evidence suggests that individuals often wait more than a decade before seeking support and that outcomes are poorer than other anxiety disorders such as generalised anxiety disorder or panic disorder (Bruce et al., 2005). Therefore, developing interventions for SAD which can be effectively utilised with adolescents is crucial.

Cognitive Behaviour Therapy (CBT) based on the Clark and Wells (1995) model of SAD is currently the treatment of choice for adult sufferers (NICE Guidelines, 2013). This approach gives centre stage to the role of negative social cognitions about the self and others (including negative automatic thoughts, assumptions and self-beliefs) in the development and maintenance of SAD. Consequently, CBT aims to challenge the validity of negative social cognitions to relieve psychological distress and associated SAD symptoms.

CBT for SAD in adults has a strong evidence base, with its efficacy and superiority to other forms of psychological and pharmacological interventions demonstrated across numerous studies (e.g. Leichsenring et al., 2013; Mayo-Wilson et al., 2014). However, the evidence is mixed when it comes to its use with socially anxious children and adolescents,

and the current most effective form of CBT based on the Clark and Wells model has not been extensively evaluated in this population. While some evidence has been found supporting CBT as an effective intervention (e.g. Melfsen et al., 2011; Scaini, Belotti, Ogliari & Battaglia, 2016), some findings suggest recovery rates can be as low as 15% by 6-month follow-up (Herbert et al., 2009). Furthermore, a meta-analysis conducted by NICE (2013) failed to demonstrate evidence for the superiority of either generic or SAD-specific CBT interventions when compared to other interventions (including psychological treatments and placebos) for young people.

The Clark and Wells (1995) model draws on principles from schema theory (Beck, 1976) and from the self-regulatory executive function (S-REF) model of psychological disorders (Wells & Matthews, 1994, 1996). In contrast to CBT, the S-REF model posits that psychological disorder stems from an unhelpful style of responding to inner experiences called the Cognitive Attentional Syndrome (CAS; Wells, 2009). This consists of three key elements: worry/rumination, threat-focussed attention and maladaptive coping behaviours, each of which results in extended cognitive responses to negative thoughts, inadvertently prolonging negative emotions and sense of threat.

Points of overlap between the Clark and Wells (1995) and S-REF models exist; for example, both encompass self-focussed attention, worry, rumination and maladaptive coping behaviours. However, unlike CBT models which give causal status to 'schemas' such as social self-beliefs in social anxiety (e.g. "I'm foolish"), the metacognitive (S-REF) model proposes that the CAS arises from an individual's positive and negative metacognitive beliefs (beliefs about cognition). Accordingly, metacognitive beliefs are considered responsible for appraisals of thoughts and emotions and the strategies employed to try and regulate these.

CBT derived from the Clark and Wells model focusses on challenging the validity of clients' distorted inner image, negative automatic thoughts and schemas about the self as a

social object. In contrast, Metacognitive Therapy (MCT) does not challenge the validity of the content of any of these forms of cognition, instead aiming to bring the CAS under control by modifying metacognitive beliefs and enabling individuals to develop new reactions to negative thoughts. Similarly, while the treatments derived from both models seek to modify attention, MCT places more emphasis on regulating attention and thinking styles and does so by examining and challenging the metacognitive beliefs underlying these. Thus, in contrast to the cognitive model, the metacognitive model proposes that it is how a person thinks rather than what a person thinks that is the key factor in the development of psychological disorder – highlighting a key difference between the two approaches.

Support for a move towards a more metacognitive conceptualisation comes from Gkika, Wittkowski and Wells (2017) who investigated the relationships between social cognitions, metacognitions and social anxiety. Their findings suggest that, while social cognitions are positively associated with SAD, this is mediated by processes such as worry and rumination (the CAS). Preliminary evidence of the direct and indirect effects of metacognitive beliefs on SAD was also identified. Furthermore, findings from Nordahl, Nordahl, Hjemdal and Wells (2017) suggest that metacognitive beliefs have greater predictive value than social beliefs for symptom improvement following pharmacological treatment and/or CBT. Combined, these findings highlight the importance of considering cognitive processes and metacognition in the assessment and treatment of SAD.

Utilising single case methodology, Nordahl and Wells (2018) found that eight sessions of MCT were associated with substantial reductions in SAD in a clinical sample of adults (n=3). Despite having different subtypes of social anxiety, all patients no longer met criteria for SAD at post-treatment. Gains were largely maintained at 6-month follow-up. Improvements in symptoms and functioning occurred despite the fact that the intervention did

not directly address social cognitions. This calls into question the necessity of addressing social beliefs and social cognitions in order to effectively treat social anxiety disorder.

Despite preliminary evidence suggesting that MCT can be used to treat SAD in adults, the application of this intervention has not yet been investigated in youth. Therefore, this study aims to investigate the feasibility and acceptability of MCT for SAD in adolescents and explore the preliminary effects associated with this treatment within an adolescent population.

Materials and Methods

Design

In order to examine feasibility, acceptability and replicability of MCT for SAD within an adolescent population, a case series utilising an A-B design (Barlow & Hersen, 1984) with follow-up was used. This design was chosen as MCT is a relatively novel approach to SAD, particularly within this age group.

All patients were assigned to no-treatment baselines lasting a minimum of 2 weeks (with three data points) and up to a maximum of 6 weeks, during which they were asked to complete a battery of four self-report measures on a weekly basis (the Social Phobia and Anxiety Inventory for Children (SPAI-C), Revised Social Phobia Rating Scale, Revised Children's Anxiety and Depression Scale, and Strengths and Difficulties Questionnaire). When stable or increasing trends were observed during baseline on the primary measure of social anxiety (SPAI-C) across three consecutive time-points within this window, patients were invited to begin treatment. Patients received no therapeutic input during baseline but received a weekly text message from the researcher to prompt completion of self-report measures. Telephone call reminders to prompt and aid completion of measures were conducted where these had not been returned within 7 days. Following completion of the

baseline period, eight weekly sessions of MCT were delivered. Each session lasted approximately 60 minutes. Patients completed post-treatment self-report measures 7 days after their final MCT session and were then followed up 4 weeks later. Patients received no therapeutic input between their final MCT session and follow-up.

Patients

Patients were recruited from Child and Adolescent Mental Health Services (CAMHS) within the North West of England. Young people presenting with social anxiety complaints were eligible to participate if they met the following inclusion criteria: (1) the Anxiety Disorders Interview Schedule (ADIS-IV; Silverman & Albano, 1996) identifies possible SAD; (2) aged 13-17 at the time of consent; (3) patient identified social anxiety as their primary presenting problem (generalised or specific subtype); and (4) any psychotropic medication remained stable during the study.

Exclusion criteria were: (1) concurrent psychological intervention for SAD or other mental health difficulties; (2) diagnosis of autism spectrum disorder, attention deficit hyperactivity disorder or a learning disability; (3) non-English speaking; or (4) currently demonstrating high level of risk to themselves or others.

Patient 1

Patient 1 was a 14-year-old female reporting generalised social anxiety complaints which began around the time of transition to high school, although she felt this had worsened recently. Although she was passionate about dance, she reported feeling that her worries about being negatively evaluated and judged by others often prevented her from entering competitions. She reported worrying about being perceived by others as ‘childish’ and described an inner image of having a bright red face, forced unnatural smile and deeply indented dimples. At times she experienced intense symptoms of anxiety including vomiting.

Her anxiety was experienced not only around strangers, but also when around lots of family members.

Patient 1 had been open to CAMHS for the previous year, during which non-specific psychological support had been provided, including psychoeducation about anxiety.

Patient 2

Patient 2 was a 16-year-old female reporting more specific social anxiety complaints, particularly around ordering food, lone use of public transport and crossing roads. She had previously received 8 months of non-specific psychological support via CAMHS around social anxiety and associated trichotillomania, ending 5 months prior to commencement of baseline for the present study. Despite worrying in social situations that she would be unable to speak coherently, she described a keen interest in acting and felt able to "perform" in front of others (i.e. take on a role).

Patient 3

Patient 3 was a 14-year-old male describing generalised social anxiety with some associated low mood which had been ongoing for the previous 2 years. Apparent triggers appeared to be historical bullying and being unexpectedly asked to give a presentation in class. He had not received any previous psychological support. Patient 3 described believing his face would be bright red with beads of sweat and that his breathing would be audibly rapid and loud when anxious. In an attempt to manage this and avoid being "judged" by others, he frequently attempted to distract himself in social situations and cover his face/mouth.

Towards the end of treatment, it transpired that Patient 3 was engaging in some superficial self-harm (pre-dating enrolment in the trial) and he disclosed some social care concerns which were subsequently addressed.

Patient 4

Patient 4 was a 13-year-old male reporting generalised social anxiety since beginning high school, describing concerns around being perceived as a 'weirdo' and feeling unable to think clearly in social situations. As a result, he had begun to avoid situations requiring social interaction. He had intermittently received non-specific psychological support for OCD and anger over the preceding 4 years. This client had also received a diagnosis of chronic fatigue resulting in time off school. Initially, Patient 4 stated that they wished to prioritise social anxiety, consenting to participate in the trial. However, they dropped out prior to commencing MCT, having only returned two sets of baseline measures. The client's Mother reported an increase in his OCD symptoms and low mood, associated with some deliberate self-harm and eating difficulties which client and family felt was the priority for intervention.

Patient 5

Patient 5 was a 15-year-old female experiencing a long history of generalised social anxiety which had subsequent effects on her appetite. This appeared to stem from instances of historical bullying and low self-esteem. She had received some non-specific assessment and support through CAMHS previously around anxiety, which ended 5 months prior to commencement of baseline for the current study. She described her goals as wanting to feel more confident in social situations, and felt that her current levels of social anxiety and worry about being negatively perceived by others meant that she constantly monitored her performance and censored her 'true self'.

Patient 6

Patient 6 was a 17-year-old male describing generalised social anxiety and low mood. As a result, he avoided most situations involving interactions with others. He described being isolated and having few friends as he felt unable to speak to peers at college. Due to his level of avoidance, it was hypothesised that Patient 6 was likely to have met criteria for Avoidant

Personality Disorder, although this was not formally assessed. Although also experiencing low mood, he stated that his main goal was to feel less anxious and self-conscious in social situations. Patient 6 was taking Fluoxetine, which remained stable for the duration of the trial.

Measures

Attendance and Treatment Completion. Proportion of treatment completers (i.e. those who attended all eight sessions of MCT) and appointments where clients did not attend ('DNA') without forewarning were considered in order to assess treatment acceptability and feasibility. Figures obtained from the NHS Benchmarking Network for 2017/18 suggest DNA rates within CAMHS of 12% for first appointments and 10% for follow-up appointments nationally. Within the North West, figures are slightly higher at 15% and 13%, respectively (data obtained via personal correspondence with Programme Manager, NHS Benchmarking Network on 11 February, 2019). To demonstrate treatment acceptability, it was expected that individuals would attend a minimum of six out of eight MCT sessions and DNA no more than two appointments.

Credibility/Expectancy Questionnaire (**CEQ**, Devilly & Borkovec, 2000). A 6-item self-report measure comprised of subscales assessing perceived credibility of treatment and patient expectancies. While credibility items reflect cognitively driven, logical responses, the expectancy items reflect an affect-based response to treatment. Both subscales have been shown to have good psychometric properties including internal consistency (credibility α=.79; expectancy α= .81) and high test-retest reliability (r=.83; Devilly & Borkovec, 2000). The CEQ uses two rating scales, one ranging from 0-100% and another ranging from 1-9. In order to calculate both overall and subscale scores, percentage ratings were transformed to map onto a 1-9 scale following the procedure used in other studies (e.g. Nock, Ferriter &

Holmberg, 2007). Subscale scores range from 3-27 while overall score range from 6-54. Higher scores indicate greater credibility and expectancy of treatment.

Session Feedback Questionnaire (**SFQ**, Evidence Based Practice Unit, 2012). A 4-item questionnaire recommended for use by the Child Outcomes Research Consortium and Children and Young People's Improving Access to Psychological Therapies Programme (Law & Wolpert, 2014). This measure assesses whether patients felt listened to and understood sessional content, as well as whether sessions focussed on topics patients wished to discuss and generated ideas to try outside of sessions. Each item is scored from 1 ('Not at all') to 5 ('Totally'). When summed, scores range from 4-20, with higher scores indicating greater satisfaction.

Quantitative data regarding treatment acceptability and feasibility was supplemented by qualitative feedback from patients about the treatment received. Feedback was collected via telephone using a brief semi-structured exit interview (see Appendix G), focusing on topics such as treatment satisfaction, perceived usefulness, helpful/unhelpful aspects, and whether further support for SAD was desired.

The Social Phobia and Anxiety Inventory for Children (**SPAI-C**; Beidel, Turner & Morris, 1995, 1998) is a self-report measure designed to assess the severity of social anxiety in children and adolescents based on DSM-IV criteria. The measure consists of 26-items assessing frequency of somatic, cognitive and behavioural symptoms of social anxiety across a range of situations, with each item rated on a 3-point scale from 'never or hardly ever' (0) to 'most of the time or always' (2). Scores range from 0-52, with a score of 18 or above indicating possible SAD (Beidel et al., 1998). The SPAI-C has been found to have excellent internal consistency (α=.95) and two-week test-retest reliability (r=.86; Beidel et al., 1995). Furthermore, evidence suggests the measure has good sensitivity (ranging from .70-.80) and specificity (.80; Beidel, Turner & Fink, 1996). Although typically used with children aged 8-

14, Inderbitzen-Nolan, Davies and McKeon (2004) found that the SPAI-C could accurately classify SAD in young people up to age 17 with specificity and sensitivity almost identical to that found when used with younger children (Beidel et al., 1998). NICE Guidelines for SAD (2013) recommend the use of routine sessional measures (including the SPAI-C) to monitor treatment outcome.

The Revised Social Phobia Rating Scale (**R-SPRS**) is an 8-item measure intended to assess mechanisms which are the focus of modification in MCT, as well as measuring underlying causal processes, self-focussed attention and safety behaviours relevant to social anxiety. This measure was created for use in this study as an appropriate state measure of metacognitions does not currently exist specifically for children and adolescents. The R-SPRS contains items from the Social Phobia Rating Scale (SPRS; Wells, 1997; all items) and CAS-1 (Wells, 2009; items 1, 2, 4 and 5).

The SPRS assesses the key cognitive components of SAD according to the Clark and Wells (1995) model, namely: distress, avoidance, self-consciousness, safety behaviours and negative self-beliefs relevant to social anxiety. Evidence suggests the SPRS has excellent internal consistency ($\alpha \geq .90$; Nordahl, Nordahl & Wells, n.d.; Nordahl, Nordahl, Vogel & Wells, 2018).

The CAS-1 is a state-measure typically used to monitor metacognitive strategies (worry, rumination and threat-monitoring), alongside conviction of positive and negative metacognitive beliefs over the past week. Recent findings from Nordahl and Wells (2019) suggest the CAS-1 has acceptable to good internal consistency across its subscales (α=.75-.89).

R-SPRS items relating to distress, avoidance, self-consciousness, worry and threat-focussed attention are each scored on a 9-point scale (0-8) with higher scores indicating higher levels of symptoms/distress. Items relating to use of safety behaviours, negative self-

beliefs and metacognitive beliefs are rated on a scale from 0 to 100. Higher scores indicate increased use of safety behaviours and greater conviction of beliefs.

Revised Children's Anxiety and Depression Scale (**RCADS**, Chorpita, Yim, Moffitt, Umemoto & Francis, 2000). A 47-item screening measure designed to assess symptoms of depression, social anxiety, obsessive-compulsive symptoms, generalised anxiety, separation anxiety and panic in children aged 8-18 years. Individuals are asked to rate how often statements are true for them ('Always', 'Often', 'Sometimes' or 'Never'). Separate scores for each subscale can be calculated and combined to provide an overall anxiety and low mood score. Higher scores indicate greater prominence of anxiety and depression symptoms. The measure displays good psychometric properties, including one-week test-retest reliability (r=.71-.81; Chorpita et al., 2000), internal consistency, convergent and discriminant validity (Chorpita, Moffitt & Grey 2005). Use of the RCADS is recommended as part of assessment and outcome monitoring with children and young people presenting with SAD (NICE, 2013).

Strengths and Difficulties Questionnaire (**SDQ**, Goodman, 2001). A 25-item screening questionnaire assessing emotional, conduct, peer relationship and hyperactivity/inattention difficulties and prosocial behaviour. The former four subscales can be totalled to provide a total difficulties score ranges from 0-40. Higher scores indicate worse outcomes. Two versions of the SDQ were utilised: initial report (during baseline) and follow-up report (at post-intervention and follow-up). The measure has good psychometric properties, including strong internal consistency (α=.81; Yao, Zhang, Zhu, Jing, McWhinnie & Abela, 2009), good concurrent validity (r=.70; Muris, Meesters & van den Berg, 2003) and discriminant validity (Lundh, Wangby-Lundh & Bjarehed, 2008). Use of the SDQ is recommended as part of assessment with children and young people to aid diagnosis of any other concurrent difficulties (NICE, 2013).

Procedure

Assessment

Young people presenting with social anxiety complaints were able to be provided with information about the study (see Appendices H-J) and referred to the trial by their CAMHS Clinician. Upon providing consent to be contacted (Appendix K), young people were invited to attend a screening appointment with the first author to check suitability for participation. Where young people were under the age of 16, parents/carers were also required to attend this appointment.

Patients were assessed against the study inclusion and exclusion criteria. The child interview schedule taken from the ADIS-IV (Silverman & Albano, 1996) was used to determine whether young people were likely to meet criteria for SAD. If inclusion criteria were met, patients were invited to participate in the study and written consent to participate was sought (Appendix L). Parental consent was also required where young people were under the age of 16 (Appendix M).

Intervention

Treatment consisted of eight weekly sessions of MCT, each lasting approximately 60 minutes. Where appointments were not attended or cancelled, these were re-arranged at the earliest convenience. Parents were not directly involved in treatment.

Treatment followed the generic MCT intervention structure outlined in Wells (2009) and utilised the following key elements:

1. Co-creation of a case formulation by therapist and patient was used to aid understanding of the presenting difficulties and maintenance processes. Discussions were had around the idea that treatment does not aim to get rid of anxiety, but to help patients stop giving it centre stage via excessively focussing on how this is making

them feel and by trying to control it. Metaphors were used to aid socialisation, with anxiety-provoking thoughts conceptualised as wasps buzzing round the patient. Although it can be tempting to swat the wasp in attempt to ease distress and make it go away (via self-focussed attention, safety behaviours, worrying etc.), this often has the reverse effect of provoking the wasps – causing them to buzz at us more! However, if we can learn to leave the wasps alone, they tend to cause less difficulty and leave us alone.

2. Treatment initially focussed on reducing excessive self-focussed attention and dropping safety behaviours. Patients were videoed engaging in a conversation with the therapist's colleague twice in quick succession, initially using their safety behaviours and focussing internally and then dropping safety behaviours while shifting to an external focus of attention (e.g. by processing details of their surroundings and the other person's appearance). Patients made predictions about self-consciousness prior to both tasks which were then revisited afterwards. Contrasting of the two conditions allowed for challenging of positive metacognitive beliefs patients held about the utility of self-focussed attention and safety behaviours and allowed discoveries to be made about their unintended consequences (i.e. increased self-consciousness), thus increasing patients' motivation to abandon these strategies.
3. Subsequent sessions built on this via behavioural experiments which aimed to increase patients' awareness of the flexibility of attentional control, facilitate adaptive information processing and further challenge positive beliefs about self-focused processing in social situations. A hierarchy of anxiety-provoking situations created for each patient was used as the basis on which to select situations to enter during experiments. Weekly homework tasks were also set in which patients were asked to

enter feared situations from their hierarchy while applying flexible attentional control and dropping safety behaviours

4. Videos of patients speaking with a colleague were used to challenge the accuracy of their inner image regarding how they appear to others when anxious. Subsequently, the utility of trying to visualise their appearance in social situations was challenged, and patients were instead asked to pay attention to other people and external aspects of the environment in future social situations.
5. Alternative ways to respond to anxiety-provoking thoughts were discussed and practised, involving detached mindfulness ("leaving thoughts alone") and postponing worry/rumination in the knowledge that these thoughts would be addressed later if necessary. Metaphors were used to aid understanding of these techniques, such as "*If the telephone rings, do you have to answer it? Is it best to answer and get into an argument with a nuisance caller? Why not? What would be a better strategy? If we let it ring without picking up, what happens?*" By responding to thoughts differently, patients learnt that these tend to become less important when left alone, highlighting the transient nature of thoughts and the role that extended thinking plays in maintaining anxiety. Homework tasks were set up aimed at weakening metacognitive beliefs concerning uncontrollability of worry/rumination. Verbal reattribution strategies were used to further challenge remaining uncontrollability beliefs and other negative metacognitive beliefs held (such as beliefs about worry being dangerous).
6. Positive metacognitive beliefs were also examined and challenged using both verbal reattribution and behavioural experiments. For example, worry mismatch strategies were used to challenge beliefs about the utility and necessity of worry. If worry is distorted and does not match reality, why spend so much time engaging in this?

7. Relapse prevention was facilitated via the co-creation of a therapy blueprint during the final session. This included consolidating and noting down key ideas and information covered during sessions, including creation of a "Plan A (old behaviours) – Plan B (new behaviours)" approach to social situations. Patients were encouraged to continue to implement "Plan B" in order to maintain and build on gains made during treatment.

Patients completed sessional measures (SPAI-C and R-SPRS) on a weekly basis prior to each MCT session (barring session one) to allow for monitoring of symptoms. A measure of treatment acceptability (SFQ) was also administered at the beginning, middle and end of treatment (sessions one, four and eight). Credibility of treatment and associated expectancies were assessed via the CEQ at the end of session two following formulation and socialisation to the model.

Treatment was administered to all patients by the first author (RW, Trainee Clinical Psychologist) under the supervision of the second author (AW, the originator of MCT). All sessions were audio recorded (with patients' consent; see Appendix N) to facilitate supervision and monitoring of treatment fidelity and protocol adherence. RW underwent training and supervision with a training case before commencing the study.

Follow-up

SPAI-C, R-SPRS, RCADS and SDQ self-report measures were also administered 7 days post-treatment and then again 4 weeks later.

Exit Interviews

After completion of follow-up measures, patients were asked to provide feedback about the treatment. Exit interviews were conducted via telephone by a member of the research team who was not involved in the delivery or supervision of the intervention.

Data Analysis

This study aimed to determine whether MCT could be a feasible and acceptable intervention for adolescents with SAD, as well as considering whether treatment was associated with improvements in SAD symptoms and functioning. Research utilising single case methodology aims to determine whether a clear treatment effect is apparent following the introduction of an intervention. It also provides an opportunity to analyse at the subject-by-subject level any change in outcome variables and maintenance processes which is not normally available to group designs.

Descriptive statistics regarding rates of non-attendance were examined alongside CEQ and SFQ scores and qualitative feedback obtained during exit interviews to inform understanding of how young people received the treatment (feasibility and acceptability).

Visual inspection of graphed data is the traditional method used when interpreting results from single case designs, providing a clear and accessible overview of treatment effects in which only clear and distinct effects are apparent (Parsonson & Baer, 1992). Scores from baseline, weekly intervention and follow-up measures were plotted (SPAI-C and R-SPRS), allowing for analysis of individual patient responses and identification of trends across patients. When used in conjunction with descriptive statistics at pre-treatment, post-treatment and follow-up across the battery of measures, this allows for consideration of whether MCT was associated with improvements in SAD symptoms and functioning.

To further evaluate clinically significant change in social anxiety symptoms, a Reliable Change Index (RCI; Jacobson & Truax, 1991) was computed for SPAI-C scores utilising the two-week test-retest reliability coefficient reported by Beidel et al. (1995; r=.86). This aimed to assess whether any changes from mean baseline score to both post-intervention and follow-up were reliable or instead likely to be due to measurement error and/or

fluctuation. RCI for the R-SPRS was unable to be calculated due to absence of information regarding psychometric properties.

Results

Treatment Acceptability

Attendance and Treatment Completion

All patients who began MCT completed treatment. Only one patient did not attend one session when expected (due to parental illness). This was rescheduled in accordance with service policy. 100% treatment completion and attendance (barring one DNA by one patient) indicates high levels of treatment acceptability.

Questionnaire Measures

It appears that most patients found MCT to be a credible treatment and had medium to high expectancies regarding outcome (see Table 4).

Table 4. Descriptive statistics on the Credibility/Expectancy Questionnaire (subscales and overall score), as measured at the end of Session 2.

	Credibility/Expectancy Questionnaire		
	Credibility (/27)	*Expectancy (/27)*	*Total Score (/54)*
Patient 1	27	24	51
Patient 2	25	22	47
Patient 3	20	17.5	37.5
Patient 5	10	15	25
Patient 6	20	17	37
Overall Mean (%)	20.4 (75.5%)	19.1 (70.7%)	39.5 (73.1%)

Patients' responses on the SFQ at the beginning, middle and end of treatment are depicted in Table 5. Overall, satisfaction appeared moderate-high, with mean scores for all

sessions falling at or above 15/20. All individual item means fell at or above 3/5, with the highest scores seen on the item assessing whether patients felt listened to.

Table 5. Descriptive statistics (mean and standard deviations) on the Session Feedback Questionnaire per item and total score at beginning, middle and end of treatment.

Item	Session 1		Session 4		Session 8		Overall Scores	
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
1. Did you feel listened to?	4.40	0.55	4.20	0.84	4.40	0.89	4.33	0.72
2. Did you talk about what you wanted to talk about?	3.70	0.84	3.90	1.24	4.60	0.55	4.07	0.94
3. Did you understand the things said in the meeting?	3.40	0.55	3.80	1.1	3.60	1.14	3.60	0.91
4. Did you feel the meeting gave you ideas for what to do?	4.00	1.41	3.70	0.84	4.40	0.89	4.03	1.04
Total Score	15.50	2.55	15.60	3.78	17.00	3.24	16.03	3.07

Exit Interviews

Following completion of follow-up measures, feedback on treatment was sought via telephone interview. Data was obtained from all five patients and suggests that, on average, satisfaction with the treatment offered (*M*=88.5%, *SD*=12.45) and perceived helpfulness in reducing social anxiety (*M*=80.5%, *SD*=17.18) was high.

Four out of five patients did not identify any parts of the treatment that were difficult to understand. However, Patient 5 reported finding detached mindfulness a "*confusing*" concept to grasp ("*I did not understand the concept until the last two sessions*"). While Patient 3 identified that being videoed conversing with a colleague was "*a bit of a shock",* they went on to state that *"it obviously helped*". Patient 5 also did not like being videoed as "*I didn't like seeing myself on camera*". She also provided mixed feedback about exposure and behavioural experiment tasks, describing that while some did help, "*some were not helpful*", although the specific tasks she was referring to and reasons underlying this statement are

unclear. Despite this, Patient 5 described the treatment as "*very good*", as this provided "*alternative perspectives*" on problems and that treatment techniques "*didn't just work on one problem […] able to challenge multiple things*".

Patient 6, who was reluctant to engage in any anxiety-provoking activities throughout treatment and often avoided or refused to engage in social interactions as part of the intervention, reported that they had not liked that the treatment involved "*interacting with people*" and therefore was "*not sure if [MCT] was for me*". However, behavioural experiments and exposure involving social interactions are a key element of SAD treatment not only within MCT but also within CBT (Clark & Wells, 1995) despite underlying differences in rationale. Thus, it is likely that this individual may have also struggled with alternate forms of intervention for SAD.

Four out of five patients described MCT as having had a positive impact on their social anxiety by helping them to face situations they had found difficult previously and/or avoided ("*It was helpful because I was able to do things that I couldn't do before, like walking into shops or ordering food*".) Another reported their anxiety had reduced "*across most situations*". Similarly, four out of five described worry postponement and/or detached mindfulness as two techniques they had found particularly useful, with three patients making specific reference to continued use of these strategies ("*I'm still using two of the strategies given in the last few sessions*"; "*I can use the strategies I have learnt to help with [social anxiety]*").

Patient 6 provided mixed feedback regarding the utility of treatment, simultaneously stating "*I'm still where I was at the start*" but also reporting that MCT had been 60% helpful in treating their difficulties. As they did not elaborate further on this discrepancy, this feedback is somewhat difficult to interpret.

At the end of the trial, only Patient 3 reported requiring further support around social anxiety. The trial clinician was able to offer six fortnightly sessions following completion of the trial. However, during the first appointment (3 weeks after follow-up), Patient 3 reported that he wished to address low mood as he felt his social anxiety was much improved (rating this as having improved from a 2/10 at the start of the trial to a 6/10). He described continuing to apply techniques such as detached mindfulness, dropping safety behaviours and focussing externally, and was keen to learn how to apply similar strategies to low mood, thus opting to continue treatment using an MCT approach when given the choice between this and CBT.

Social Anxiety Symptoms

Pre-treatment, post-treatment and follow-up mean scores on the SPAI-C, R-SPRS, RCADS and SDQ are depicted in Table 6. See Appendix O for patient-by-patient scores.

Table 6. Descriptive statistics for all patients (n=5) at pre-treatment, post-treatment and follow-up.

Measure	Pre		Post		Follow-up	
	M	*SD*	*M*	*SD*	*M*	*SD*
SPAI-C	39.74	4.54	30.00	10.79	28.20	10.18
R-SPRS Distress	5.02	0.73	3.80	2.86	4.00	2.12
R-SPRS Avoidance	4.08	1.70	3.20	2.77	2.90	2.70
R-SPRS Self Consciousness	5.71	0.64	2.80	2.39	3.50	2.24
R-SPRS Safety Behaviours	70.08	20.28	35.40	21.23	30.40	18.77
R-SPRS Negative Self-Beliefs	1006.20	196.64	496.20	426.75	545.00	413.52
R-SPRS Worry	6.00	0.97	3.00	2.45	3.70	2.64
R-SPRS Threat Monitoring	4.62	2.07	2.80	2.28	3.20	2.77
R-SPRS Positive MCBs	211.40	65.70	108.00	62.61	106.00	80.81
R-SPRS Negative MCBs	266.10	37.66	118.00	111.22	139.00	131.93
RCADS	69.84	13.04	50.60	17.18	51.70	21.48
SDQ (-prosocial)	20.76	4.06	17.00	6.89	18.40	6.58

SPAI-C, Social Phobia and Anxiety Inventory for Children; R-SPRS, Revised Social Phobia Rating Scale; MCBs, metacognitive beliefs; RCADS, Revised Children's Anxiety and Depression Scale; SDQ, Strengths and Difficulties Questionnaire (not including prosocial subscale)

SAD symptoms were measured by the SPAI-C alongside distress and negative self-beliefs as measured by the R-SPRS. Scores on these measures during baseline, treatment and follow-up are shown in Figures 2-4.

SPAI-C

Largely stable scores on the SPAI-C are apparent during baseline with all scores consistently falling above the clinical cut-off (≥18; Beidel et al., 1998). Evidence of a reduction of SAD symptoms from pre-post treatment is somewhat mixed, with Patients 1 and 2 showing substantial improvement, and Patients 3 and 5 showing a partial reduction in symptoms. During treatment, Patient 6 showed no change although a significant decrease in scores was seen at follow-up. This was potentially due to the Patient being able to revert to his primary strategy of avoidance, which was discouraged and actively reversed during treatment. Where improvement was seen during treatment, this tended to begin around sessions 3-5 and steadily continue or plateau from this point. Gains made were largely maintained at follow-up, at which point Patient 1 no longer met criteria for SAD according to the SPAI-C and Patient 2 scored just above the clinical cut-off (see Figure 2).

The RCI for the SPAI-C was calculated as 4.71, which was rounded up to 5. This indicates that a change of 5-points on the SPAI-C is necessary to ensure reliable change has occurred during treatment. Applying this criterion, three of five patients (Patients 1, 2 and 5) demonstrated reliable improvement from baseline to post-treatment. This was maintained at follow-up in all instances. Despite showing no improvement in scores by post-intervention, Patient 6 demonstrated further symptom reduction from post-treatment to follow-up, thus meeting criteria for reliable change (see Table 7). However, it is noted that only Patient 1 both met criteria for reliable change and scored below the clinical cut-off (≥18; Beidel et al., 1998) on the SPAI-C.

Table 7. Reliable Change Data on the SPAI-C from baseline to both post-treatment and follow-up

Time Period	***Total N***	**Improved (*N*)**	**No Improvement (*N*)**	**Deteriorated (*N*)**
Baseline - post-intervention	5	3	2	0
Baseline - follow-up	5	4	1	0

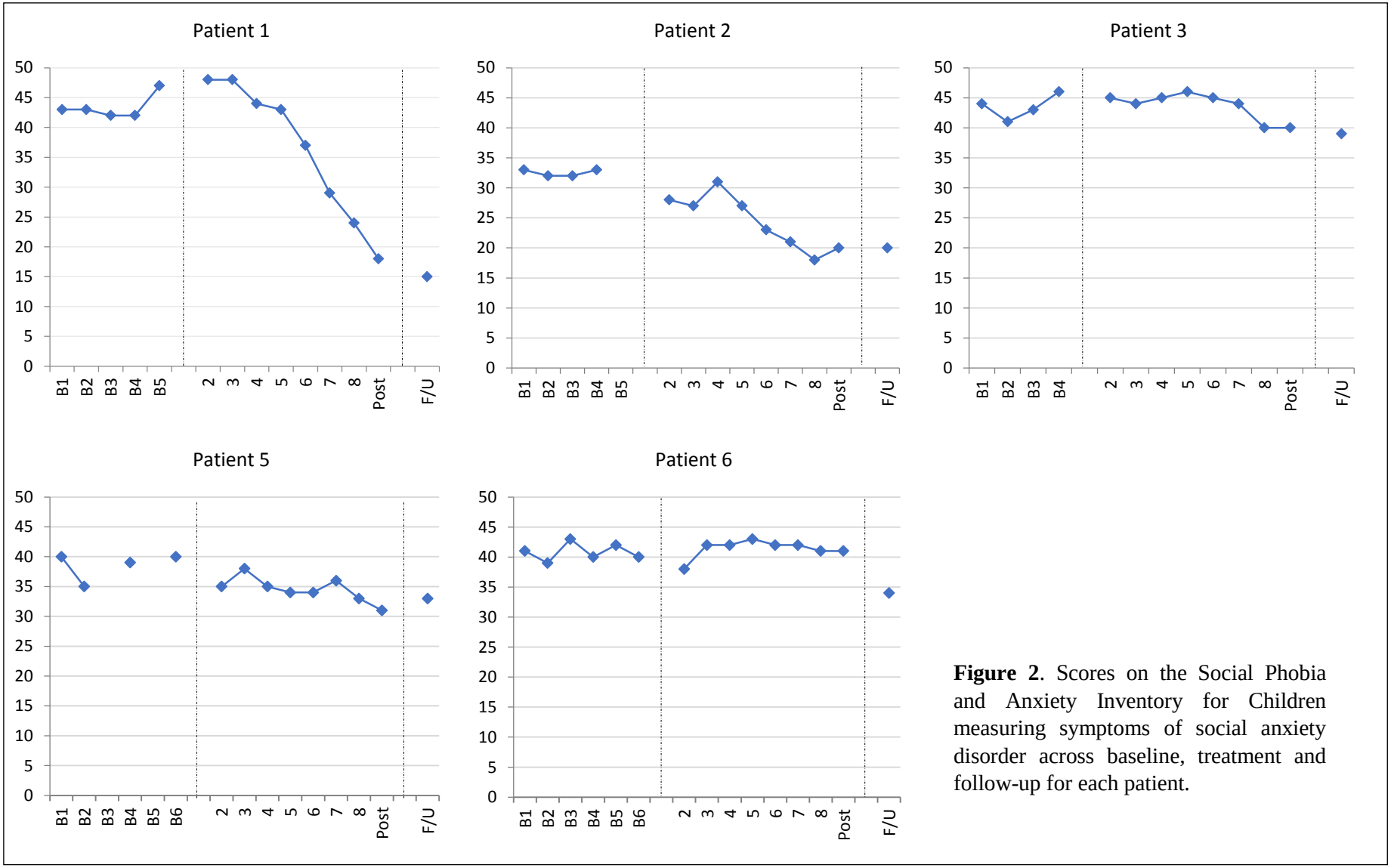

Figure 2. Scores on the Social Phobia and Anxiety Inventory for Children measuring symptoms of social anxiety disorder across baseline, treatment and follow-up for each patient.

Distress

Patients 1 and 2 showed a general reduction in distress over the course of treatment as measured by the R-SPRS. While some increase in distress was seen from post-treatment to follow-up for both patients, this did not exceed levels of distress reported during baseline. Although trends in Patient 5's distress scores were less clear and appeared to peak post-treatment, these had significantly decreased at follow-up. In contrast, Patients 3 and 6 showed little to no change. While increases in distress were seen during treatment for Patient 3, this may have been associated with the fact that he was encouraged to enter more anxiety-provoking situations which he would usually have avoided during this time (see Figure 3).

Negative Self-Beliefs

Patients 1, 2, 3 and 5 showed substantial decreases in negative self-beliefs from pre-post treatment. Steep reductions occurred in all cases in the latter half of treatment, coinciding with the introduction of worry postponement and detached mindfulness techniques. Where improvements were made these were maintained in all cases with the exception of Patient 3 who despite demonstrating an increase in negative self-beliefs from post-treatment to follow-up scored at a lower level compared with baseline (see Figure 4).

Although Patient 6 showed increasing negative self-beliefs during baseline, these remained relatively stable during treatment. However, it is noted that he was unwilling or unable to practice worry postponement or detached mindfulness either within or between sessions. Reasons for this were unclear, as he gave conflicting information about some thoughts being impossible to ignore at the same time denying having beliefs about uncontrollability of worries. However, a decrease in Patient 6's negative self-beliefs was observed at follow-up.

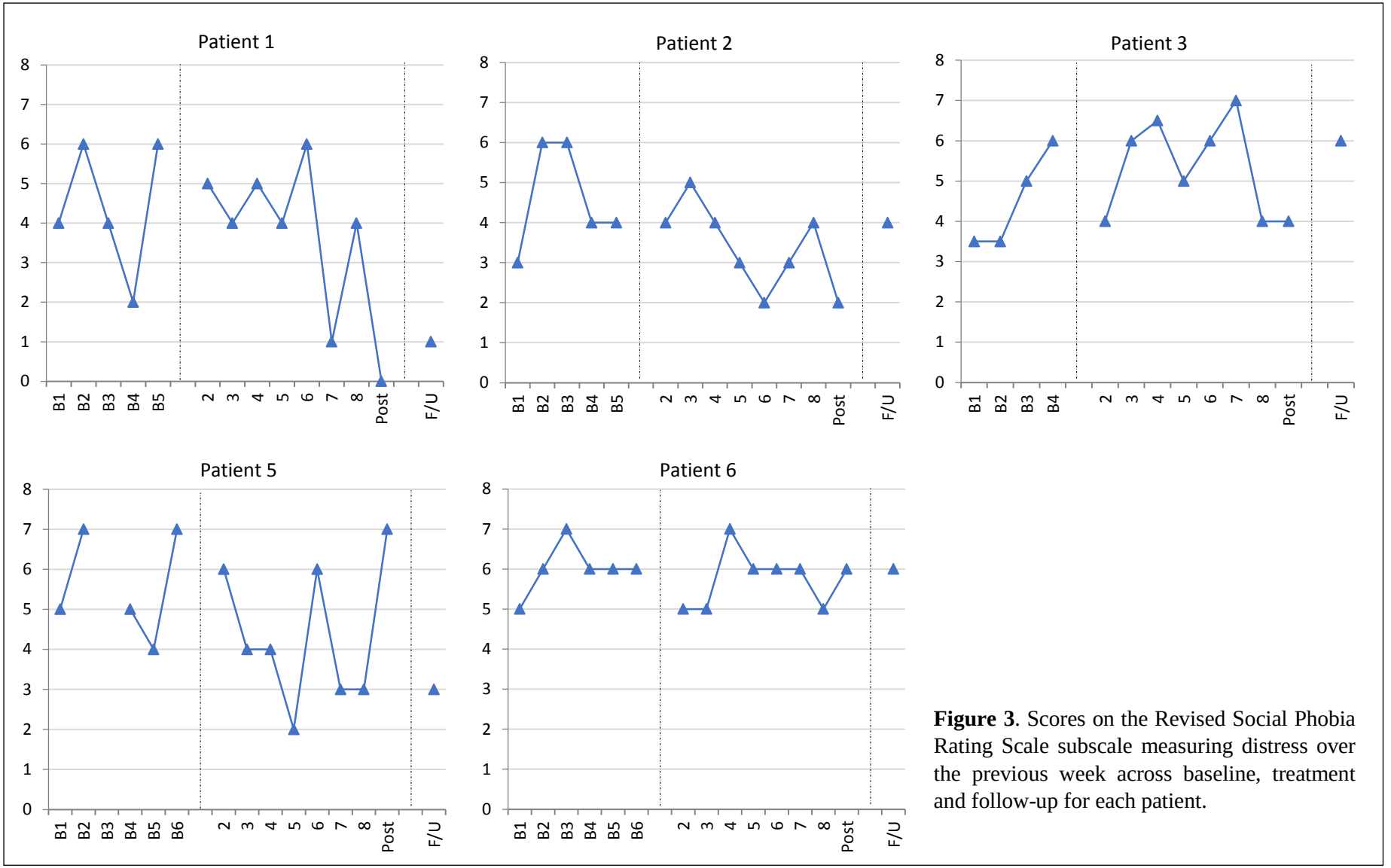

Figure 3. Scores on the Revised Social Phobia Rating Scale subscale measuring distress over the previous week across baseline, treatment and follow-up for each patient.

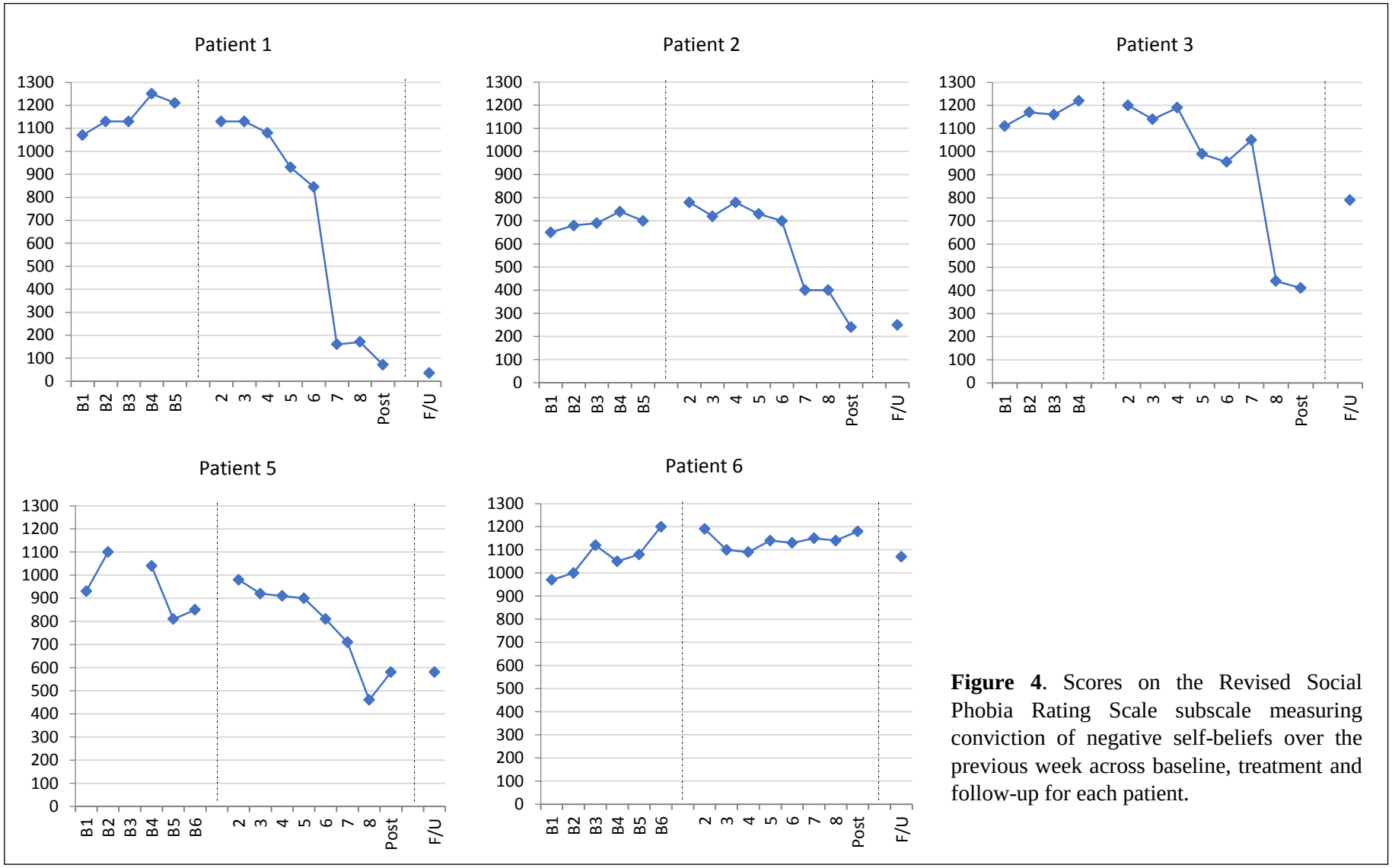

Figure 4. Scores on the Revised Social Phobia Rating Scale subscale measuring conviction of negative self-beliefs over the previous week across baseline, treatment and follow-up for each patient.

Mechanisms

Mechanisms proposed to maintain SAD symptoms and associated distress were measured by the remaining R-SPRS items assessing both positive and negative metacognitions and metacognitive strategies (avoidance of social situations, self-consciousness, use of safety behaviours, time spent dwelling or worrying about problems and threat-monitoring).

Metacognitive Strategies

Figure 5 shows a decrease in use of safety behaviours by all patients from pre-post treatment. This decrease appears substantial across all patients except Patient 6 where smaller reductions are observed. However, Patient 6 was noted to struggle with dropping safety behaviours independently outside of sessions throughout treatment. All gains were maintained, with most patients continuing to show reductions in safety behaviours from post-treatment to follow-up.

Decreases in self-consciousness, worrying and threat-focussed attention were also apparent for Patients 1, 2, 3 and 5. However, whether gains were fully maintained varied among patients. While Patients 1 and 5's scores remained largely stable, increases in each of these three variables was apparent from post-treatment to follow-up for Patient 2. However, these had not returned to pre-treatment levels. Patient 3 also showed increases in self-consciousness and worry from post-treatment to follow-up – scoring slightly above his pre-treatment mean. However, at follow-up, reductions in threat-focussed attention remained stable for Patient 3. Patient 6's scores remained largely stable across the study from pre-post treatment, although a slight decrease in threat-focussed attention was reported at post-treatment which was maintained at follow-up. Similarly, self-consciousness also appeared to have decreased slightly from post-treatment to follow-up.

Avoidance remained largely stable for all patients with the exception of Patients 1 and 5 who showed substantial reductions from pre-post treatment which were maintained at follow-up. Patient 6 showed a slight increase in avoidance from pre-post treatment, although this had reduced slightly to just below pre-treatment levels at follow-up.

Metacognitions

Figure 6 shows a substantial decrease in conviction of both positive and negative metacognitions from pre-post treatment for Patients 1, 2 and 3. This appeared to occur in the latter half of treatment, which focussed on challenging metacognitive beliefs around the utility, uncontrollability and danger of worry. Continued reductions were seen at from post-treatment to follow-up for Patients 1 and 2. Although Patient 3 showed a slight increase in positive metacognitions at follow-up and a larger increase in negative metacognitions, both scores remained substantially lower than they had been during baseline or at any point prior to session seven of MCT.

While Patient 5 appears to show reductions in both positive and negative metacognitions over the course of treatment, comparisons with pre-treatment scores are limited due to relevant questionnaire items not being completely at points during baseline. While Patient 5 demonstrated a slight increase in both types of metacognitive beliefs from post-treatment to follow-up, these did not appear to have returned to pre-treatment levels. Patient 6 appeared to show some smaller decreases in positive metacognitions although no reduction in negative metacognitions was seen. Scores for both positive and negative metacognitions appeared to have increased slightly from post-intervention to follow-up, although positive metacognition scores did not exceed those observed during baseline.

Rate and direction of change appear positively correlated for positive and negative metacognitions within all patients except Patient 6.

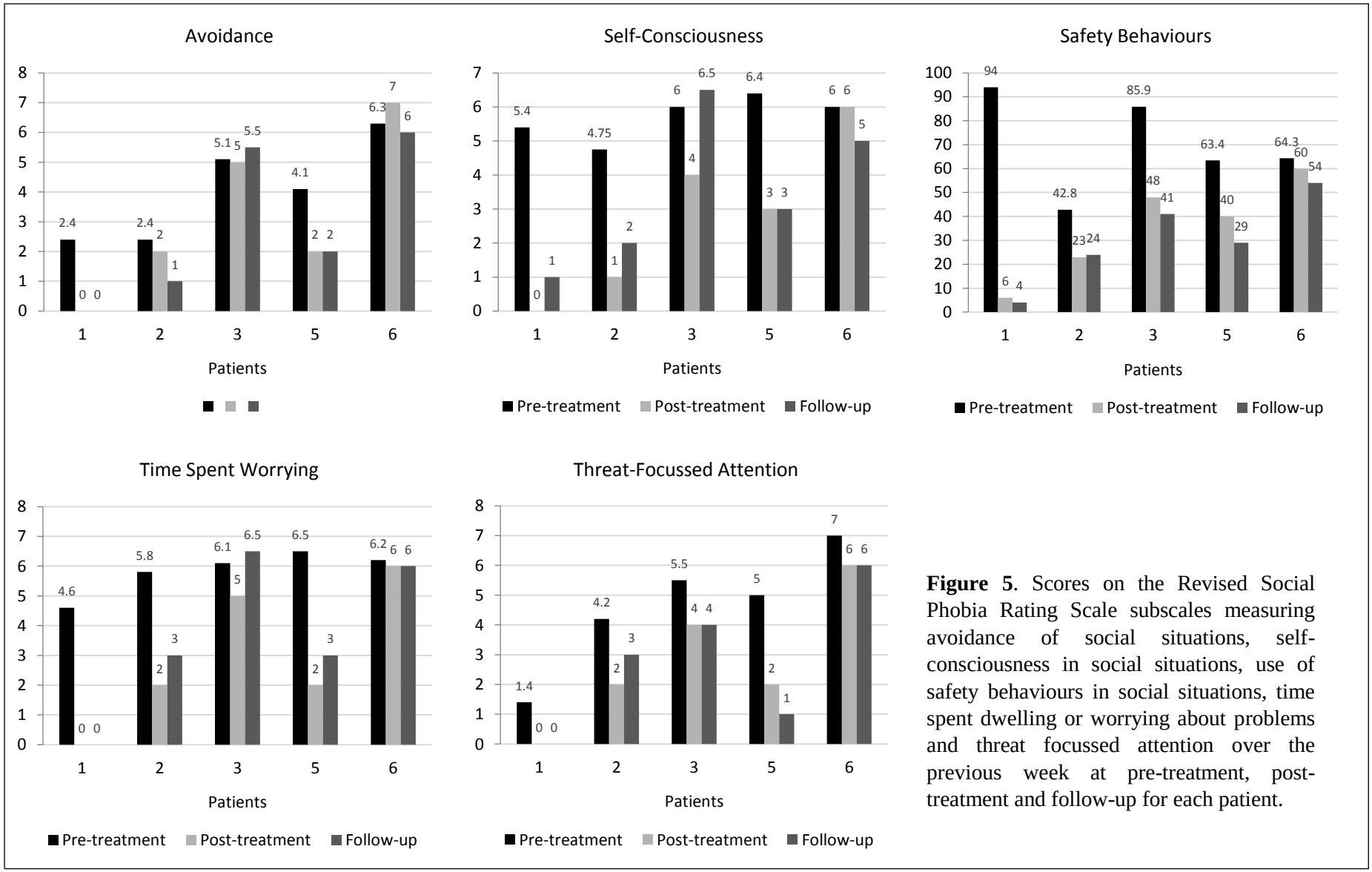

Figure 5. Scores on the Revised Social Phobia Rating Scale subscales measuring avoidance of social situations, self-consciousness in social situations, use of safety behaviours in social situations, time spent dwelling or worrying about problems and threat focussed attention over the previous week at pre-treatment, post-treatment and follow-up for each patient.

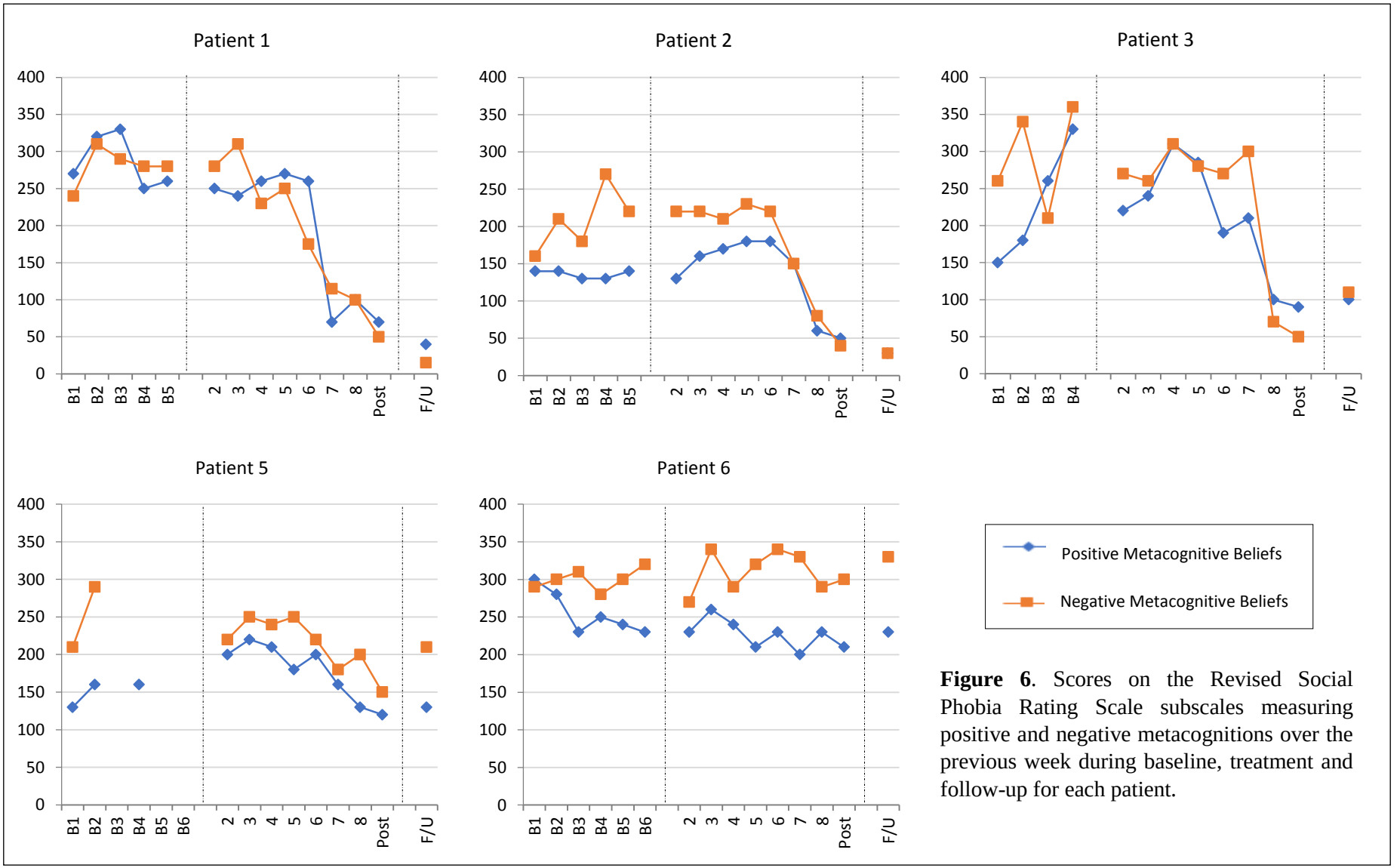

Figure 6. Scores on the Revised Social Phobia Rating Scale subscales measuring positive and negative metacognitions over the previous week during baseline, treatment and follow-up for each patient.

General Emotional Distress and Behavioural Difficulties

Figure 7 provides an overview of RCADS scores relating to emotional distress and SDQ 'total difficulties' score (comprised of internalising and externalising difficulties) during pre-treatment, post-treatment and follow-up.

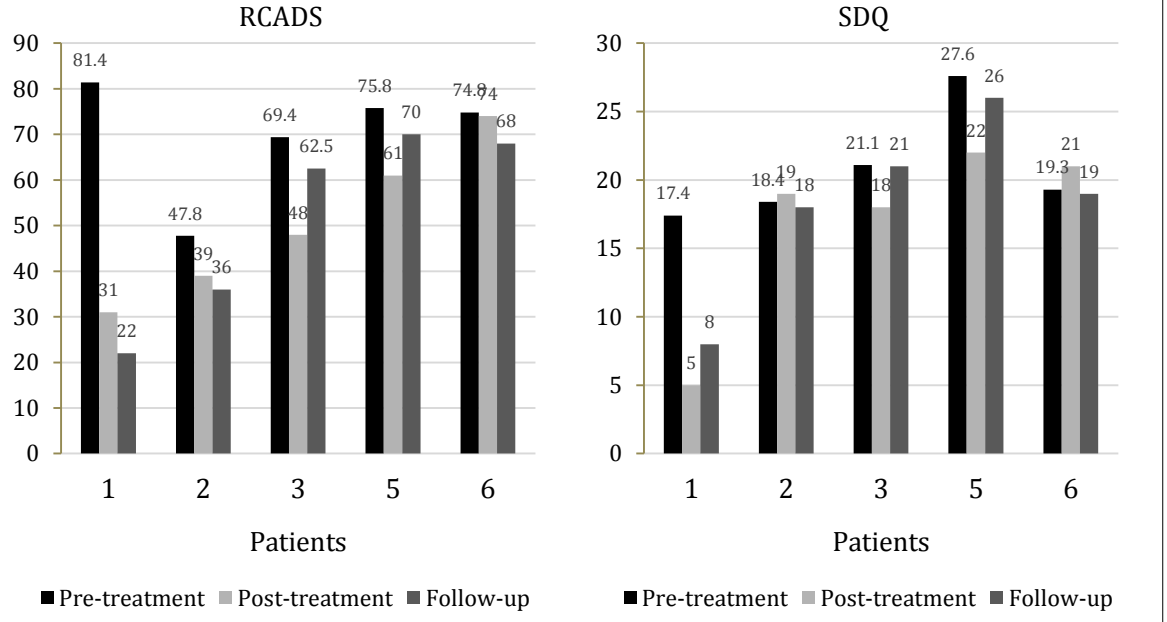

Figure 7. Scores on the Revised Children's Anxiety and Depression Scale (RCADS) and Strengths and Difficulties Questionnaire (SDQ) during baseline, treatment and follow-up for each patient.

Patients 1, 2, 3 and 5 showed improvements in emotional distress as measured by the RCADS over the course of treatment. Gains were maintained at follow-up by Patients 1 and 2. Although Patients 3 and 5 showed an increase in emotional distress at follow-up, scores remained below pre-treatment levels. Patient 6 showed minimal change from pre-post treatment, although a slight decrease in emotional distress was apparent at follow-up.

In contrast, minimal to no change was seen across all patients on the SDQ with the exception of Patients 1 and 5 who showed substantial decreases in 'total difficulties' score from pre-post treatment, followed by a slight increase at follow-up. While scores remained considerably below pre-treatment scores for Patient 1, Patient 5's scores were only marginally below pre-treatment levels.

The follow-up version of the SDQ utilised 4 weeks post-treatment asked patients to quantify changes in problems since receiving treatment on a 5-point scale from "Much worse" to "Much better". While Patients 2, 5 and 6 described their problems as "A bit better", Patients 1 and 3 reported these were "Much better". None reported their problems had worsened. While not consistently reflected in SDQ scores, this is likely due to the fact that the SDQ is a measure of general emotional, conduct and attention difficulties, rather than a social anxiety specific measure.

Discussion

This study primarily aimed to investigate the feasibility and acceptability of MCT for SAD in adolescents, and examine associations between the introduction of treatment and any changes in social anxiety symptoms and mechanisms. Although preliminary, findings support the use of MCT as a feasible intervention for social anxiety complaints within an adolescent population, as demonstrated by all patients completing treatment regardless of the level or rate of improvements made. Even where patients reported little positive change or impact of treatment on difficulties (via self-report measures and qualitative feedback), it is notable that they continued to attend weekly sessions and complete the treatment programme, indicating high treatment acceptability.

In addition, qualitative and quantitative feedback suggests that MCT is a credible intervention which is acceptable to adolescents. Interestingly, changes across SAD symptoms and maintaining mechanisms appear somewhat independent from perceived acceptability of treatment. It is notable that credibility and expectancy scores for Patients 3 and 6 were almost identical despite their different outcomes on measures of distress, self-consciousness, use of safety behaviours and conviction of both negative self-beliefs and negative metacognitive beliefs. Furthermore, Patient 5 reported the lowest CEQ ratings within the sample, but

demonstrated greater improvement in areas such as avoidance, threat-monitoring and time spent worrying over the course of therapy than some patients reporting greater treatment credibility and expectancies. This suggests that optimism regarding how well treatment might work early on in therapy does not necessarily affect outcome.

A secondary aim of this study was to explore the preliminary effects associated with MCT for SAD within an adolescent population. While results pertaining to potential efficacy are not definitive from studies with the present design, it appears that two patients showed substantial improvement, two demonstrated a partial reduction in symptoms and mechanisms, and one showed minimal to no change in social anxiety symptoms.

Findings suggest that MCT may be associated with reductions in negative self-beliefs, as demonstrated by four out of five patients over the course of treatment. Furthermore, reductions in positive and negative metacognitions (n=4) and some unhelpful styles of responding to inner experiences including use of safety behaviours and threat-monitoring were also observed across all patients (n=5). Where gains in these areas were made, scores appeared to remain stable or reduced further in most cases at 4 week follow-up. These aspects are believed to be key in the development and maintenance of SAD according to the metacognitive model (Wells & Matthews, 1994; Wells, 2009; Nordahl & Wells, 2017). However, comments on the interplay and any potential overlap between cognitive and metacognitive beliefs are unable to be made with confidence due to the design of the present study.

Improvements in symptoms and mechanisms appeared less pronounced for patients who were reluctant to engage in homework practice of aspects such as reducing safety behaviours, excessive self-focussed attention and worrying. This highlights the importance of ensuring that clients are fully socialised to the model and understand the rationale for changing aspects of their usual responses to anxiety-provoking thoughts/situations to promote

adherence to between-session tasks. All four patients who attempted worry postponement reported finding this beneficial, and introduction of this technique appeared to coincide with reductions in distress, negative self-beliefs, time spent worrying and both positive and negative metacognitions. Introduction of this technique earlier in treatment may allow patients to experience benefits in these areas sooner, thus potentially increasing motivation to engage in homework tasks and potentially more challenging aspects of treatment. Patients who also reported difficulties with low mood (Patients 3 and 6) also appeared to show less pronounced changes over the course of treatment.

Patient 6 appears to be the individual who reported the least change across measures during treatment (barring a slight decrease in safety behaviours and positive metacognitions as measured by the R-SPRS and a decrease in social anxiety symptoms as measured by the SPAI-C at follow-up). However, information was divulged by this patient in the final treatment session concerning intrusive thoughts about historical abusive experiences which had not been fully disclosed to services previously. On this basis, it was hypothesised that symptoms which were initially framed by various professionals in terms of social anxiety might be better understood as part of a trauma reaction. This highlights the importance of full psychological assessment with young people in order to ensure that the most distressing and/or disabling difficulties are accurately identified and thus the most appropriate form of intervention provided.

The current study utilised a short, fixed number of treatment sessions. In order to optimise effects associated with MCT and allow for appropriate adjusting of pacing for this client group, extending the treatment period to between 8-12 sessions may be beneficial. This would also fit with NICE Guidance (2013) regarding the recommended number of CBT sessions offered to children and adolescents presenting with SAD.

Measurement of symptoms using the SPAI-C did not appear to consistently reflect the qualitative feedback received from participants regarding their levels of anxiety and distress during and after treatment. While it is possible that participants felt obliged to provide more positive feedback about the intervention, this was mitigated by using a member of the research team unrelated to delivery of the treatment to seek feedback which was provided via telephone. Alternatively it is hypothesised that, as the SPAI-C asks individuals to **imagine** their degree of anxiety in a multitude of specific situations (e.g. "*I feel scared when I have to speak or read aloud in front of a group of people*"), this could be encouraging rumination about historical anxiety-provoking situations of a similar nature or worry about potential upcoming situations – inflating self-reported anxiety. Furthermore, the wording of items (most of which begin with "*I feel scared when*") could be viewed as potentially leading, particularly as the measure does not include any reverse scored items. Therefore, consideration of alternative measures which include reverse-scored items or which utilise more neutral phrasing should be considered for future research purposes. Appropriate tools may include the Brief Fear of Negative Evaluation Scale (Leary, 1983), Social Interaction Anxiety Scale or Social Phobia Scale (Mattick & Clarke, 1998), all of which contain fewer items than the SPAI-C and thus may also reduce participant burden.

A number of limitations in this study's design must be acknowledged. Firstly, the lack of control and/or comparison group within this study means causality of relationships are unable to be established. As a result, spontaneous recovery, potential mediators or moderators of outcome and confounding variables are unable to be discussed with confidence. Similarly, as treatment was delivered by a single therapist, influence of skill level and personal attributes (such as gender, age and race differences between patient and therapist) cannot be determined. Combined with the small sample size, this limits inferences regarding the generalisability of findings. Lack of statistical analysis across all measures also does not

allow for the statistical significance of changes in mechanisms and presentation to be widely assessed. Further research is required to assess whether findings are replicable in larger sample sizes utilising controlled designs, which would allow greater confidence in findings. Future studies may also wish to utilise a longer follow-up period in order to further investigate the sustainability of treatment outcomes.

The use of self-report measures also entails risk of social desirability bias, which may be particularly heightened among those experiencing social anxiety complaints. However, self-report of symptoms, beliefs and functioning is an important part of treatment used to adapt and tailor intervention structure to the needs of different individuals. Furthermore, the majority of measures utilised within this study are recommended by NICE Guidance (2013) in the assessment of SAD and have good psychometric properties. In addition, alternatives styles of measurement such as structured interviews (e.g. the ADIS-IV) are also prone to be affected by similar biases.

Conclusion

Findings from this case series indicate that MCT is a feasible and acceptable treatment for adolescents presenting with social anxiety complaints. A range of outcome measures appeared to be sensitive to treatment effects and results suggest MCT was associated reliable improvements in social anxiety symptoms as measured by the SPAI-C in four out of five patients at follow-up. Metacognitive beliefs, threat-monitoring and use of safety behaviours tended to decrease during treatment, all of which are considered important mechanisms in psychological disorder (Wells, 2009). However, the preliminary nature of the results means that larger, well-controlled studies are required to explore the efficacy and acceptability of MCT against current recommended treatments within this population. The present results support the move towards such a study. An investigation of the mediators and

moderators of change within this client group, such as exploration of the roles of social versus meta-cognitions, may also inform understanding of both the conceptual nature of SAD and treatment approaches.

References

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edn. Washington, DC: American Psychiatric Publication. http://doi.org/10.1176/appi.books.9780890425596

Barlow, D. H., & Hersen, M. (1984). *Single case experimental designs: Strategies for studying behavior change* (2nd ed.). New York: Pergamon Press

Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders*. New York, NY: International Universities Press.

Beidel, D. C., Turner, S. M., & Morris, T. L. (1995). A new inventory to assess childhood social anxiety and phobia: the Social Phobia and Anxiety Inventory for Children. *Psychological Assessment*, *7*, 73-79. http://dx.doi.org/10.1037/1040-3590.7.1.73

Beidel, D. C., Turner, S. M. & Fink, C. M. (1996). Assessment of Childhood Social Phobia: Construct, Convergent, and Discriminative Validity of the Social Phobia and Anxiety Inventory for Children (SPAI-C). *Psychological Assessment*, *8*(3), 235-240. http://dx.doi.org/10.1037/1040-3590.8.3.235

Beidel, D. C., Turner, S. M., & Morris, T. L. (1998). *Social Phobia and Anxiety Inventory for Children (SPAI-C) manual*. North Tonawanda, NY: Multi-Health Systems Inc.

Bruce, S. E., Yonkers, K. A., Otto, M. W., Eisen, J. L., Weisberg, R. B., Pagano, M., ... & Keller, M. B. (2005). Influence of psychiatric comorbidity on recovery and recurrence in generalized anxiety disorder, social phobia, and panic disorder: a 12-year prospective study. *American Journal of psychiatry*, *162*(6), 1179-1187. https://doi.org/10.1176/appi.ajp.162.6.1179

Chorpita, B. F., Yim, L. M., Moffitt, C. E., 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*, 835-855. https://doi.org/10.1016/S0005-7967(99)00130-8

Chorpita, B. F., Moffitt, C. E., Gray, J. A. (2005). Psychometric properties of the Revised Child Anxiety and Depression Scale in a clinical sample. *Behaviour Research and Therapy*, *43*, 309-322. http://dx.doi.org/10.1016/j.brat.2004.02.004

Clark, D. M., and Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, F. R. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment and treatment* (pp. 69-93). New York, NY: Guilford.

Devilly, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavioral Therapy and Experimental Psychiatry, 31*, 73-86. http://doi.org/10.1016/S0005-7916(00)00012-4

Evidence Based Practice Unit (2012). *Session Feedback Questionnaire*. Retrieved from www.corc.uk.net, 11 February, 2019

Gkika, S., Wittkowski, A., and Wells, A. (2017). Social cognition and metacognition in social anxiety: a systematic review. *Clinical Psychology & Psychother*apy 25, 10–30. http://doi.org/10.1002/cpp.2127

Goodman. R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40* (11), 1337-1345. https://doi.org/10.1097/00004583-200111000-00015

Grant, B. F., Hasin, D. S., Blanco, C., Stinson, F. S., Chou, S. P., Goldstein, R. B., … & Huang, B. (2005). The epidemiology of social anxiety disorder in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of clinical psychiatry*, *6*(11), 1351-1361. http://doi.org/10.4088/JCP.v66n1102

Herbert, J. D., Gaudiano, B. A., Rheingold, A. A., Moitra, E., Myers, V. H., Dalrymple, K. L., & Brandsma, L. L. (2009). Cognitive behavior therapy for generalized social anxiety disorder in adolescents: A randomized controlled trial. *Journal of anxiety disorders*, *23*(2), 167-177. http://doi.org/10.1016/j.janxdis.2008.06.004

Inderbitzen-Nolan, H., Davies, C. A., & McKeon, N. D. (2004). Investigating the construct validity of the SPAI-C: comparing the sensitivity and specificity of the SPAI-C and the SAS-A. *Journal of Anxiety Disorders*, *18*(4), 547-560. https://doi.org/10.1016/S0887-6185(03)00042-2

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. http://dx.doi.org/10.1037/0022-006X.59.1.12

Katzelnick, D. J., Kobak, K. A., DeLeire, T., Henk, H. J., Greist, J. H., Davidson, J. R., … & Helstad, C. P. (2001). Impact of generalized social anxiety disorder in managed care. *American Journal of Psychiatry*, *158*(12), 1999-2007. https://doi.org/10.1176/appi.ajp.158.12.1999

Kessler, R. C. (2003). The impairments caused by social phobia in the general population: implications for intervention. *Acta Psychiatrica Scandinavica*, *108*, 19-27. https://doi.org/10.1034/j.1600-0447.108.s417.2.x

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), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Last, C. G., & Strauss, C. C. (1990). School refusal in anxiety-disordered children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *29*(1), 31-35. https://doi.org/10.1097/00004583-199001000-00006

Law, D., & Wolpert, M. (Eds.). (2014). *Guide to using outcomes and feedback tools with children, young people and families*. CAMHS Press.

Leary, M. R. (1983). A brief version of the Fear of Negative Evaluation Scale. *Personality and Social Psychology Bulletin, 9*, 371-376. https://doi.org/10.1177/0146167283093007

Leichsenring, F., Salzer, S., Beutel, M. E., Herpertz, S., Hiller, W., Hoyer, J., … & Ritter, V. (2013). Psychodynamic therapy and cognitive-behavioral therapy in social anxiety disorder: a multicenter randomized controlled trial. *American Journal of Psychiatry*, *170*(7), 759-767. https://doi.org/10.1176/appi.ajp.2013.12081125

Lundh, L.G., Wangby-Lundh, M., & Bjarehed, J. (2008). Self reported emotional and behavioral problems in Swedish 14 to 15-year-old adolescents: A study with the self-report version of the Strengths and Difficulties Questionnaire. *Scandinavian Journal of Psychology, 49*, 523-532. http://doi.org/10.1111/j.1467-9450.2008.00668.x

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour research and therapy*, *36*(4), 455-470. https://doi.org/10.1016/S0005-7967(97)10031-6

Mayo-Wilson, E., Dias, S., Mavranezouli, I., Kew, K., Clark, D. M., Ades, A. E., & Pilling, S. (2014). Psychological and pharmacological interventions for social anxiety disorder in adults: a systematic review and network meta-analysis. *Lancet Psychiatry*, *1*(5), 368-376. http://doi.org/10.1016/S2215-0366(14)70329-3

Melfsen, S., Kühnemund, M., Schwieger, J., Warnke, A., Stadler, C., Poustka, F., & Stangier, U. (2011). Cognitive behavioral therapy of socially phobic children focusing on cognition: a randomised wait-list control study. *Child and adolescent psychiatry and mental health, 5*(1), 5. http://doi.org/10.1186/1753-2000-5-5

Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(10), 980-989. https://doi.org/10.1016/j.jaac.2010.05.017

Muris, P., Meesters, C., & van den Berg, F. (2003). The Strengths and Difficulties Questionnaire (SDQ): Further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *European Child and Adolescent Psychiatry*, *12* (1), 1-8. http://doi.org/10.1007/s00787-003-0298-2

National Institute for Health and Care Excellence (2013). *Social Anxiety Disorder: Recognition, Assessment and Treatment of Social Anxiety Disorder*. London: Clinical Guideline, No. 159. Available at: http://guidance.nice.org.uk/CG159

Nock, M. K., Ferriter, C., & Holmberg, E. (2007). Parent beliefs about treatment credibility and effectiveness: Assessment and relation to subsequent treatment participation. *Journal of Child and Family Studies*, *16*(1), 27-38. http://doi.org/10.1007/s10826-006-9064-7

Nordahl, H., & Wells, A. (2017). Testing the metacognitive model against the benchmark CBT model of social anxiety disorder: Is it time to move beyond cognition? *PloS one*, *12*(5), e0177109. https://doi.org/10.1371/journal.pone.0177109

Nordahl, H., & Wells, A. (2018). Metacognitive Therapy for Social Anxiety Disorder: An A–B Replication Series Across Social Anxiety Subtypes. *Frontiers in psychology*, *9*, 540. http://doi.org/10.3389/fpsyg.2018.00540

Nordahl, H., & Wells, A. (2019). *Measuring the Cognitive Attentional Syndrome associated with anxiety and depression: Psychometric properties and predictive validity of the CAS-1*. Manuscript submitted for publication.

Nordahl, H., Nordahl, H. M., & Wells, A. (n.d.). *The Social Phobia Rating Scale: Psychometric properties of a widely used clinical assessment tool for treatment of social phobia with cognitive-behavioural therapy*. Unpublished Manuscript.

Nordahl, H., Nordahl, H. M., Hjemdal, O., & Wells, A. (2017). Cognitive and metacognitive predictors of symptom improvement following treatment for social anxiety disorder: A secondary analysis from a randomized controlled trial. *Clinical psychology & psychotherapy*, *24*(6), 1221-1227. http://doi.org/10.1002/cpp.2083

Nordahl, H., Nordahl, H. M., Vogel, P. A., & Wells, A. (2018). Explaining depression symptoms in patients with social anxiety disorder: Do maladaptive metacognitive beliefs play a role? *Clinical psychology & psychotherapy*, *25*(3), 457-464. http://doi.org/10.1002/cpp.2181

Parsonson, B. S., and Baer, D. M. (1992). "The visual analysis of data and current research into the stimuli controlling it" in *Single-case Research Design and Analysis: New Directions for Psychology and Education*, eds T. R. Kratochwill and J. R. Levin (Hillsdale, NJ: Lawrence Erlbaum), 15–40.

Scaini, S., Belotti, R., Ogliari, A., & Battaglia, M. (2016). A comprehensive meta-analysis of cognitive-behavioral interventions for social anxiety disorder in children and adolescents. *Journal of Anxiety Disorders*, *42*, 105-112. http://doi.org/10.1016/j.janxdis.2016.05.008

Silverman W. K. & Albano, A. M. (1996). *The anxiety disorders interview schedule for DSM-IV - Child and parent versions*. San Antonio: Psychological Corporation.

Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of anxiety disorders*, *17*(5), 561-571. https://doi.org/10.1016/S0887-6185(02)00228-1

Wells, A. (1997). *Cognitive Therapy of Anxiety Disorders: A Practice Manual and Conceptual Guide*. John Wiley & Sons Ltd.

Wells, A. (2009). Metacognitive Therapy for Anxiety and Depression. New York, NY: Guilford press

Wells, A., and Matthews, G. (1994). *Attention and Emotion: A Clinical Perspective*. Hove: Erlbaum.

Wells, A., and Matthews, G. (1996). Modelling cognition in emotional disorder: the S-REF model. *Behaviour Research and Therapy*, *34*(11-12), 881–888. http://doi.org/10.1016/S0005-7967(96) 00050-2

Yao, S., Zhang, C., Zhu, X., Jing, X., McWhinnie, C. M., & Abela, J. R. Z. (2009). Measuring Adolescent Psychopathology: Psychometric Properties of the Self-Report Strengths and Difficulties Questionnaire in a sample of Chinese adolescents. *Journal of Adolescent Health*, *45*, 55-62. http://doi.org/10.1016/j.jadohealth.2008.11.006

Paper Three: Critical Appraisal

Word Count: 5,998 (excluding references)

Introduction

Paper Three provides a critical appraisal of both the empirical study and meta-analysis conducted as part of the Trainee's Doctoral (ClinPsyD) thesis. This paper will provide further exploration of the planning and implementation of both pieces of work, as well as the Trainee's reflections on the research process as a whole.

Paper One: Meta-Analysis

Topic Selection

In considering the development of a systematic review in keeping with the key themes of the Trainee's empirical paper (exploring the use of Metacognitive Therapy (MCT) for social anxiety), several potential topics were considered. These included reviewing the efficacy of Cognitive Behaviour Therapy (CBT) for social anxiety disorder (SAD) in children and adolescents, or the relative contribution of metacognitive beliefs across psychological disorders. However, initial scoping of the literature led to identification of recently published meta-analyses in both areas (Scaini, Belotti, Ogliari & Battalia, 2016; Sun, Zhu & So, 2017).

Following discussions with the primary supervisor, the Trainee was made aware of a recent publication by Gkika, Wittkowski and Wells (2017) in which findings regarding the direct and indirect relationships between social anxiety, cognitive beliefs and metacognitive beliefs were systematically reviewed. While the conclusions of Gkika et al.'s (2017) narrative review suggests both belief domains are implicated in social anxiety, findings were not quantitatively assessed. On this basis, a meta-analysis quantifying the magnitude of association between social anxiety and both cognitive beliefs and metacognitive beliefs was proposed.

As Gkika et al.'s (2017) findings were published less than 12-months prior to the beginning of the current research, it was unclear whether any additional studies warranting

inclusion would be identified and thus whether a new and unique contribution to the literature could be made. However, a preliminary scoping exercise revealed that several articles had been published within the previous year investigating the constructs of interest.

The Beliefs of Interest

In planning this review, consideration was given to which cognitive and metacognitive beliefs should be prioritised for investigation. This process was informed by consideration of the beliefs outlined within the most prominent models of social anxiety and metacognition; namely, the Clark and Wells (1995) cognitive model of SAD and the Wells and Matthews (1994, 1996) self-regulatory executive functioning (metacognitive) model, respectively. Initial scoping of the literature was also used to examine the extent of research available regarding the association between social anxiety and different belief-types. Consequently, the following beliefs were selected for exploration:

1. High Standards
2. Conditional Beliefs
3. Unconditional Beliefs
4. Positive Beliefs about Worry
5. Negative Beliefs about Uncontrollability and Danger of Thoughts
6. Need to Control Thoughts
7. Cognitive Self-Consciousness
8. Cognitive Confidence

A particularly small number of studies investigating the latter three metacognitive beliefs were identified (six, six and five, respectively). Whether these beliefs should be included in the current review was debated as meta-analyses of a small number of studies

(≤5) can result in imprecise estimates of confidence intervals and heterogeneity, meaning effects detected may be inaccurate (Higgins, Thompson & Spiegelhalter, 2009; Mathes & Kuss, 2018). However, the inclusion of this data was justified due to the hypothesised utility of providing a tentative synthesis of existing research findings regarding these beliefs, although the need to interpret results with caution was noted.

To maximise consistency across included papers regarding the beliefs examined, alongside transparency and replicability of the screening process, definitions of the aforementioned beliefs were created (see Paper One). This process was informed by how beliefs had been defined within both theoretical models (Clark & Wells, 1995; Wells & Matthews, 1994, 1994) and the wider literature (e.g. Cartwright-Hatton & Wells, 2004; Gkika et al., 2017; Wells & Cartwright-Hatton, 1997; Wong & Moulds, 2011b). Belief measures utilised within potentially eligible papers were screened against belief definitions by two members of the research team, with any discrepancies resolved via discussion.

Search Terms

The search strategy employed by Gkika et al. (2017) was optimised for use within the present study in order to maximise comparability across the two papers, consisting of the combined terms: (*belief** OR *metacog** OR *SBSA* OR *SCQ* OR *CBQ* OR *MCQ*) AND (*social anxiety* OR *social phobia*). Acronyms refer to the most widely recognised and validated measures of the beliefs of interest (as far as the Trainee was aware following scoping of the literature). Initial piloting of the search strategy revealed that this captured all of the articles included within Gkika et al.'s (2017) review, indicating that this was suitable for the purposes of the present study.

Inclusion and Exclusion Criteria

Initial scoping of the literature indicated that most research investigating associations between the constructs of interest utilised non-clinical samples. Therefore, narrowing the focus of the current review to purely clinical samples was not considered feasible due to the small number of studies likely to be eligible. This decision was further justified on the basis that social anxiety can be viewed on a severity continuum (Ruscio, 2010), with evidence indicating that similar cognitive processes are observed across clinical and non-clinical populations experiencing heightened levels of social anxiety (Stopa & Clark, 2001).

Consideration was given to the age of individuals to be included within this review. Evidence suggests that metacognition begins to develop around 8 years of age (Barquero, Robinson, & Thomas, 2003; Quakely, Reynolds, & Coker 2004) and may continue developing well into adolescence (Weil et al., 2013). In order to reduce heterogeneity amongst studies and possible confounds, it was decided that the current meta-analysis would focus solely on adult populations.

Contacting Authors

Authors of eligible papers identified via electronic database searches were contacted in the hope of obtaining any unpublished manuscripts, data or conference presentations focusing on the constructs of interest. This was an attempt by the Trainee to reduce the impact of publication bias on meta-analytic findings. 12 authors were contacted, of whom nine replied. Five provided suitable unpublished data or that which had only been presented at conferences (Maeda, Ogishima & Shamada, 2018; Nordahl & Wells, 2019; Nordahl, Ødegaard, Hjemdal & Wells, 2018; Parsons & Clerkin, 2018; Wells, Clark, Stopa & Papageorgiou, 2000).

Authors of papers examining the relevant constructs but where all relevant results were seemingly not reported (e.g. only including certain Metacognitions Questionnaire (MCQ) subscales; Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004) or where results were not reported in a format suitable for meta-analytic integration (e.g. failing to report correlations between beliefs and social anxiety at baseline) were also contacted. Of the four authors contacted, two provided additional data (Gkika & Wells, 2016; Nordahl & Wells, 2017). Where no reply was received from authors, these papers were necessarily excluded (Huppert et al., 2018; Kizilcik, Gregory, Baille & Crome, 2016).

Where authors had published multiple papers examining the constructs of interest utilising similar procedures and/or samples, clarification was sought regarding participant overlap in order to avoid violating assumptions of independent observations within the planned analyses (Borenstein, Hedges, Higgins & Rothstein, 2009). Seven authors of a combined 24 papers were contacted, all of whom replied. The information obtained led to the exclusion of four papers (Wong & Moulds, 2009, 2011a, 2012a, 2012b) and partial data from a fifth (Wong, Moulds & Rapee, 2014). It is noted that all of these excluded papers were included within Gkika et al.'s (2017) review without mention of participant overlap, potentially biasing their findings via undue influence of papers containing overlapping samples contributing more than one set of results.

Data Extraction and Analysis

Relevant data (including sample size, study population and participant demographics, details of study design, measures of social anxiety and beliefs used, and relevant statistical information) was extracted from all eligible papers and summarised within an Excel Spreadsheet. Data extraction was conducted alongside the screening process in that, upon identification of a relevant paper, data was extracted prior to continuation of screening. Data

extraction initially seemed an overwhelming task due to the number of papers and volume of data available. However, this parallel process was extremely helpful in clarifying whether studies were likely to be eligible based on the data and information provided, as well as increasing the Trainee's understanding of the information required for meta-analytic integration. Where there was a lack of clarity regarding eligibility of certain papers and/or types of data, these articles were discussed in supervision.

This process of integrating and analysing data via meta-analysis was completely unfamiliar to the Trainee at the start of the research process, having never been involved in meta-analytic studies previously. In preparation, relevant reading was recommended in supervision. "An Introduction to Meta-Analysis" (Borenstein et al., 2009) proved invaluable in increasing the Trainee's understanding of the meta-analytic process.

A random effects model was chosen as the most appropriate model for integration based on the assumption that there was likely to be variation in the 'true' effect size across studies due to the diversity of populations, measures and designs used. Further justifications of analytic decisions made are provided in Paper One.

Quality Assessment

The process of quality appraisal is an important component of meta-analyses, helping to guide interpretation of results and subsequent inferences made (Khan, ter Riet, Popay, Nixon & Kleijnen, 2001). Several different quality assessment tools were considered for use in this research, including the Newcastle-Ottawa Quality Assessment Scale (Wells et al., 2013) and the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies (EPHPP, 2009). However, the former tool contained certain items relevant only to experimental and/or longitudinal designs (e.g. length of follow-up). Similarly, the latter tool contained items assessing blinding, attrition and intervention

integrity which, due to the cross-sectional and correlational designs of most eligible studies, were thus deemed inapplicable. Although the merits of adapting these tools to better fit study characteristics were considered, this was decided against as this would likely have affected the validity of the measures in question. Furthermore, this approach could be criticised due to the potential for experimenter bias (e.g. selecting items to indicate studies are of a certain quality while neglecting other poorer scoring items).

The Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh, Lawton, Gardner, & Armitage, 2012) was eventually selected as the most appropriate tool for reviewing the quality of eligible studies. Previous studies have demonstrated good inter-rater reliability when using this tool (e.g. Albutt, O'Hara, Conner, Fletcher & Lawton, 2017; Sirriyeh et al., 2012). However, it is noted that this measure lacks a guide to aid interpretation of overall study quality, such as predetermined cut-offs indicating 'high', 'medium' and 'low' quality. This likely affects ability to categorise studies consistently across raters, instead relying heavily on individual rater subjective interpretation of summary scores (Fenton, Lauckner & Gilbert, 2015). For the ease of readers, a colour-coded rating system was created to allow areas of strengths and weakness both within and between studies to be easily interpreted (Appendix D) based on interrater agreement regarding individual item scores and the use of similar techniques within other studies (e.g. Aslam et al., 2018).

For many quality assessment tools, including the QATSDD, failure to explicitly discuss aspects of research (e.g. service user involvement in design) often results in lower scores. Upon reflection, it was considered that failure to report these factors does not necessarily preclude the possibility that these elements were carefully considered during research design. However, pressures regarding word counts associated with research publication could mean that such information has necessarily been omitted. Despite being a lengthy process, quality appraising eligible studies was perceived as beneficial in aiding

reflection on which elements were most important to consider and discuss within the Trainee's own research in order to try and maximise research quality.

Results and Clinical Implications

Meta-analytic results suggested that certain domains of metacognitive beliefs, particularly negative beliefs about uncontrollability and danger and need to control thoughts, may be as important as cognitive beliefs in understanding social anxiety. Although preliminary, these findings are consistent with Wells and Matthews' (1994, 1996) transdiagnostic metacognitive model of disorder, as well as wider research implicating these two domains of metacognitive beliefs in a wide range of psychopathologies (Sun, Zho & So, 2017).

Our findings imply that metacognitive beliefs should be routinely considered within both the assessment and treatment of SAD. As metacognitive beliefs are often neglected within social anxiety at present, with research, measures and national recommendations for treatment (see NICE Guidelines, 2013) tending to focus on cognitive factors and associated cognitive-behavioural interventions, our findings may support the move towards a more process-based intervention. Furthermore, results imply that the current leading models of SAD could benefit from revision to incorporate metacognitive beliefs and thus improve our understanding and conceptualisation of this disorder. Recommendations for future research are discussed at length in Paper One.

This conclusion is in keeping with the results of Paper Two which suggest that MCT is a feasible treatment for adolescent SAD and is associated with reductions in social anxiety symptoms and underlying mechanisms, despite cognitive beliefs not being target directly during intervention.

Paper Two: Empirical Paper

Prior to clinical training, the Trainee had worked across two different Child and Adolescent Mental Health Services (CAMHS) and had enjoyed working with this population. However, the Trainee's previous Assistant Psychologist post had largely involving conducting neurodevelopmental assessments with children under the age of 10 and forming part of a reflecting team within a Family Therapy clinic. Combined with their core child ClinPsyD placement, during which the Trainee worked within an inpatient CAMHS unit consisting mainly of young people in their late teens, this meant that the Trainee's experience and confidence in delivering a structured, manualised intervention to young people in early-mid adolescence was lacking. Therefore, the Trainee felt this project would be an excellent fit with their interests and requirements for both clinical and research skills development.

Project Set-Up

The aims of this research were two-fold. Firstly, the study sought to investigate whether MCT is a feasible and acceptable intervention for adolescents experiencing social anxiety. Secondary aims concerned preliminary exploration of the effects associated with this treatment. A case-series was felt to be the most appropriate research design due to the utility of this investigative approach in the early stages of treatment development and evaluation prior to implementation of costlier randomised controlled trials, allowing for assessment of intervention feasibility and acceptability, associated effects and identification of potential difficulties. This design also provides the opportunity to analyse change in outcome variables and maintenance processes at the individual level which is not normally available within larger group designs.

Baseline periods afford flexibility in that these can be extended until stability of scores is observed. Within the present study, it was originally proposed that baseline would

be extended until stability was observed in the primary measure of social anxiety before introduction of MCT. However, due to the time limitations of the current project, baselines were necessarily capped at a maximum of six weeks. As a result, Patient 6's scores did not meet our definition of stability prior to receiving MCT – limiting to some extent the conclusions that can be drawn for this individual. On reflection a multiple baseline approach in which participants are randomly assigned to baselines of varying lengths could have been a viable alternative. Given the differences in time at which participants are transitioned from baseline to intervention, this may potentially have provided more confidence in ruling out other explanations for changes in scores observed following treatment introduction (Morgan & Morgan, 2009).

Much thought was given to the age range of participants to be recruited within this study, including consideration of the average age of SAD onset and the stages of cognitive development likely across different age groups. A lower age limit of 13 was selected on the basis that capacity to think about thinking (metacognition) tends to develop between the ages 8-13 (Quakely, Reynolds & Coker 2004; Flavell, Green & Flavell, 1998). Furthermore, evidence suggests that the typical age of onset for social anxiety is commonly around 13 (Kessler et al., 2005; McEvoy, Grove & Slade, 2011). As CAMHS tend to work with young people up until they turn 18, an upper age limit of 17 was selected.

Careful consideration was also given to inclusion and exclusion criteria for participation in the current study. It was believed that conditions such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder and/or a learning disability would likely impair individuals' ability to participate due to either difficulties engaging in 60-minute sessions caused by attentional difficulties or trouble with abstract thought (which a number of techniques in MCT rely upon). On this basis, individuals with diagnoses of these conditions were not eligible to participate. Adolescents who were non-English speaking were also

excluded as, in order to cover the required amount of MCT content outlined within the treatment protocol, individuals would likely require a higher number of sessions due to the need for translation between therapist and client. While MCT may be able to be adapted to suit the needs of these populations, this was not possible within the time frame of the current research. However, it is acknowledged that this may limit generalisability of the current study's findings to some extent. In addition, it was agreed that individuals demonstrating high levels of risk or experiencing clinically significant low mood would also not be eligible to participate due to these issues requiring addressing as a priority over social anxiety complaints.

In order to ascertain whether any changes in symptoms and/or hypothesised maintaining mechanisms in social anxiety were associated with MCT, it was decided that participants receiving ongoing psychological intervention (whether for SAD or another form of distress) would not be eligible for participation. This decision was also justified on the basis that interrupting evidence-based treatment (such as CBT) to provide an intervention which is at present lacking in evidence for use with a socially anxious adolescent population is unethical.

Within single case series, it is widely recognised that the minimum number of participants required to show a replication of effect can be as low as three (Chambless & Hollon, 1998). Therefore, recruiting between six to eight participants was initially proposed in order to allow for significant attrition in the hope that a minimum of three participants could be retained. However, the time limitations associated with the doctoral research process meant that this number was reduced to five on the recommendation of the Clinical Psychology Department's research subcommittee. This was deemed to be a suitable balance between allowing enough time for completion of the research process within the designated timeline while also allowing for some attrition from treatment. On reflection, despite the

Trainee's initial reservations around reducing the study's sample size due to worries about not having enough data to present within their thesis, this was an extremely beneficial decision to have made given that the project was more time consuming than the Trainee had originally anticipated.

In order to maximise comparability with preliminary research conducted using MCT for SAD in adults (Nordahl & Wells, 2018), treatment was delivered over eight weekly sessions. A follow-up period of three months was initially planned and approved by the NHS Research Ethics Committee (REC) in order to assess to the extent to which any changes in SAD symptoms or associated mechanisms had been maintained. This timeframe was selected on the basis that this was believed to be feasible in terms of the timescale available for the project and evidence that similar lengths of follow-up had been employed within other studies of MCT (e.g. Haseth et al., 2019; Simons & Kursawe, 2019). Although a three month follow-up period would have been preferable in order to maximise chances of study publication and confidence in conclusions drawn regarding the sustainability of any changes associated with MCT, due to delays encountered with obtaining local site approval and recruitment (discussed in further detail below), a minor amendment was submitted and subsequently approved by NHS REC in order to reduce the follow-up period to within four-six weeks post-treatment. The timing of exit interviews, initially planned for three months post-treatment, was also amended to fit within this timeframe.

Measure Selection

The Trainee and supervisory team spent much time deliberating on the best measure of social anxiety to use on a sessional basis. Consultation of the literature regarding the use of appropriate measures with this population was used to aid decision-making (e.g. Bailey, Chavira, Stein & Stein, 2006; Garcia-Lopz, Sáez-Castillo, Beidel & La Greca, 2015). The

following measures were considered, but ultimately decided against for the reasons outlined below:

- The Kutcher Generalised Social Anxiety Disorder Scale for Adolescents (Brooks & Kutcher, 2004). Although developed as a measure of treatment outcome, the Trainee could not identify a self-report version of this measure. It was believed that using a clinician-administered scale on a sessional basis would be too time-consuming and may influence participants' responses (e.g. via social desirability bias). Furthermore, the measure included Americanised language (e.g. "bank teller", "clergy") which it was felt may have been difficult for some adolescents to understand.
- The Social Anxiety Scale for Adolescents (SAS-A; La Greca, 1998) is a widely used measure of fear of negative evaluation, social avoidance and distress. However, this measure was not designed to measure SAD symptoms as outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association) and lacks items assessing physiological symptoms of social anxiety.
- The Liebowitz Social Anxiety Scale for Children and Adolescents (Masia-Warner et al., 2003) measures avoidance of and anxiety in social situations. Despite possessing good psychometric properties (Masia-Warner et al., 2003), an English self-report version of this measure was unable to be identified. Furthermore, the wording of some items was felt to be confusing (e.g. "giving a party").

Evidence suggests that the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner & Morris, 1995, 1998) possesses good psychometric properties (see Paper Two for further information) and has higher sensitivity than some comparable measures (including the SAS-A) in terms of identifying young people meeting criteria for SAD (Inderbitzen-Nolan, Davies & McKeon, 2004). Furthermore, the SPAI-C is recommended for

use when assessing SAD among young people (NICE Guidelines, 2013). On this basis, the SPAI-C was selected as the most appropriate social anxiety measure for use in the present study.

However, as discussed at greater length in Paper Two, participants' qualitative feedback regarding changes in their presentation during the study did not consistently appear reflected in their SPAI-C scores. This Trainee found this frustrating given the length of time spent researching the best measure to use. This finding may have been due to social desirability bias meaning individuals felt obliged to provide more positive feedback regarding the intervention, despite the use of a self-report measure to try and prevent this as much as possible. Alternatively, it was hypothesised that the wording of SPAI-C items could be encouraging rumination and/or worry about anxiety-provoking situations of a similar nature. The measures which, on reflection, may have been a better choice are discussed in Paper Two.

A state measure of metacognition appropriate for use with adolescents was unable to be identified for the purposes of this research. While an adolescent version of the MCQ (considered the 'gold standard' measure of metacognitions) has been created and psychometrically validated (Cartwright-Hatton et al., 2004), evidence suggests that this is a trait measure and thus is unlikely to be sensitive to rapid changes in metacognition. This led to the creation of a measure for use within the current study via a combination of items from the Social Phobia Rating Scale (SPRS; Wells, 1997) and CAS-1 (Wells, 2009). While it is recognised that the creation of a measure for study purposes is not ideal due to lack of information regarding the psychometric properties of said measure, both the SPRS and CAS-1 were designed for use in a clinical setting and preliminary evidence suggests these measures possess good internal validity (e.g. Nordahl, Norhdal, Vogel & Wells, 2018; Nordahl & Wells, 2019).

The remaining measures utilised within the current study (barring the Credibility/Expectancy Questionnaire; Devilly & Borkovec, 2000) were selected on the basis that these are recommended for use by NICE Guidelines (2013) when assessing SAD amongst children and adolescents and/or by the Child Outcomes Research Consortium (Law & Wolpert, 2014). The Revised Children's Anxiety and Depression Scale (Chorpita, Yim, Moffitt, Umemoto & Francis, 2000) and Strengths and Difficulties Questionnaire (Goodman, 2001) are also routinely used within the CAMHS services from which participants were recruited. Having more generic measures of emotional distress, conduct and relationship difficulties in addition to SAD specific measures was felt to be useful in order to assess whether MCT had any beneficial effects beyond the primary identified problem (social anxiety).

Recruitment

Once approval from NHS REC was received (Appendix P), the Trainee had believed that the research would be able to begin promptly. However, obtaining local site approval took far longer than expected (a further month) due to the relevant NHS Trust having a 30-day period within which to provide approval.

Once approval was obtained (Appendix Q), the Trainee arranged to deliver a presentation to each of the four local CAMHS teams to increase clinicians' awareness of the project and aid recruitment, as the project was reliant upon clinicians providing participants with the study information sheets and consent to contact forms. Arranging a time to attend team meetings in order to deliver the study presentation or speak with CAMHS Clinicians regarding this on a one-to-one basis was trickier than anticipated due to clinicians often having high caseloads and thus having very little free time. The pressures apparent on CAMHS services also meant that team meetings often had full agendas. However, the

Trainee spent as much time as possible in the CAMHS offices engaging staff in order to discuss the project and determine whether they knew of any potentially suitable clients. The utility of the Trainee's field supervisor in aiding recruitment was invaluable due to the emails circulated regarding the project, provision of study material to potential participants and screening of the CBT waiting-list on the Trainee's behalf.

When referrals to the trial were made, these were not always deemed appropriate due to the study's stringent inclusion and exclusion criteria. For example, a number of clinicians reported working with autistic clients who also experienced social anxiety who, due to their ASD diagnosis were not eligible to participate in this research. Evidence suggests individuals with ASD often also meet criteria for SAD (e.g. Maddox & White, 2015), causing the Trainee to consider whether the study's criteria reflect the way client's "typically" present within CAMHS services. If the patients recruited do not tend to reflect the clients typically seen within a 'real-world' setting, this poses a potential threat the ecological validity and generalisability of findings. Therefore, future research within this field may wish to utilise broader inclusion criteria.

Some clinicians also seemed keen to refer clients to the trial in order for them to receive treatment sooner than would otherwise have been possible due to the length of CBT waiting-lists within services. This meant that the Trainee had to carefully consider referrals prior to contacting participants to arrange screening. It is believed that Patient 6 came into the trial due to these reasons, as it was identified towards the end of treatment that SAD was unlikely to be his primary concern. A more intensive screening process (e.g. administering a full diagnostic interview or a broader range of measures) may have helped to better safeguard against inappropriate referrals. However, during the planning of the study the advantages of this were weighed up against the utility of clinicians' clinical judgement and participant burden.

Treatment Administration

The treatment protocol used within this research was based on Wells' (2009) generic MCT intervention structure. However specifics of the protocol, including ordering of certain techniques and decisions regarding which elements of treatment to prioritise, were determined based on a pre-trial training case undertaken by the Trainee.

A young person open to the CAMHS team within which the Trainee's field supervisor worked was identified as potentially suitable and willing to receive MCT for SAD. The purpose of this training case was to aid refinement of the treatment protocol and ensure that the Trainee was suitably familiar with and skilled in MCT prior to commencement of the case-series. Transparent discussions with the young person and their parent were had around the purposes of providing this intervention, the clinician's level of skill and what treatment would likely entail. Verbal consent was provided and MCT was delivered on the understanding that this young person would remain on the CBT waiting-list and be able to receive further support from CAMHS if required following MCT. A longer treatment period (12 sessions) was provided in comparison to the actual trial in the belief that delivering MCT on subsequent occasions should be a more succinct process due to increased therapist skill, familiarity with the techniques and confidence.

As a result, timing of the video-feedback task was brought forward (from Session Four to Session One), as were challenging of uncontrollability beliefs, worry mismatch and worry postponement techniques. These decisions were made on the basis that these elements seemed associated with greater shifts in self-reported symptoms and distress.

MCT delivery was supervised by the Trainee's primary supervisor throughout the initial training case and case-series. This was an invaluable learning experience which helped the Trainee develop both their confidence and skills in delivering MCT with this population.

Furthermore, this provided an opportunity to reflect on things the Trainee was finding difficult as well as what was going well within the intervention. The Trainee noted during this process that it was sometimes difficult for them to encourage clients to step outside the boundaries of their comfort zone – despite knowledge of the benefits that this could bring. For example, the Trainee felt concerned that video-recording client's conversing with a colleague would be too anxiety-provoking for young people during the first session and thus may result in high rates of drop-out. Supervision was required around these concerns, and discussion of the Trainee's own anxieties around delivering certain elements of the treatment helped aid protocol adherence and increase the Trainee's awareness of their own feelings about aspects of the intervention.

Audio-recording of sessions allowed for monitoring of the Trainee's adherence to the metacognitive model and treatment protocol. Furthermore, this captured elements which would not necessarily be able to be relayed during a typical supervision process (e.g. tone of voice, precise wording, length of pauses), and at times highlighted meaningful and important elements of interactions with clients which had not always been recognised during sessions. The Trainee and Supervisor jointly listened back to recordings in supervision, providing a space to reflect on the work away from pressures of conducting sessions and the opportunity to pause and discuss elements of sessions as required.

Keeping clients 'on topic' during sessions was difficult on occasion as some were keen to discuss events from the week at great length. Balancing the opportunity for clients to feel heard and validated during these discussions while feeling the pressure of delivering a time-limited, structured intervention was difficult at times. Striking the balance between sticking to the treatment protocol and being appropriately flexible was also something that took the Trainee time to adjust to. While the Trainee at times felt that they were unable to explore elements of clients' presentations that they would have obtained more information

about during routine practice, they concluded that sticking to protocol-led intervention reduces therapist drift (see Waller, 2009) and helped them to provide a more clear and concise treatment. Furthermore, needing to address certain mechanisms and factors hypothesised by the metacognitive model to be underlying distress within a limited timeframe meant that sessions were utilised to their full potential rather being side-tracked by tangential discussions.

Trying to remain within the appropriate 'mode' of dialogue for MCT also felt difficult at times. For example, there were instances where the Trainee slipped into discussing thought-content at a cognitive level ('object mode') rather than helping patients to stand-back from thoughts, seeing these as separate from themselves and subsequently being able to relate to these in a different way ('metacognitive mode'; Wells, 2009). This was felt to be due to the Trainee's greater familiarity with CBT techniques at the start of the trial. However, this was able to be identified and improved with the use of supervision.

Exit Interviews

Although the department of Clinical Psychology's research subcommittee initially suggested that formal qualitative analysis of exit interviews should be undertaken (e.g. thematic analysis), this was not felt to be appropriate due to two key factors. Firstly, while exit interviews were conducted to add valuable descriptive level information regarding patients' experience of treatment and how this might be further improved, this was considered supplementary information rather than the primary focus of the research. Interviews were therefore very brief, tending to take no more than 15 minutes. Secondly, the small number of participants within this research (not all whom were guaranteed to participate in exit interviews due to potential attrition and/or loss to follow-up) was much smaller than the sample sizes usually recommended within qualitative research (Fugard &

Potts, 2015; Guest, Bunce & Johnson, 2006). While conducting in-depth interviews more amenable to analysis using formal qualitative methodology would have provided more detailed information regarding participants' experiences of MCT, given the scope of the project and time period available, this was not feasible.

Limitations and Future Recommendations

A potential limitation of the current research is that certain concepts (e.g. threat-monitoring, distress, avoidance) were evaluated using single items which may have had limited sensitivity and ability to detect change. Using multiple items to measure constructs in future studies may allow for gathering of more detailed and psychometrically sound information regarding changes in mechanisms proposed to underlie SAD.

It was initially proposed that research would aim to replicate findings across subtypes of SAD (i.e. specific and generalised). However, the availability of participants within local CAMHS services meant that only one participant with specific SAD was identified. It is hypothesised that, due to pressures on services associated with cost-savings and waiting-times, the threshold of distress and/or impairment required to access services is increasing (Wallis, Potier, Milson & Beck, 2015) and thus individuals with specific SAD may not always meet thresholds for a referral into CAMHS. Future research should aim to replicate findings across subtypes of SAD.

Necessary reductions in the post-treatment follow-up period subsequently reduce the confidence with which claims about the sustainability of treatment can be made. Studies employing longer term follow-up periods are thus recommended to investigate this further. Future research may also wish to experiment with the number of MCT sessions delivered, weighing up the clinical utility in terms of symptom and distress reduction against the economic costs of offering lengthier treatment.

Personal Reflections

Having not been involved in psychological research prior to undertaking the current project, the process initially felt daunting and the Trainee lacked confidence in their research skills. Furthermore, during clinical placements the Trainee had not had many instances of being directly observed delivering psychological intervention. Therefore, despite recognising the benefits of recording MCT sessions, the prospect of listening to these recordings was anxiety-provoking for the Trainee who feared being exposed as "not good enough" and lacking the skills required to deliver MCT to an acceptable level. However, as the research progressed the Trainee became more accustomed to receiving feedback on their style and use of techniques, and better able to tolerate the anxiety associated with this. Furthermore, this process highlighted areas which the Trainee will continue to be mindful of during future work with clients (regardless of the therapeutic model used). Of note, the Trainee intends to ask more questions and talk less during sessions (something which, on reflection, was identified as potentially stemming from their own anxieties at points).

Although the Trainee had been apprehensive about the research process, they found this highly enjoyable as well beneficial to development of both their research and clinical skills. As the Trainee approaches qualifying, they aim to consider how they can continue their involvement in research alongside clinical practice. The Trainee has noticed that they now more routinely enquire about and/or consider client's metacognitive beliefs during practice, and would like to continue to refine and develop their MCT skills in the future.

References

Albutt, A. K., O'hara, J. K., Conner, M. T., Fletcher, S. J., & Lawton, R. J. (2017). Is there a role for patients and their relatives in escalating clinical deterioration in hospital? A systematic review. *Health Expectations*, *20*(5), 818-825. http://doi.org/10.1111/hex.12496

American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition*. Washington, DC: American Psychiatric Association.

Aslam, R. H. W., Bates, V., Dundar, Y., Hounsome, J., Richardson, M., Krishan, A., ... & Sikdar, S. (2018). A systematic review of the diagnostic accuracy of automated tests for cognitive impairment. *International journal of geriatric psychiatry*, *33*(4), 561-575. http://doi.org/10.1002/gps.4852

Bailey, K. A., Chavira, D. A., Stein, M. T., & Stein, M. B. (2005). Brief measures to screen for social phobia in primary care pediatrics. *Journal of pediatric psychology*, *31*(5), 512-521. https://doi.org/10.1093/jpepsy/jsj044

Barquero, B., Robinson, E., & Thomas, G. (2003). Children's ability to attribute different interpretations of ambiguous drawings to a naïve vs. a biased observer. *International Journal of Behavioral Development*, *27*(5), 445-456. https://doi.org/10.1080/01650250344000064

Beidel, D. C., Turner, S. M., & Morris, T. L. (1995). A new inventory to assess childhood social anxiety and phobia: the Social Phobia and Anxiety Inventory for Children. *Psychological Assessment, 7*, 73-79. http://dx.doi.org/10.1037/1040-3590.7.1.73

Beidel, D. C., Turner, S. M., & Morris, T. L. (1998). *Social Phobia and Anxiety Inventory for Children (SPAI-C) manual*. North Tonawanda, NY: Multi-Health Systems Inc.

Borenstein, M., Hedges, L. V., Higgins, J., & Rothstein, H R. (2009) *Introduction to meta-analysis*. Chichester, UK: John Wiley & Sons Ltd.

Brooks, S. J., & Kutcher, S. (2004). The Kutcher Generalized Social Anxiety Disorder Scale for Adolescents: assessment of its evaluative properties over the course of a 16-week pediatric psychopharmacotherapy trial. *Journal of Child and Adolescent Psychopharmacology*, *14*(2), 273-286. http://dx.doi.org/10.1089/1044546041649002

Cartwright-Hatton, S., Mather, A., Illingworth, V., Brocki, J., Harrington, R., & Wells, A. (2004). Development and preliminary validation of the Meta-cognitions Questionnaire-Adolescent Version. *Journal of Anxiety Disorders*, *18*, 411–422. http://doi.org/10.1016/S0887-6185(02)00294-3

Cartwright-Hatton, S., & Wells, A. (1997). Beliefs about worry and intrusions: The meta-cognitions questionnaire and its correlates. *Journal of Anxiety Disorders*, *11*(3), 279-296. https://doi.org/10.1016/S0887-6185(97)00011-X

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of consulting and clinical psychology*, *66*(1), 7-18. http://dx.doi.org/10.1037/0022-006X.66.1.7

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, F. R. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment and treatment* (pp. 69-93). New York, NY: Guilford.

Chorpita, B. F., Yim, L. M., Moffitt, C. E., 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*, 835-855. https://doi.org/10.1016/S0005-7967(99)00130-8

Devilly, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavioral Therapy and Experimental Psychiatry, 31*, 73-86. http://doi.org/10.1016/S0005-7916(00)00012-4

Effective Public Health Practice Project. (1998). Quality Assessment Tool For Quantitative Studies. *Hamilton, The Effective Public Health Practice Project*. Retrieved April 5, 2019, from https://merst.ca/ephpp/

Fenton, L., Lauckner, H., & Gilbert, R. (2015). The QATSDD critical appraisal tool: comments and critiques. *Journal of evaluation in clinical practice*, *21*(6), 1125-1128. http://doi.org/10.1111/jep.12487

Flavell, J. H., Green, F. L., & Flavell, E. R. (1998). The mind has a mind of its own: Developing knowledge about mental uncontrollability. *Cognitive Development*, *13*(1), 127-138. https://doi.org/10.1016/S0885-2014(98)90024-7

Fugard, A. J., & Potts, H. W. (2015). Supporting thinking on sample sizes for thematic analyses: a quantitative tool. *International Journal of Social Research Methodology*, *18*(6), 669-684. http://dx.doi.org/10.1080/13645579.2015.1005453

Garcia-Lopez, L. J., Sáez-Castillo, A. J., Beidel, D., & La Greca, A. M. (2015). Brief measures to screen for social anxiety in adolescents. *Journal of Developmental & Behavioral Pediatrics*, *36*(8), 562-568. http://doi.org/10.1097/DBP.0000000000000213

Gkika, S., & Wells, A. (2016). The impact of metacognitive beliefs and anticipatory processing on state anxiety in high socially anxious individuals in a speech task. *Journal of Experimental Psychopathology*, *7*(4), 588-600. https://doi.org/10.5127/jep.054916

Gkika, S., Wittkowski, A., & Wells, A. (2017). Social cognition and metacognition in social anxiety: a systematic review. *Clinical psychology & psychotherapy*, *25*(1), 10-30. http://doi.org/10.1002/cpp.2127

Goodman. R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 40* (11), 1337-1345. http://doi.org/10.1097/00004583-200111000-00015

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, *18*(1), 59-82. https://doi.org/10.1177/1525822X05279903

Haseth, S., Solem, S., Baardsen, G. S., Bjørnstad, E., Grøtte, T., & Fisher, P. (2019). Group Metacognitive Therapy for Generalized Anxiety Disorder: A Pilot Feasibility Trial. *Frontiers in psychology*, *10*, 290. http://doi.org/10.3389/fpsyg.2019.00290

Higgins, J. P., Thompson, S. G., & Spiegelhalter, D. J. (2009). A re-evaluation of random-effects meta-analysis. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, *172*(1), 137-159. http://doi.org/10.1111/j.1467-985X.2008.00552.x

Huppert, J. D., Kivity, Y., Cohen, L., Strauss, A. Y., Elizur, Y., & Weiss, M. (2018). A pilot randomized clinical trial of cognitive behavioral therapy versus attentional bias modification for social anxiety disorder: An examination of outcomes and theory-based mechanisms. *Journal of anxiety disorders*, *59*, 1-9. http://doi.org/ 10.1016/j.janxdis.2018.08.002

Inderbitzen-Nolan, H., Davies, C. A., & McKeon, N. D. (2004). Investigating the construct validity of the SPAI-C: comparing the sensitivity and specificity of the SPAI-C and the SAS-A. *Journal of Anxiety Disorders*, *18*(4), 547-560. https://doi.org/10.1016/S0887-6185(03)00042-2

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), 593-602. https://doi.org/10.1001/archpsyc.62.6.593

Khan, K. S., ter Riet, G., Popay, J., Nixon, J., & Kleijnen, J. (2001). Stage II: conducting the review, phase 5: study quality assessment. In K. S. Khan, G. ter Riet, J. Glanville, A. J. Sowden & J. Kleijnen (Eds). *Undertaking Systematic Reviews of Research Effectiveness: CRD's Guidance for Those Carrying Out or Commissioning Reviews* (pp. 1-20). 2nd Edition. York, United Kingdom: NHS Centre for Reviews and Dissemination, University of York. CRD Report 4.

Kizilcik, I. N., Gregory, B., Baillie, A. J., & Crome, E. (2016). An empirical analysis of Moscovitch's reconceptualised model of social anxiety: How is it different from fear of negative evaluation? *Journal of anxiety disorders*, *37*, 64-70. https://doi.org/10.1016/j.janxdis.2015.11.005

La Greca, A. M. (1998). *Manual for the Social Anxiety Scale for Adolescents*. Miami, FL: University of Miami.

Law, D., & Wolpert, M. (Eds.). (2014). *Guide to using outcomes and feedback tools with children, young people and families*. CAMHS Press.

Maddox, B. B., & White, S. W. (2015). Comorbid social anxiety disorder in adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *45*(12), 3949-3960. http://doi.org/10.1007/s10803-015-2531-5

Maeda, S., Ogishima, H., & Shimada, H. (2018). *Acute cortisol response to a psychosocial stressor is associated with heartbeat perception*. Manuscript submitted for publication.

Masia-Warner, C., Storch, E. A., Pincus, D. B., Klein, R. G., Heimberg, R. G., & Liebowitz, M. R. (2003). The Liebowitz social anxiety scale for children and adolescents: an initial psychometric investigation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(9), 1076-1084. http://doi.org/10.1097/01.CHI.0000070249.24125.89

Mathes, T., & Kuss, O. (2018). A comparison of methods for meta-analysis of a small number of studies with binary outcomes. *Research synthesis methods*, *9*(3), 366-381. https://doi.org/10.1002/jrsm.1296

McEvoy, P. M., Grove, R., & Slade, T. (2011). Epidemiology of anxiety disorders in the Australian general population: findings of the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*, *45*(11), 957-967. http://doi.org/10.3109/00048674.2011.624083.

Morgan, D. L., & Morgan, R. K. (2009). Multiple baseline designs. In *Single-case research methods for the behavioral and health sciences*. Thousand Oaks, CA: SAGE Publications, Inc. http://doi.org/10.4135/9781483329697

National Institute for Health and Care Excellence (2013). *Social Anxiety Disorder: Recognition, Assessment and Treatment of Social Anxiety Disorder*. London: Clinical Guideline, No. 159. Available at: http://guidance.nice.org.uk/CG159

Nordahl, H., Nordahl, H. M., Vogel, P. A., & Wells, A. (2018). Explaining depression symptoms in patients with social anxiety disorder: Do maladaptive metacognitive beliefs play a role? *Clinical psychology & psychotherapy*, *25*(3), 457-464. https://doi.org/10.1002/cpp.2181

Nordahl, H., Ødegaard, I. H., Hjemdal, O., & Wells, A. (2018). *Can a simplified metacognitive model account for anxiety- and depression comorbidity? A preliminary test of the generic metacognitive model in a non-selected sample*. Manuscript submitted for publication.

Nordahl, H., & Wells, A. (2017). Testing the metacognitive model against the benchmark CBT model of social anxiety disorder: Is it time to move beyond cognition? *PloS one*, *12*(5), e0177109. https://doi.org/10.1371/journal.pone.0177109

Nordahl, H., & Wells, A. (2018). Metacognitive Therapy for Social Anxiety Disorder: An A–B Replication Series Across Social Anxiety Subtypes. *Frontiers in psychology*, *9*, 540. https://doi.org/10.3389/fpsyg.2018.00540

Nordahl, H., & Wells, A. (2019). *Measuring the Cognitive Attentional Syndrome associated with anxiety and depression: Psychometric properties and predictive validity of the CAS-1*. Manuscript submitted for publication

Parsons, E. M., & Clerkin, E. M. (2018). *The Value of Shame as a Predictor of Social Anxiety Disorder Symptom Severity*. Poster presented at Association for Behavioural and Cognitive Therapies, Annual Convention, Washington DC, 15-18 November, 2018.

Quakley, S., Reynolds, S., & Coker, S. (2004). The effect of cues on young children's abilities to discriminate among thoughts, feelings and behaviours. *Behaviour research and therapy*, *42*(3), 343-356. http://doi.org/10.1016/S0005-7967(03)00145-1

Ruscio, A. M. (2010). The latent structure of social anxiety disorder: Consequences of shifting to a dimensional diagnosis. *Journal of Abnormal Psychology, 119*(4), 662-671. https://doi.org/10.1037/a0019341.

Scaini, S., Belotti, R., Ogliari, A., & Battaglia, M. (2016). A comprehensive meta-analysis of cognitive-behavioral interventions for social anxiety disorder in children and adolescents. *Journal of Anxiety Disorders*, *42*, 105-112. http://doi.org/10.1016/j.janxdis.2016.05.008

Simons, M., & Kursawe, A. L. (2019). Metacognitive Therapy for Posttraumatic Stress Disorder in Youth: A Feasibility Study. *Frontiers in psychology*, *10*, 264. https://doi.org/10.3389/fpsyg.2019.00264

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse designs: The development and evaluation of a new tool. *Journal of Evaluation in Clinical Practice, 18*(4), 746–752. https://doi.org/10.1111/j.1365-2753.2011.01662.x

Stopa, L., & Clark, D. M. (2001). Social phobia: Comments on the viability and validity of an analogue research strategy and British norms for the fear of negative evaluation questionnaire. *Behavioural and Cognitive Psychotherapy*, *29*(4), 423-430. https://doi.org/10.1017/S1352465801004039

Sun, X., Zhu, C., & So, S. H. W. (2017). Dysfunctional metacognition across psychopathologies: a meta-analytic review. *European Psychiatry*, *45*, 139-153. https://doi.org/10.1016/j.eurpsy.2017.05.029

Waller, G. (2009). Evidence-based treatment and therapist drift. *Behaviour research and therapy*, *47*(2), 119-127. http://doi.org/10.1016/j.brat.2008.10.018

Wallis, P., Potier, J., Milson, G., & Beck, A. Delivering psychological services for children and young people with emotional and behavioural difficulties, and their families in specialist CAMHS settings. In *The Child & Family Clinical Psychology Review: What good looks like in psychological services for children, young people and their families*, 3, (pp. 48-59). British Psychological Society – Faculty for Children Young People and Their Families.

Weil, L. G., Fleming, S. M., Dumontheil, I., Kilford, E. J., Weil, R. S., Rees, G., Dolan, R. J., & Blakemore, S. J. (2013). The development of metacognitive ability in adolescence. *Consciousness and cognition*, *22*(1), 264-271. http://doi.org/10.1016/j.concog.2013.01.004

Wells, A., & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: Properties of the MCQ-30. *Behaviour Research and Therapy, 42*(4), 385–396. https://doi.org/10.1016/s0005-7967(03)00147-5

Wells, A. (1997). *Cognitive Therapy of Anxiety Disorders: A Practice Manual and Conceptual Guide*. John Wiley & Sons Ltd.

Wells, A. (2009). Metacognitive Therapy for Anxiety and Depression. New York, NY: Guilford press

Wells, A., Clark, D. M., Stopa, L., & Papageorgiou, C. (2000). *Assessment of Thoughts and Beliefs in Social Phobia: Development And Properties Of The Social Cognitions Questionnaire (SCQ)*. Paper presented at Association for Advancement of Behavior Therapy, Annual Convention, New Orleans, 16-19 November, 2000.

Wells, A., & Matthews, G. (1994). *Attention and emotion: A clinical perspective*. Hove, UK: Psychology Press.

Wells, A., & Matthews, G. (1996). Modelling cognition in emotional disorder: The S-REF model. *Behaviour Research and Therapy*, 34(11-12), 881-888. https://doi.org/10.1016/S0005-7967(96)00050-2

Wells, G., Shea, B., O'Connell, D., Peterson, J., Welch, V., Losos, M., Tugwell, P. (2013). *The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses*. Retrieved April 5, 2019, from http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp

Wong, Q. J. J., & Moulds, M. L. (2009). Impact of rumination versus distraction on anxiety and maladaptive self-beliefs in socially anxious individuals. *Behaviour Research and Therapy*, *47*(10), 861–867. https://doi.org/10.1016/j.brat.2009.06.014

Wong, Q. J. J., & Moulds, M. L. (2011a). Impact of anticipatory processing versus distraction on multiple indices of anxiety in socially anxious individuals. *Behaviour Research and Therapy, 49*(10), 700–706. https://doi.org/10.1016/j.brat.2011.07.007

Wong, Q. J. J., & Moulds, M. L. (2011b). A new measure of the maladaptive self-beliefs in social anxiety: Psychometric properties in a non-clinical sample. *Journal of Psychopathology and Behavioral* Assessment, *33*(2), 273–284. https://doi.org/10.1007/s10862-010-9208-3

Wong, Q. J. J., & Moulds, M. L. (2012a). Does rumination predict the strength of maladaptive self-beliefs characteristic of social anxiety over time? *Cognitive Therapy and Research*, *36*(1), 94–102. https://doi.org/10.1007/s10608-010-9316-0

Wong, Q. J. J., & Moulds, M. L. (2012b). Processing mode during repetitive thinking in socially anxious individuals: Evidence for a maladaptive experiential mode. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*(4), 1064–1073. https://doi.org/10.1016/j.jbtep.2012.05.002

Wong, Q. J. J., Moulds, M. L., & Rapee, R. M. (2014). Validation of the self-beliefs related to social anxiety scale: A replication and extension. *Assessment*, *21*(3), 300-311. https://doi.org/10.1177/1073191113485120

Appendices

Appendix A: Author Guidelines – Clinical Psychology Review

CLINICAL PSYCHOLOGY REVIEW

AUTHOR INFORMATION PACK

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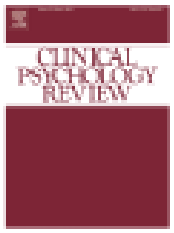

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Appendix B: Quality Assessment Tool for Studies with Diverse Designs

	Score (0-3)			
Criteria	Paper:	Paper:	Paper:	Paper:
Explicit theoretical framework				
Statement of aims/objectives in main body of report				
Clear description of research setting				
Evidence of sample size considered in terms of analysis				
Representative sample of target group of a reasonable size				
Description of procedure for data collection				
Rationale for choice of data collection tool(s)				
Detailed recruitment data				
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)				

Fit between stated research question and method of data collection (Quantitative only)				
Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative only)				
Fit between research question and method of analysis (Quantitative only)				
Good justification for analytic method selected				
Assessment of reliability of analytic process (Qualitative only)				
Evidence of user involvement in design				
Strengths and limitations critically discussed				

Scoring criteria:

- 0 = Not at all
- 1 = Very slightly
- 2 = Moderately
- 3 = Complete

Appendix C: Quality assessment summary table

Author (year)	Key Strengths	Key Limitations	Quality Score
Social Beliefs			
Carter (2012)	Clear explanation of theoretical framework and relevance to underlying research Clear statement of study aims and objectives. Clear description of research setting. Detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims and selected analytic method. Detailed discussion of strengths and limitations of the research.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample. sample size not considered (no evidence of power analysis). Lack of detailed recruitment procedure. No justification provided regarding choice of analytic method. No evidence of service user involvement in design.	31
Gregory & Peters (2017)	Clear description of research setting. Detailed description of data collection procedure. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and selected analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). No information regarding recruitment procedure. No evidence of service user involvement in design.	24
Heeren et al. (2014)	Clear explanation of theoretical framework and relevance to underlying research Clear statement of study aims and objectives. Clear description of research setting. appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). Lack of detailed information regarding data collection procedure. Lack of information regarding recruitment procedure. No evidence of service user involvement in design. minimal discussion of study limitations.	28
Holzman et al. (2014)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools.	No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). Lack of detailed information regarding data collection procedure. No justification provided regarding choice of analytic method.	23

Author (year)	Key Strengths	Key Limitations	Quality Score
Kissell et al. (2016)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method. Detailed discussion of strengths and limitations of the research.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	28
Maeda et al. (2017)	Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	Limited information provided regarding research setting. Power analysis not reported. non-clinical, student sample. Lack of detailed information regarding data collection procedure. No evidence of service user involvement in design.	26
Maeda et al. (2018)	Clear statement of study aims and objectives. Detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Good fit between aims and choice of analytic method. Detailed discussion of strengths and limitations of the research.	Limited reference to theoretical framework underlying research. Limited information provided regarding research setting. no consideration of required sample size (power analysis not reported). Non-clinical, student sample. no justification provided regarding choice of analytic method. No evidence of service user involvement in design.	24
Maeda et al. (under review)	N/A	N/A	N/A
Makkar & Grisham (2011)	Detailed description of data collection procedure. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	25

Author (year)	Key Strengths	Key Limitations	Quality Score
Makkar & Grisham (2013)	Clear statement of study aims and objectives. Clear description of research setting. detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method. Detailed discussion of strengths and limitations of the research.	No consideration of required sample size (power analysis not reported). No justification provided regarding choice of analytic method. No evidence of service user involvement in design.	30
Nordahl & Wells (under review)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Appropriate statistical assessment of selected measurement tools. Good fit between aims and analytic method.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). No evidence of service user involvement in design	28
Norton & Abbott (2017)	Clear statement of study aims and objectives. Detailed recruitment data provided. good fit between aims, method of data collection and analytic method. Detailed discussion of strengths and limitations of the research.	Limited reference to theoretical framework underlying research. No consideration of required sample size (power analysis not reported). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	26
Parsons et al. (2017)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Detailed description of data collection procedure. Appropriate statistical assessment of selected measurement tools. Good fit between aims and analytic method. Detailed discussion of strengths and limitations of the research.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). No evidence of service user involvement in design.	28
Parsons & Clerkin (2018)	N/A	N/A	N/A

Author (year)	Key Strengths	Key Limitations	Quality Score
Peschard & Philipott (2017)	Clear statement of study aims and objectives. Detailed description of data collection procedure. Good fit between aims, method of data collection and analytic method	No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). No rationale for choice of data collection tools. Limited statistical assessment of selected measurement tools. Limited justification provided regarding choice of analytic method.	24
Peschard et al. (2017)	Clear statement of study aims and objectives. Detailed description of data collection procedure. Good fit between aims, method of data collection and analytic method	No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). No rationale for choice of data collection tools. No statistical assessment of selected measurement tools. No evidence of service user involvement in design.	23
Tang et al. (2015)	Clear statement of study aims and objectives. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Minimal rationale for choice of data collection tools.	27
Taylor & Stopa (2013)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Good fit between aims and choice of analytic method.	No information provided regarding research setting. power analysis not reported. No evidence of service user involvement in design. Limited statistical assessment of selected measurement tools. Limited justification provided regarding choice of analytic method. Minimal discussion of study limitations.	24
Wells et al. (2000)	N/A	N/A	N/A

Author (year)	Key Strengths	Key Limitations	Quality Score
Wong & Moulds (2011a)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Detailed discussion of strengths and limitations of the research.	Power analysis not reported. Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	28
Wong & Moulds (2011b)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	27
Wong et al. (2014)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Good fit between aims, method of data collection and analytic method. Detailed discussion of strengths and limitations of the research.	No consideration of required sample size (power analysis not reported). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	31
Wong et al. (2016)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	30
Wong et al. (2017)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Clear description of research setting. Detailed description of data collection procedure. Good fit between aims, method of data	No consideration of required sample size (power analysis not reported). No evidence of service user involvement in design.	32

Author (year)	Key Strengths	Key Limitations	Quality Score
	collection and analytic method.		
Metacognitive Beliefs			
Fisak & Hammond (2013)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. appropriate statistical assessment of selected measurement tools. Good fit between aims and method of data collection.	No consideration of required sample size (power analysis not reported). Non-clinical, student sample (mostly female). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	25
Gkika & Wells (2016)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Detailed description of data collection procedure. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	27
Hosey (2012)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Sample size explicitly considered and justified. Appropriate statistical assessment of selected measurement tools. Good fit between aims and method of data collection.	Power analysis not reported. Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design	31
McEvoy & Perini (2009)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	23

Author (year)	Key Strengths	Key Limitations	Quality Score
Nordahl & Wells (2017)	Clear explanation of theoretical framework and relevance to underlying research. Appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). No evidence of service user involvement in design.	27
Nordahl, Nordahl, Vogel & Wells (2018)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Clear description of research setting. appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). No information regarding data collection procedure. No evidence of service user involvement in design.	27
Nordahl, et al. (under review)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). Lack of detailed information regarding data collection procedure. No evidence of service user involvement in design.	28
Shihata et al. (2017)	Clear statement of study aims and objectives. Detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims, method of data collection and analytic method.	Power analysis not reported. Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	31
Vassilopoulos et al. (2015)	Clear statement of study aims and objectives. Detailed description of data collection procedure. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). No evidence of service user involvement in design.	26

Author (year)	Key Strengths	Key Limitations	Quality Score
Vassilopoulos et al. (2017)	Clear explanation of theoretical framework and relevance to underlying research. Good rationale for choice of data collection tools provided. Appropriate statistical assessment of selected measurement tools. Good fit between aims and choice of analytic method.	No consideration of required sample size (power analysis not reported). Non-clinical, undergraduate sample (mostly female). Lack of detailed information regarding data collection procedure. Limited justification provided regarding choice of analytic method. No evidence of service user involvement in design.	24
Wells & Carter (2001)	Clear explanation of theoretical framework and relevance to underlying research. Clear statement of study aims and objectives. Representative sample of reasonable size (clinical v. control). Good fit between aims, method of data collection and analytic method.	Limited information provided regarding research setting. No consideration of required sample size (power analysis not reported). Lack of detailed information regarding data collection procedure. Limited statistical assessment of selected measurement tools. No evidence of service user involvement in design.	27

Appendix D: Quality assessment colour coded ratings

	Explicit theoretical framework	*Statement of aims / objectives in main body of report*	*Clear description of research setting*	*Evidence of sample size considered in terms of analysis*	*Representative sample of target group of a reasonable size*	*Description of procedure for data collection*	*Rationale for choice of data collection tool(s)*	*Detailed recruitment data*	*Statistical assessment of reliability and validity of measurement tool(s)*	*Fit between stated research question and method of data collection*	*Fit between research question and method of analysis*	*Good justification for analytic method selected*	*Evidence of user involvement in design*	*Strengths and limitations critically discussed*	***Quality Score***
Cognitive Studies															
Carter (2012)	3	3	3	0	1	3	3	1	3	2	3	3	0	3	**31**
Gregory & Peters (2017)	2	2	3	0	1	3	2	0	3	3	3	0	0	2	**24**
Heeren et al. (2014)	3	3	3	0	1	1	2	1	3	3	3	3	0	2	**28**
Holzman et al. (2014)	3	3	2	0	1	1	3	2	3	2	2	0	0	1	**23**
Kissell et al. (2016)	3	3	1	0	1	2	3	0	3	3	3	3	0	3	**28**
Maeda et al. (2017)	2	3	1	1	1	1	3	1	3	2	3	3	0	2	**26**
Maeda et al. (2018)	1	3	1	0	1	3	3	2	2	2	3	0	0	3	**24**
Maeda et al. (under review)	N/A														
Makkar & Grisham (2011)	2	2	1	0	2	3	2	1	3	3	3	1	0	2	**25**
Makkar & Grisham (2013)	2	3	3	0	2	3	3	2	3	3	3	0	0	3	**30**
Nordahl & Wells (2019)	3	3	1	0	2	2	2	2	3	2	3	3	0	2	**28**

	Explicit theoretical framework	*Statement of aims / objectives in main body of report*	*Clear description of research setting*	*Evidence of sample size considered in terms of analysis*	*Representative sample of target group of a reasonable size*	*Description of procedure for data collection*	*Rationale for choice of data collection tool(s)*	*Detailed recruitment data*	*Statistical assessment of reliability and validity of measurement tool(s)*	*Fit between stated research question and method of data collection*	*Fit between research question and method of analysis*	*Good justification for analytic method selected*	*Evidence of user involvement in design*	*Strengths and limitations critically discussed*	***Quality Score***
Norton & Abbott (2017)	1	3	2	0	1	2	2	3	2	3	3	1	0	3	**26**
Parsons et al. (2017)	3	3	1	0	1	3	2	1	3	2	3	3	0	3	**28**
Parsons & Clerkin (unpublished)	N/A														
Peschard & Philipott (2017)	2	3	2	0	1	3	0	2	1	3	3	1	1	2	**24**
Peschard et al. (2017)	2	3	2	0	1	3	0	2	0	3	3	2	0	2	**23**
Tang et al. (2015)	2	3	1	0	2	2	1	0	3	3	3	3	2	2	**27**
Taylor & Stopa (2013)	3	3	0	1	2	2	3	2	1	2	3	1	0	1	**24**
Wells et al. (2000)	N/A														
Wong & Moulds (2011b)	3	3	2	1	1	2	3	1	2	2	2	3	0	3	**28**
Wong & Moulds (2011c)	3	3	2	0	1	2	3	0	3	2	3	3	0	2	**27**
Wong et al. (2014)	3	3	2	0	2	3	3	2	3	3	3	1	0	3	**31**
Wong et al. (2016)	3	3	2	0	1	3	3	1	3	3	3	3	0	2	**30**
Wong et al. (2017)	3	3	3	0	3	3	2	2	2	3	3	3	0	2	**32**

	Explicit theoretical framework	*Statement of aims / objectives in main body of report*	*Clear description of research setting*	*Evidence of sample size considered in terms of analysis*	*Representative sample of target group of a reasonable size*	*Description of procedure for data collection*	*Rationale for choice of data collection tool(s)*	*Detailed recruitment data*	*Statistical assessment of reliability and validity of measurement tool(s)*	*Fit between stated research question and method of data collection*	*Fit between research question and method of analysis*	*Good justification for analytic method selected*	*Evidence of user involvement in design*	*Strengths and limitations critically discussed*	***Quality Score***
Metacognitive Studies															
Fisak & Hammond (2013)	3	3	2	0	1	2	2	1	3	3	2	1	0	2	**25**
Gkika & Wells (2016)	3	3	1	0	2	3	2	1	3	3	3	1	0	2	**27**
Hosey (2013)	3	3	2	3	1	2	2	2	3	3	2	3	0	2	**31**
McEvoy & Perini (2009)	3	3	1	0	2	2	2	1	2	2	2	1	0	2	**23**
Nordahl & Wells (2017)	3	2	2	0	2	2	2	1	3	2	3	3	0	2	**27**
Nordahl et al. (2018)	3	3	3	0	2	0	2	1	3	2	3	3	0	2	**27**
Nordahl et al. (under review)	3	3	2	0	2	1	3	2	3	2	3	2	0	2	**28**
Shihata et al. (2017)	2	3	2	2	1	3	3	1	3	3	3	3	0	2	**31**
Vassilopoulos et al. (2015)	2	3	2	0	1	3	3	0	3	2	3	2	0	2	**26**
Vassilopoulos et al. (2017)	3	2	2	0	1	1	3	1	3	2	3	1	0	2	**24**
Wells & Carter (2001)	3	3	1	0	3	1	2	2	1	3	3	3	0	2	**27**

Appendix E: Forest plots depicting the relationship between social anxiety and the cognitive and metacognitive beliefs of interest

Study name	Outcome	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gregory & Peters (2017)	SBSA total score	0.680	0.631	0.724	18.889	0.000
Heeren et al. (2014)	SBSA total score	0.272	0.197	0.344	6.872	0.000
Maeda et al (2018)	SBSA total score	0.505	0.438	0.567	12.532	0.000
Maeda et al. (2017)	SBSA total score	0.588	0.520	0.649	13.458	0.000
Makkar & Grisham (2011)	Combined	0.598	0.352	0.767	4.200	0.000
Makkar & Grisham (2013) - sample 1	SBSA total score	0.624	0.412	0.772	4.892	0.000
Makkar & Grisham (2013) - sample 2	SBSA total score	0.296	-0.002	0.545	1.946	0.052
Nordahl & Wells (under review)	SBSA total score	0.710	0.673	0.743	24.618	0.000
Parsons & Clerkin (unpublished)	SBSA total score	0.500	0.407	0.582	9.208	0.000
Parsons et al. (2017)	SBSA total score	0.590	0.463	0.693	7.546	0.000
Peschard & Philippot (2017)	SBSA total score	0.772	0.665	0.848	8.997	0.000
Peschard et al (2017)	SBSA total score	0.640	0.476	0.761	6.186	0.000
Tang et al. (2015)	SBSA total score	0.189	0.032	0.337	2.359	0.018
Wong & Moulds (2011a)	SBSA total score	0.606	0.516	0.683	10.429	0.000
Wong et al. (2014)	SBSA total score	0.419	0.320	0.508	7.643	0.000
		0.550	0.457	0.632	9.657	0.000

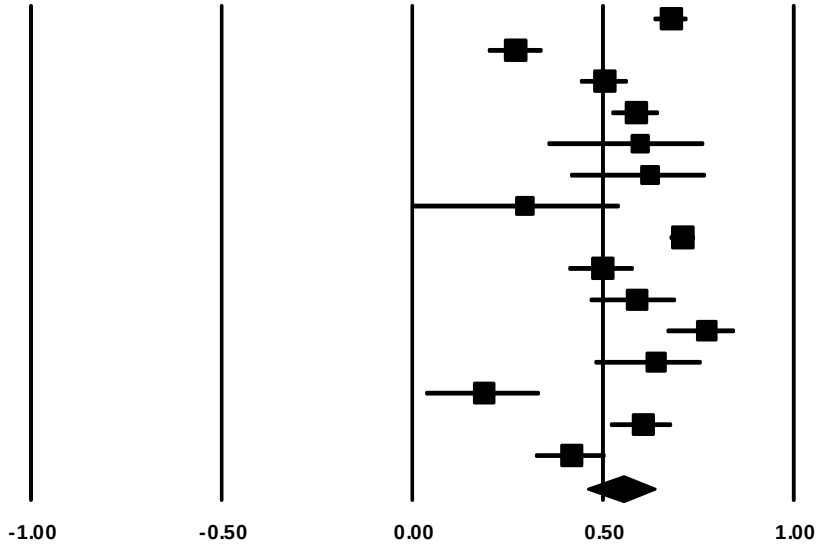

Figure E.1. A forest plot of the relationships between Self-Beliefs Related to Social Anxiety (SBSA) total score and social anxiety.

Study name	Outcome	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Heeren et al. (2014)	High standards	0.300	0.226	0.371	7.637	0.000
Holzman et al. (2014)	High standards	0.415	0.239	0.565	4.373	0.000
Kissell et al. (2016)	High standards	0.470	0.400	0.535	11.542	0.000
Maeda et al (2018)	High standards	0.315	0.235	0.391	7.344	0.000
Maeda et al. (2017)	High standards	0.395	0.309	0.475	8.340	0.000
Maeda et al. (under review)	High standards	0.305	-0.026	0.576	1.810	0.070
Makkar & Grisham (2013) - sample 1	High standards	0.562	0.343	0.722	4.484	0.000
Makkar & Grisham (2013) - sample 2	High standards	0.376	0.093	0.603	2.564	0.010
Nordahl & Wells (under review)	High standards	0.500	0.445	0.551	15.243	0.000
Norton & Abbot (2017)	High standards	0.240	-0.077	0.513	1.489	0.137
Parsons & Clerkin (unpublished)	High standards	0.330	0.222	0.430	5.747	0.000
Parsons et al. (2017)	High standards	0.300	0.133	0.451	3.447	0.001
Peschard et al (2017)	High standards	0.305	0.052	0.521	2.347	0.019
Tang et al. (2015)	High standards	0.052	-0.107	0.208	0.642	0.521
Wong & Moulds (2011a)	High standards	0.468	0.358	0.564	7.520	0.000
Wong & Moulds (2011b)	High standards	0.470	0.385	0.547	9.651	0.000
Wong et al. (2016)	High standards	0.410	0.316	0.496	7.889	0.000
		0.379	0.323	0.431	12.350	0.000

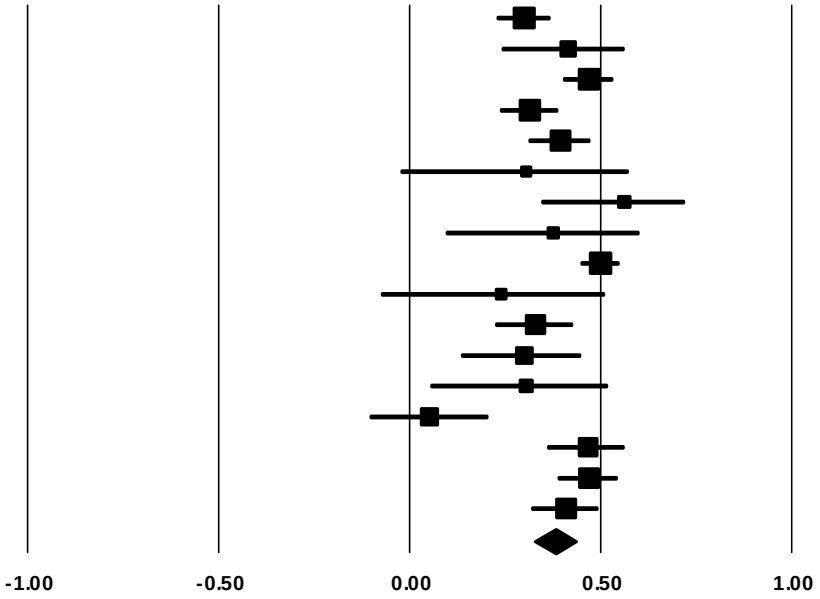

Figure E.2. A forest plot of the relationships between high standards and social anxiety.

Study name	Outcome	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Heeren et al. (2014)	Conditional beliefs	0.236	0.160	0.310	5.941	0.000
Holzman et al. (2014)	Conditional beliefs	0.560	0.410	0.681	6.269	0.000
Kissell et al. (2016)	Conditional beliefs	0.570	0.509	0.626	14.652	0.000
Maeda et al (2018)	Conditional beliefs	0.500	0.432	0.563	12.377	0.000
Maeda et al. (2017)	Conditional beliefs	0.558	0.487	0.622	12.581	0.000
Maeda et al. (under review)	Conditional beliefs	0.620	0.366	0.788	4.166	0.000
Makkar & Grisham (2013) - sample 1	Conditional beliefs	0.566	0.349	0.725	4.538	0.000
Makkar & Grisham (2013) - sample 2	Conditional beliefs	0.177	-0.131	0.455	1.128	0.259
Nordahl & Wells (under review)	Conditional beliefs	0.710	0.673	0.743	24.618	0.000
Norton & Abbot (2017)	Conditional beliefs	0.470	0.186	0.682	3.103	0.002
Parsons & Clerkin (unpublished)	Conditional beliefs	0.510	0.418	0.591	9.433	0.000
Parsons et al. (2017)	Conditional beliefs	0.560	0.427	0.669	7.047	0.000
Peschard et al (2017)	Conditional beliefs	0.624	0.454	0.750	5.934	0.000
Tang et al. (2015)	Conditional beliefs	0.198	0.042	0.345	2.474	0.013
Wong & Moulds (2011a)	Conditional beliefs	0.568	0.472	0.651	9.559	0.000
Wong & Moulds (2011b)	Conditional beliefs	0.540	0.463	0.609	11.431	0.000
Wong et al. (2016)	Conditional beliefs	0.530	0.448	0.603	10.688	0.000
		0.514	0.434	0.586	10.750	0.000

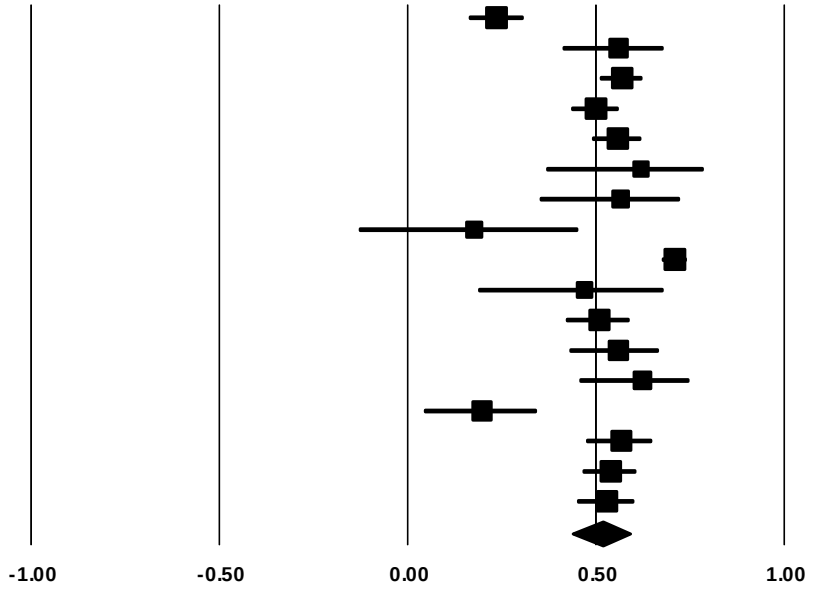

Figure E.3. A forest plot of the relationships between conditional beliefs and social anxiety.

Study name	Outcome	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Carter (2012)	Combined	0.652	0.597	0.701	16.743	0.000
Heeren et al. (2014)	Unconditional beliefs	0.140	0.061	0.217	3.475	0.001
Holzman et al. (2014)	Unconditional beliefs	0.563	0.413	0.683	6.308	0.000
Kissell et al. (2016)	Unconditional beliefs	0.570	0.509	0.626	14.652	0.000
Maeda et al (2018)	Unconditional beliefs	0.507	0.440	0.569	12.582	0.000
Maeda et al. (2017)	Unconditional beliefs	0.549	0.477	0.614	12.304	0.000
Maeda et al. (under review)	Unconditional beliefs	0.619	0.365	0.788	4.158	0.000
Makkar & Grisham (2013) - sample 1	Unconditional beliefs	0.534	0.305	0.704	4.165	0.000
Makkar & Grisham (2013) - sample 2	Unconditional beliefs	0.201	-0.107	0.473	1.284	0.199
Nordahl & Wells (under review)	Unconditional beliefs	0.720	0.684	0.752	25.186	0.000
Norton & Abbot (2017)	Unconditional beliefs	0.500	0.223	0.702	3.341	0.001
Parsons & Clerkin (unpublished)	Unconditional beliefs	0.430	0.330	0.520	7.709	0.000
Parsons et al. (2017)	Unconditional beliefs	0.650	0.537	0.740	8.633	0.000
Peschard et al (2017)	Unconditional beliefs	0.594	0.414	0.730	5.491	0.000
Tang et al. (2015)	Unconditional beliefs	0.220	0.065	0.365	2.757	0.006
Taylor & Stopa (2013)	Unconditional beliefs	0.468	0.121	0.713	2.578	0.010
Wells et al. (2000) - clinican	Combined	0.550	0.358	0.697	4.984	0.000
Wells et al. (2000) - non-clinican	Combined	0.389	0.261	0.504	5.616	0.000
Wong & Moulds (2011a)	Unconditional beliefs	0.457	0.347	0.555	7.328	0.000
Wong & Moulds (2011b)	Unconditional beliefs	0.460	0.375	0.538	9.410	0.000
Wong et al. (2016)	Unconditional beliefs	0.580	0.504	0.647	11.998	0.000
Wong et al. (2017)	Combined	0.564	0.493	0.627	12.756	0.000
		0.510	0.433	0.579	11.164	0.000

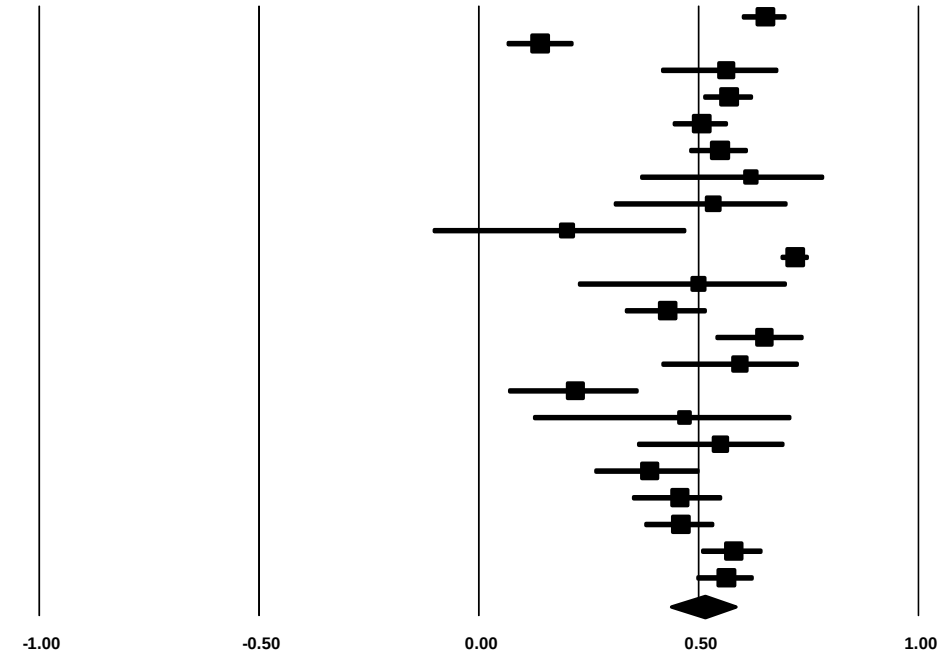

Figure E.4. A forest plot of the relationships between unconditional beliefs and social anxiety.

Study name	Subgroup within study	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gkika & Wells (2016)	Positive beliefs about worry	0.038	-0.183	0.256	0.334	0.739
McEvoy & Perini (2009)	Positive beliefs about worry	0.145	-0.076	0.352	1.290	0.197
Nordahl & Wells (2017)	Positive beliefs about worry	0.299	0.231	0.365	8.215	0.000
Nordahl et al. (2018)	Positive beliefs about worry	0.253	0.062	0.426	2.573	0.010
Nordahl et al. (under review)	Positive beliefs about worry	0.345	0.275	0.411	9.115	0.000
Wells & Carter (2001)	Positive beliefs about worry	-0.155	-0.411	0.125	-1.086	0.277
Fisak & Hammond (2013)	Positive beliefs about worry	0.429	0.332	0.517	7.905	0.000
Vassilopoulos, Brouzos & Moberly (2015)	Positive beliefs about worry	0.160	0.048	0.268	2.786	0.005
Vassilopoulos, Brouzos & Moberly (2017)	Positive beliefs about worry	0.280	0.155	0.397	4.277	0.000
		0.240	0.154	0.322	5.372	0.000

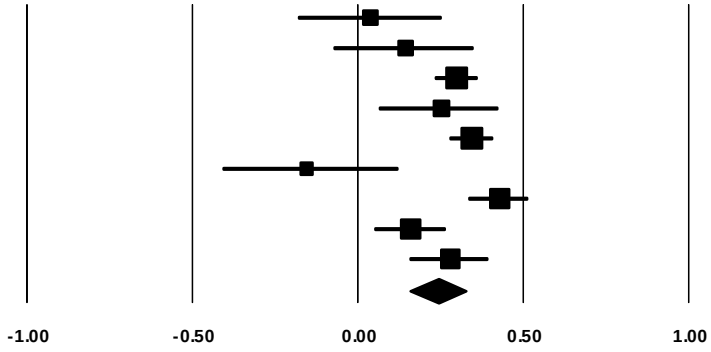

Figure E.5. A forest plot of the relationships between positive beliefs about worry and social anxiety.

Study name	Subgroup within study	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Fisak & Hammond (2013)	Negative beliefs about uncontrollability and danger	0.468	0.375	0.552	8.746	0.000
Gkika & Wells (2016)	Negative beliefs about uncontrollability and danger	0.268	0.051	0.461	2.411	0.016
McEvoy & Perini (2009)	Negative beliefs about uncontrollability and danger	0.215	-0.004	0.414	1.929	0.054
Nordahl & Wells (2017)	Negative beliefs about uncontrollability and danger	0.645	0.600	0.686	20.403	0.000
Nordahl et al. (2018)	Negative beliefs about uncontrollability and danger	0.247	0.055	0.421	2.510	0.012
Nordahl et al. (under review)	Negative beliefs about uncontrollability and danger	0.640	0.592	0.683	19.210	0.000
Shihata, McEvoy & Mullan (2017)	Negative beliefs about uncontrollability and danger	0.630	0.574	0.680	16.632	0.000
Wells & Carter (2001)	Negative beliefs about uncontrollability and danger	0.382	0.129	0.588	2.894	0.004
		0.476	0.362	0.576	7.328	0.000

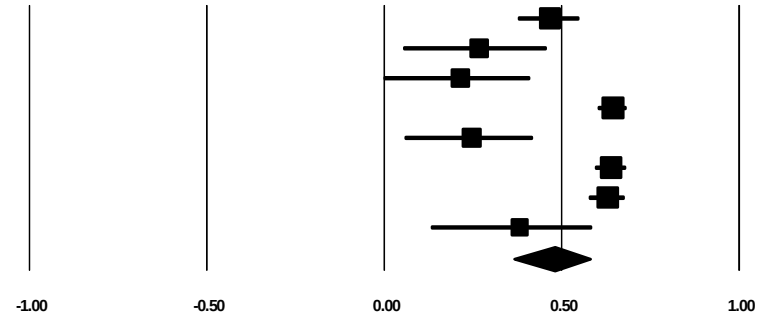

Figure E.6. A forest plot of the relationships between negative beliefs about uncontrollability and danger of thoughts and social anxiety.

Study name	Subgroup within study	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gkika & Wells (2016)	Need to control thoughts	0.232	0.013	0.430	2.074	0.038
McEvoy & Perini (2009)	Need to control thoughts	0.260	0.044	0.453	2.350	0.019
Nordahl & Wells (2017)	Need to control thoughts	0.573	0.521	0.620	17.359	0.000
Nordahl et al. (2018)	Need to control thoughts	0.218	0.025	0.396	2.204	0.027
Nordahl et al. (under review)	Need to control thoughts	0.549	0.493	0.601	15.632	0.000
Wells & Carter (2001)	Need to control thoughts	0.197	-0.080	0.446	1.399	0.162
		0.376	0.228	0.506	4.745	0.000

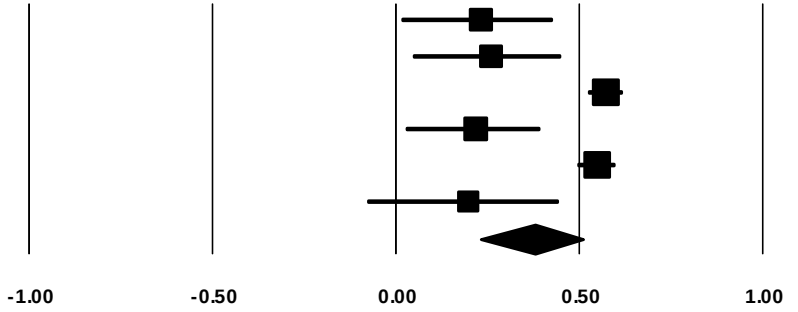

Figure E.7. A forest plot of the relationships between need to control thoughts and social anxiety.

Study name	Subgroup within study	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gkika & Wells (2016)	Cognitive Self-Consciousness	0.133	-0.089	0.343	1.174	0.240
McEvoy & Perini (2009)	Cognitive Self-Consciousness	0.015	-0.204	0.233	0.134	0.893
Nordahl & Wells (2017)	Cognitive Self-Consciousness	0.384	0.320	0.445	10.777	0.000
Nordahl et al. (2018)	Cognitive Self-Consciousness	0.231	0.038	0.407	2.341	0.019
Nordahl et al. (under review)	Cognitive Self-Consciousness	0.362	0.293	0.427	9.608	0.000
Hosey (2012)	Cognitive Self-Consciousness	0.100	-0.059	0.254	1.233	0.218
		0.233	0.115	0.345	3.825	0.000

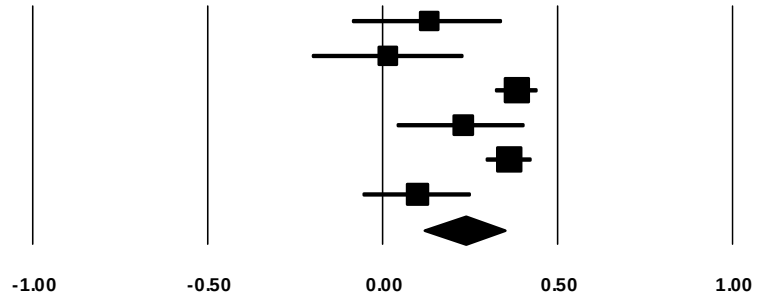

Figure E.8. Forest plot of the relationships between cognitive self-consciousness and social anxiety.

Study name	Subgroup within study	Statistics for each study				
		Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gkika & Wells (2016)	Cognitive Confidence	0.177	-0.044	0.382	1.570	0.116
McEvoy & Perini (2009)	Cognitive Confidence	0.145	-0.076	0.352	1.291	0.197
Nordahl & Wells (2017)	Cognitive Confidence	0.430	0.368	0.488	12.253	0.000
Nordahl et al. (2018)	Cognitive Confidence	0.168	-0.027	0.351	1.688	0.091
Nordahl et al. (under review)	Cognitive Confidence	0.371	0.302	0.436	9.871	0.000
		0.297	0.185	0.401	5.049	0.000

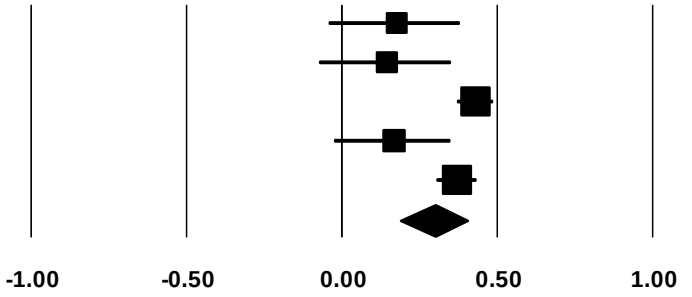

Figure E.9. Forest plot of the relationships between cognitive confidence and social anxiety.

Appendix F: Author Guidelines – Behaviour Research and Therapy

BEHAVIOUR RESEARCH AND THERAPY

AUTHOR INFORMATION PACK

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DESCRIPTION

The major focus of *Behaviour Research and Therapy* is an experimental psychopathology approach to understanding emotional and behavioral disorders and their prevention and treatment, using cognitive, behavioral, and psychophysiological (including neural) methods and models. This includes laboratory-based experimental studies with healthy, at risk and subclinical individuals that inform clinical application as well as studies with clinically severe samples. The following types of submissions are encouraged: theoretical reviews of mechanisms that contribute to psychopathology and that offer new treatment targets; tests of novel, mechanistically focused psychological interventions, especially ones that include theory-driven or experimentally-derived predictors, moderators and mediators; and innovations in dissemination and implementation of evidence-based practices into clinical practice in psychology and associated fields, especially those that target underlying mechanisms or focus on novel approaches to treatment delivery. In addition to traditional psychological disorders, the scope of the journal includes behavioural medicine (e.g., chronic pain). The journal will not consider manuscripts dealing primarily with measurement, psychometric analyses, and personality assessment.The Editor and Associate Editors will make an initial determination of whether or not submissions fall within the scope of the journal and/or are of sufficient merit and importance to warrant full review.

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For clinical psychologists, psychiatrists, psychotherapists, psychoanalysts, social workers, counsellors, medical psychologists, and other mental health workers.

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GUIDE FOR AUTHORS

INTRODUCTION

The major focus of *Behaviour Research and Therapy* is an experimental psychopathology approach to understanding emotional and behavioral disorders and their prevention and treatment, using cognitive, behavioral, and psychophysiological (including neural) methods and models. This includes laboratory-based experimental studies with healthy, at risk and subclinical individuals that inform clinical application as well as studies with clinically severe samples. The following types of submissions are encouraged: theoretical reviews of mechanisms that contribute to psychopathology and that offer new treatment targets; tests of novel, mechanistically focused psychological interventions, especially ones that include theory-driven or experimentally-derived predictors, moderators and mediators; and innovations in dissemination and implementation of evidence-based practices into clinical practice in psychology and associated fields, especially those that target underlying mechanisms or focus on novel approaches to treatment delivery. In addition to traditional psychological disorders, the scope of the journal includes behavioural medicine (e.g., chronic pain). The journal will not consider manuscripts dealing primarily with measurement, psychometric analyses, and personality assessment.

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

Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. . In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

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If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

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For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Appendix G: Exit interview guide

Questions

1. What are your thoughts about the treatment you received?

2. Were there any parts of the treatment that you liked or that were particularly helpful?

3. Were there any parts of the treatment that you didn't like or that were unhelpful?

4. Were there any parts of the treatment that didn't seem to make sense or that were difficult to understand?

5. If we were to offer this treatment to other young people with social anxiety in the future, is there anything that you think we should change?

6. Overall, what effect do you feel that this treatment has had on your social anxiety?

7. Overall, how satisfied are you with the treatment you received? (0-100%)

8. How much do you feel the therapy has helped with your problems? (0-100%)

9. Do you feel you require further support from CAMHS for your social anxiety?

Appendix H: Participant information sheet

MANCHESTER 1824
The University of Manchester

Version 5. 26/10/2018
IRAS ID: 238314

Young Person's Participant Information Sheet

Metacognitive Therapy for Social Anxiety in Youth

Would you like to join a research project looking at social anxiety in teenagers?

Before you decide, let's look at what the research is about and what it involves. Talk to your family, friends or CAMHS worker about it if you want to, or contact me if you have any questions.

We recommend that you take a least 48 hours to think about the information in this sheet before deciding whether to take part.

Why are we doing this research?

Social anxiety involves feeling nervous and scared around other people. This study aims to look at a new treatment called Metacognitive Therapy (MCT) for social anxiety in teenagers. This is a talking therapy which helps people by changing what they pay attention to and how they think in social situations. By doing this, you can begin to feel more confident and less anxious.

Although this treatment works well when treating adults who have social anxiety, it has not yet been used with young people. This study will explore whether it can help teenagers with social anxiety too.

Why have I been invited to take part?

You have been invited to take part because said that you struggle with social anxiety and that this is causing you some distress. We are looking for 5 young people between the ages of 13-17 to take part in this project.

Do I have to take part?

No! It is up to you whether you take part or not. If you decide to take part, we will ask you to sign a consent form. You can stop taking part at any time during the research without giving a reason. If you decide to stop, it won't affect the care you receive at CAMHS.

What will happen to me if I do take part?

If you would like to take part, I will meet with you at CAMHS and ask you some questions about your social anxiety. This will help to decide whether it is appropriate for you to take part in the full study. You can bring a parent or carer with you if you would like to. If you are not able to take part following this initial meeting, you will continue to receive your usual treatment from CAMHS and your involvement in the study will end at this point. We will pay for any bus, train or taxi journeys you make to come to this initial appointment.

If you are suitable to take part in the full study, you will be asked to fill in some questionnaires once a week for between 2-6 weeks and return these to me in the post. If you complete and return all of these questionnaires, you will be given a £5 high street voucher as a thank you.

You will then be offered 8 weekly sessions of MCT at your local CAMHS. Each session will last about 1 hour. This will involve talking to a me about how you've been thinking and feeling in social situations, filling in some more questionnaires and learning to do new things that can help you reduce anxiety. I will offer after school appointments where possible, although I cannot say that these will definitely be available. If you agree, I will voice record our sessions. This helps to make sure that you are getting the best possible treatment.

Within 4-6 weeks after you have had your last session of MCT, I will send you a final set of questionnaires through the post for you to fill out and return. This will allow me to see how things have been for you since your last session of MCT. If you complete and return these, you will receive another £5 high street voucher as a thank you for taking part in this study.

You will then be asked if you would be happy to give some feedback on how you found the treatment. This will involve talking on the phone with someone from the research team and answering some questions about the treatment you received. This will help us improve the treatment for other young people in the future. We may write down some of the things you say about how you found the treatment (e.g. what you liked and didn't like) and publish these when we write-up the study results. However, everything you say will be kept anonymous (we will not include your name or personal details). This part of the study is optional, but if you are happy to give us some feedback you will receive a final £5 high street voucher.

When you finish taking part in the study, I will send you some more information about the purpose of the study, how you can give feedback and how you can access further support if you would like this.

What are the benefits of taking part?

Although we cannot promise that taking part in this study will definitely help you to feel more confident and less anxious around others, MCT has been found to help improve social anxiety in adults. Therefore, it may also help teenagers with social anxiety.

This research will help provide information about the effectiveness and acceptability of MCT at treating social anxiety in young people. This information will help us to plan larger studies and might help to improve treatment options for other young people with social anxiety in the future.

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

It is unlikely that there will be any risks associated with taking part in this study. MCT has been used for many years with adults and there is no evidence of negative reactions.

You will stay on the waiting list at CAMHS during the study, although you will be unable to receive other forms of treatment for social anxiety while taking part. However, you are free to stop taking part

in the study and receive your usual treatment from CAMHS at any point. Once the study has ended, you can receive further support from CAMHS if you wish.

Will my details be kept private if I take part? Will anyone else know I'm doing this?

If you decide to take part, I will write to your GP and your CAMHS worker to let them know that you are taking part in the study. A copy of your study consent form will also be kept in your CAMHS file. During this study, your personal information will be kept confidential. This means your identity will be kept private and I will only share information with people who have a need or right to know. However, if you tell me anything which makes me feel very worried about you or other people, I may need to share some of what you have said with others involved in your care. This might be people like your parents, GP or CAMHS worker. This helps to make sure that you and others are safe. I will always try to let you know if I need to share any of what you have told me with other people.

During the study, I will have access to your CAMHS file so that I can add some notes about your treatment. However, I will only access information that would normally be available to your CAMHS team.

All information you provide during this study will be kept locked cabinets separate from any identifying information (like your name). You will not be asked to write your name on any of the questionnaires you fill out during the study. Instead, we can use a unique ID number. This means that I will be able to tell which questionnaires are yours but no one else will know how you have answered these. All data will be stored for 5 years after the study ends, after which it will be destroyed.

Some people from the University of Manchester, the NHS or regulatory authorities may need to look at the data collected in this study to make sure that it is being carried out as planned. This may involve looking at some identifiable data. The people involved in this will maintain confidentiality, meaning they will not reveal your identity or personal information to anyone else.

From 25th May 2018, the University of Manchester will be collecting and storing personal information in accordance with the General Data Protection Regulation (GDPR) and Data Protection Act 2018 which legislate to protect your personal information. The legal basis upon which we are using your personal information is "public interest task" and "for research purposes" if sensitive information is collected. For more information about the way we process your personal information and comply with data protection law, please see the attached 'Privacy Notice for Research Participants' sheet.

What will happen when the study is over?

The results of the study will be published as part of a research project but your identity will be kept private. I can send you a copy of the results and publications if you would like these.

Data collected in this study will be available to other researchers who may want to look at and re-analyse this in the future. However, they will not have access to any information regarding your identity.

Who has reviewed the research project?

Before any research goes ahead it must be checked by a Research Ethics Committee. They make sure that the research is safe and fair. This project has been reviewed and approved by the North West - Preston Research Ethics Committee [18/NW/0326] and The University of Manchester's Doctoral Research Ethics Committee.

What if I change my mind and don't want to take part anymore?

You can change your mind about taking part at any time. Just tell me, your parents or your CAMHS worker – you don't need to give any reason. This will not affect any of the further support you receive through CAMHS.

What do I need to do if I want to take part?

If you are interested in taking part, let your CAMHS worker know. They will ask you to sign a form to say you are happy for me to contact you to see if you are suitable to take part in the study.

If you are under the age of 16, your parent or the person who looks after you will also have to fill in a consent form to say that they are happy for you to take part in the study.

What if I have any questions?

This study is being conducted by Rachel Williams (Trainee Clinical Psychologist on The University of Manchester's Clinical Psychology Doctorate Programme). If you have any questions or worries about the project, you can get in touch with me at rachel.williams-7@postgrad.manchester.ac.uk

If I am unable to answer your questions or you wish to make a complaint, you can contact The Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 275 2046.

THANK YOU FOR TAKING THE TIME TO READ THIS.

PLEASE ASK ANY QUESTIONS IF YOU NEED TO.

Appendix I: Parental information sheet (ages 13-15)

MANCHESTER 1824
The University of Manchester

Version 5. 26/10/2018
IRAS ID: 238314

Parent/Carer Participant Information Sheet (ages 13-15)

Metacognitive Therapy for Social Anxiety in Youth

Why are we conducting the research study?

This is a pilot study of a new treatment called Metacognitive Therapy (MCT) for social anxiety in adolescents. MCT is a form of one-to-one talking therapy which focuses on changing patterns of attention and thinking in social situations. By doing this, people with social anxiety can begin to feel more confident and reduce their anxiety when interacting with others.

Although preliminary evidence suggests that MCT is an effective treatment for social anxiety in adults, this is the first study to evaluate the use of MCT for social anxiety within an adolescent population. The research aims to provide an indication of whether this treatment is acceptable to young people and whether it can work, with a view to moving towards larger scale studies.

Who is carrying out the research?

The research is being conducted by Rachel Williams (Trainee Clinical Psychologist on The University of Manchester's Clinical Psychology Doctorate Programme) under the supervision of Professor Adrian Wells and Dr Mark Knowles (Clinical Psychologist).

Who has reviewed the study?

This study has been reviewed and approved by the North West - Preston Research Ethics Committee [18/NW/0326] and The University of Manchester's Doctoral Research Ethics Committee. These are independent groups of people working to protect participants' interests.

Your options

a) *I do not want my child to take part*

Participation is entirely voluntary. If you do not wish for your child to participate, you do not need to do anything further and your child's treatment at Child and Adolescent Mental Health Services (CAMHS) will not be affected.

b) *I do want my child to take part*

If you are interested in your child taking part in this study, a convenient time to will be arranged for the researcher to contact you and your child. This will give you the opportunity to ask any questions you may have about the study. If you still agree to your child participating, you will both be invited to an initial meeting with the researcher at CAMHS during which your child will be asked to sign a consent form to show that they agree to take part. As your child is under the age of 16, we will also require consent from a parent/carer. However, your child is free to withdraw from the study at any time, without giving a reason.

During this initial meeting, I will ask your child some questions about their social anxiety. This will help to determine whether it is appropriate for them to participate in the full study. If they are not suitable to participate, they will continue to receive their usual treatment from CAMHS and their involvement in the study will end at this point. Any travel costs associated with attending this initial appointment (e.g. bus fare) will be reimbursed.

If they are suitable to take part, they will be invited to participate in the full study. During the initial phase of the study, your child will be asked to complete 4 measures once a week for between 2-6 weeks and return these to their local CAMHS in the pre-paid envelopes provided. Your child can receive a weekly text and courtesy call to remind them to do this and the researcher can help your child to complete these over the phone if necessary. A £5 high street voucher will be available for all young people who complete and return all measures in this part of the study.

Following this, your child will be invited to attend 8 weekly sessions of MCT at their local CAMHS. Each session will last for approximately 1 hour and will be audio recorded to ensure your child is receiving the best possible treatment. During these sessions, your child will be asked about how they've been thinking and feeling when in social situations and will be asked to complete some more questionnaire measures to allow us to monitor their progress. Where possible, your child will be offered after school appointments (although these cannot be guaranteed).

Within 4-6 weeks after their last session of MCT, your child will be asked to complete and return a final set of 4 measures via the post. This allows us to obtain a final measure of their level of social anxiety and see whether any benefits of receiving MCT have been maintained over time. Your child can receive a reminder text and courtesy call to remind them to do this. The researcher can help your child to complete these over the phone if necessary. Further £5 high street vouchers will be available for those who complete and return all follow-up measures.

When your child has returned these final measures, they will be asked to give us some feedback on how they found the treatment. This part of the study is optional and would involve talking briefly on the phone with another member of the research team and answering some questions about the treatment they received. We may publish direct quotes obtained during feedback interviews, but these will be anonymised and no personally identifiable information will be published. If your child is happy to give us some feedback on the treatment, they will receive a final £5 high street voucher.

When your child's involvement in the study finishes, I will send them some more information about the purpose of the study, how they can give feedback and how they can access further support if required.

Information will be kept strictly confidential

If you consent to your child taking part, we will write to their GP and CAMHS Clinician to let them know that they will be participating in this study. Copies of your child's study consent forms will also be kept in their CAMHS file. All information you and your child provide will be kept strictly confidential, meaning their identity will be kept private. However, should your child disclose anything which raises concerns about possible harm to themselves or others, this information may need to be shared with relevant individuals (e.g. their GP or CAMHS case manager) for the purpose of safety.

During the study, the researcher will have access to your child's relevant notes within CAMHS in order to make brief entries regarding your child's treatment (MCT). The researcher will not be accessing any information above and beyond that which would be usually available to your child's CAMHS team.

All information collected during the study will be anonymised with all young people being allocated a unique identification number. Data will be stored securely locked cabinets separate from any identifying information. All data will be stored for 5 years after completion of the study, after which it will be destroyed.

Individuals from the University of Manchester, NHS Trust or regulatory authorities may need to look at the data collected for this study to make sure the project is being carried out as planned. This may involve looking at identifiable data but all individuals involved in auditing and monitoring the study will have a strict duty of confidentiality to your child as a research participant.

From 25th May 2018, the University of Manchester will be collecting and storing personal information in accordance with the General Data Protection Regulation (GDPR) and Data Protection Act 2018 which legislate to protect your child's personal information. The legal basis upon which we are using your child's personal information is "public interest task" and "for research purposes" if sensitive information is collected. For more information about the way we process personal information and comply with data protection law, please see the attached 'Privacy Notice for Research Participants' sheet.

Are there potential benefits?

It is hoped that this study will help provide information about the effectiveness of MCT for social anxiety and how acceptable it is to adolescents. This knowledge will help us to plan larger studies in the future.

This treatment may be of personal benefit to those who take part as MCT has been found to be effective at reducing social anxiety in adults. Therefore, it may also be of benefit for young people with social anxiety and should help to reduce symptoms.

Are there potential risks?

There are unlikely to be any risks associated with this taking part in this study. MCT has been used for many years with adults and there is no evidence of negative reactions to this intervention. Treatment will be adjusted so that the pace and activities are made as comfortable as possible for each person participating in this study.

Your child will remain on the waiting list at CAMHS for the duration of the study, although they will be unable to receive other forms of psychological treatment for social anxiety (or other mental health conditions) while taking part. However, your child is free to opt out of the study and receive treatment as usual from CAMHS at any point if this is something they feel they need or would prefer. Once the study has ended, they can receive further support from CAMHS if required.

What do I do now?

If you are happy for your child to participate or you would like to find out more information about the study, you should let their CAMHS worker know. They will ask you to sign a form to say you are happy for me to contact you and your child. We can then arrange a time to have an initial meeting, during which your child's suitability for full participation will be determined. As your child is under the age of 16, we will also require a parental signature on the consent form to show that you agree to your child taking part in this study.

Please contact the researcher directly if you wish to further discuss the study and possible participation (see contact details below).

Who do I contact?

If you or your child have any concerns or questions regarding this study, please contact the researcher at rachel.williams-7@postgrad.manchester.ac.uk. If they are unable to adequately answer your questions or concerns, or if you wish to make a complaint, please contact The Research Governance and Integrity

Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 275 2046.

What happens once the study is over?

The results of the study are intended to be published in relevant scientific journals and other publications accessible to healthcare professionals. Your child will not be identifiable in any of the published documentation. All participants will be able to receive a copy of the results and relevant publications if they wish. Results will also be fed back to staff at the research sites and may be presented at relevant conferences.

Data collected in this study will be available via Open Access. This means that other researchers will be able to request and re-analyse the study data at a later date. However, they will not have access to any information regarding your child's identity.

THANK YOU FOR YOUR TIME

Please retain this information sheet for your records

Appendix J: Parental information sheet (ages 16-17)

MANCHESTER 1824
The University of Manchester

Version 5. 26/10/2018
IRAS ID: 238314

Parent/Carer Participant Information Sheet (ages 16-17)

Metacognitive Therapy for Social Anxiety in Youth

Why are we conducting the research study?

This is a pilot study of a new treatment called Metacognitive Therapy (MCT) for social anxiety in adolescents. MCT is a form of one-to-one talking therapy which focuses on changing patterns of attention and thinking in social situations. By doing this, people with social anxiety can begin to feel more confident and reduce their anxiety when interacting with others.

Although preliminary evidence suggests that MCT is an effective treatment for social anxiety in adults, this is the first study to evaluate the use of MCT for social anxiety within an adolescent population. The research aims to provide an indication of whether this treatment is acceptable to young people and whether it can work, with a view to moving towards larger scale studies.

Who is carrying out the research?

The research is being conducted by Rachel Williams (Trainee Clinical Psychologist on The University of Manchester's Clinical Psychology Doctorate Programme) under the supervision of Professor Adrian Wells and Dr Mark Knowles (Clinical Psychologist).

Who has reviewed the study?

This study has been reviewed and approved by the North West - Preston Research Ethics Committee [18/NW/0326] and The University of Manchester's Doctoral Research Ethics Committee. These are independent groups of people working to protect participants' interests.

Options

a) *My child does not wish to take part*

Participation is entirely voluntary. If your child does not wish to participate, they do not need to do anything further and their treatment at Child and Adolescent Mental Health Services (CAMHS) will not be affected.

b) *My child does wish to take part*

If your child is interested in taking part in this study, a convenient time to will be arranged for the researcher to contact your child. This will give them the opportunity to ask any questions they may have about the study. If they still agree to participating, your child will invited to an initial meeting with the researcher at CAMHS and will be asked to sign a consent form to show that they agree to take part. However, your child is free to withdraw from the study at any time, without giving a reason.

Young people aged 16 or above will be assumed to be able to provide consent to participate in the study without requiring formal consent from a parent/carer. However, you are free to accompany your child to their initial appointment with the researcher if this is something they would like and we will be happy to answer any questions you may have about the study.

During this initial meeting, I will ask your child some questions about their social anxiety. This will help to determine whether it is appropriate for them to participate in the full study. If they are not suitable to participate, they will continue to receive their usual treatment from CAMHS and their involvement in

the study will end at this point. Any travel costs associated with attending this initial appointment (e.g. bus fare) will be reimbursed.

If they are suitable to take part, they will be invited to participate in the full study. During the initial phase of the study, your child will be asked to complete 4 measures once a week for between 2-6 weeks and return these to their local CAMHS in the pre-paid envelopes provided. They can receive a weekly text and courtesy call to remind them to do this and the researcher can help your child to complete these over the phone if necessary. A £5 high street voucher will be available for all young people who complete and return all measures in this part of the study.

Following this, your child will be invited to attend 8 weekly sessions of MCT at their local CAMHS. Each session will last for approximately 1 hour and will be audio recorded to ensure your child is receiving the best possible treatment. During these sessions, your child will be asked about how they've been thinking and feeling when in social situations and will be asked to complete some more questionnaire measures to allow us to monitor their progress. Where possible, your child will be offered after school appointments (although these cannot be guaranteed).

Within 4-6 weeks after their last session of MCT, your child will be asked to complete and return a final set of 4 measures via the post. This allows us to obtain a final measure of their level of social anxiety and see whether any benefits of receiving MCT have been maintained over time. Your child can receive a reminder text and courtesy call to remind them to do this. The researcher can help your child to complete these over the phone if necessary. Further £5 high street vouchers will be available for those who complete and return all follow-up measures.

When your child has returned these final measures, they will be asked to give us some feedback on how they found the treatment. This part of the study is optional and would involve talking briefly on the phone with another member of the research team and answering some questions about the treatment they received. We may publish direct quotes obtained during feedback interviews, but these will be anonymised and no personally identifiable information will be published. If your child is happy to give us some feedback on the treatment, they will receive a final £5 high street voucher.

When your child's involvement in the study finishes, I will send them some more information about the purpose of the study, how they can give feedback and how they can access further support if required.

Information will be kept strictly confidential

If your child consents to taking part, we will write to their GP and CAMHS Clinician to let them know that they will be participating in this study. A copy of your child's study consent form will also be kept in their CAMHS file. All information your child provides will be kept strictly confidential, meaning their identity will be kept private. However, should your child disclose anything which raises concerns about possible harm to themselves or others, this information may need to be shared with relevant individuals (e.g. their GP or CAMHS case manager) for the purpose of safety.

During the study, the researcher will have access to your child's relevant notes within CAMHS in order to make brief entries regarding their treatment (MCT). The researcher will not be accessing any information above and beyond that which would be usually available to your child's CAMHS team.

All information collected during the study will be anonymised with all young people being allocated a unique identification number. Data will be stored securely locked cabinets separate from any identifying

information. All data will be stored for 5 years after completion of the study, after which it will be destroyed.

Individuals from the University of Manchester, NHS Trust or regulatory authorities may need to look at the data collected for this study to make sure the project is being carried out as planned. This may involve looking at identifiable data but all individuals involved in auditing and monitoring the study will have a strict duty of confidentiality to your child as a research participant.

From 25th May 2018, the University of Manchester will be collecting and storing personal information in accordance with the General Data Protection Regulation (GDPR) and Data Protection Act 2018 which legislate to protect your child's personal information. The legal basis upon which we are using your child's personal information is "public interest task" and "for research purposes" if sensitive information is collected. For more information about the way we process personal information and comply with data protection law, please see the attached 'Privacy Notice for Research Participants' sheet.

Are there potential benefits?

It is hoped that this study will help provide information about the effectiveness of MCT for social anxiety and how acceptable it is to adolescents. This knowledge will help us to plan larger studies in the future.

This treatment may be of personal benefit to those who take part as MCT has been found to be effective at reducing social anxiety in adults. Therefore, it may also be of benefit for young people with social anxiety and should help to reduce symptoms.

Are there potential risks?

There are unlikely to be any risks associated with this taking part in this study. MCT has been used for many years with adults and there is no evidence of negative reactions to this intervention. Treatment will be adjusted so that the pace and activities are made as comfortable as possible for each person participating in this study.

Your child will remain on the waiting list at CAMHS for the duration of the study, although they will be unable to receive other forms of psychological treatment for social anxiety (or other mental health conditions) while taking part. However, your child is free to opt out of the study and receive treatment as usual from CAMHS at any point if this is something they feel they need or would prefer. Once the study has ended, they can receive further support from CAMHS if required.

What next?

If your child would like to participate or find out more information about the study, they should let their CAMHS worker know. Their CAMHS worker will then ask your child to sign a form to say that they are happy for me to contact them. We can then arrange a time to have an initial meeting, during which your child's suitability for full participation will be determined. You are free to accompany your child to this initial appointment with the researcher if this is something they would like.

Please contact the researcher directly if you wish to further discuss the study and your child's possible participation (see contact details below).

Who can I contact?

If you or your child have any concerns or questions regarding this study, please contact the researcher at rachel.williams-7@postgrad.manchester.ac.uk. If they are unable to adequately answer your questions

or concerns, or if you wish to make a complaint, please contact The Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674 or 275 2046.

What happens once the study is over?

The results of the study are intended to be published in relevant scientific journals and other publications accessible to healthcare professionals. Your child will not be identifiable in any of the published documentation. All participants will be able to receive a copy of the results and relevant publications if they wish. Results will also be fed back to staff at the research sites and may be presented at relevant conferences.

Data collected in this study will be available via Open Access. This means that other researchers will be able to request and re-analyse the study data at a later date. However, they will not have access to any information regarding your child's identity.

THANK YOU FOR YOUR TIME

Please retain this information sheet for your records

Appendix K: Consent to contact form

Version 1. 17/11/2017
IRAS ID: 238314

Study Title: Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series
Researcher: Rachel Williams, Trainee Clinical Psychologist
Under the supervision of Adrian Wells, Professor of Clinical and Experimental Psychopathology

You are receiving this form because your Child and Adolescent Mental Health Service (CAMHS) Worker thinks you might be suitable for a research study looking at a new treatment for social anxiety.

If you are interested in taking part in this study and would like the researchers to contact you so that you can find out more about what is involved, please give your details below. You should only provide the information if you are happy to be contacted in that way. For example, if you do not want to be contacted by phone then do not provide a phone number.

Once you have completed your details, please ensure that you have added your signature. Tear along the dotted line, and hand the bottom half of the form back to your CAMHS Worker. We recommend that you keep the top half of the form for your own records.

✂----------

I am happy **to provide/for my health care professional to provide** (delete as appropriate) my personal details so that I can be contacted about this study.

Child's Name	
Child's Signature	
Name of Parent / Carer (if aged under 16)	
Parent / Carer Signature (if aged under 16)	
Today's date	

Please complete the details below or hand back to your CAMHS Clinician to complete on your behalf

Contact by phone	Preferred contact number	
	When would you prefer to be contacted? (please circle)	Morning/ Afternoon/ Evening/ Don't Mind
Contact by email	Email address	

Appendix L: Participant consent form

MANCHESTER 1824
The University of Manchester

Version 5. 26/10/2016
IRAS ID: 238314

CONSENT FORM

Study Title: Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series
Researcher: Rachel Williams, Trainee Clinical Psychologist

		Please Initial Box
1)	I confirm that I have read and understand the Participant Information Sheet dated 26/10/2018 (Version 5) for the above study and have had the opportunity to consider the information.	☐
2)	I confirm that I have had the opportunity to ask questions about the study and that these questions have been answered satisfactorily.	☐
3)	I understand that my participation is completely voluntary and that I am free to withdraw at any time, without giving a reason.	☐
4)	I understand that the researcher will have access to my relevant notes within Child and Adolescent Mental Health Services in order to make brief entries regarding my treatment during the study.	☐
5)	I understand that relevant sections of data collected during the study may be looked at by responsible individuals from the University of Manchester, regulatory authorities or the NHS Trust, where it is relevant to my taking part in the research. I give permission for these individuals to have access to this data.	☐
6)	I agree to my GP and CAMHS worker being told that I am taking part in this study.	☐
7)	I agree to take part in the above study.	☐
8)	Optional: I agree to be contacted by the researcher upon completion of the study regarding my thoughts about the treatment offered. I understand that this part of the study is optional and I do not have to provide feedback on the treatment if I do not want to.	☐
9)	I understand that the data collected may be published as part of a research project, including direct quotes obtained during any feedback I provide about the treatment. My identity will not be revealed in any publication.	☐
10)	If I withdraw from the study, I agree to my data being kept and used by the research team for the purposes of evaluating treatment feasibility, acceptability and associated benefits. These results will be included in relevant publications.	☐

PLEASE TURN OVER

Data Protection

The personal information we collect and use to conduct this research will be processed in accordance with data protection law as explained in the Participant Information Sheet and the Privacy Notice for Research Participants.

Name of Participant: .....

Signature: ..... Date: .....

Name of Researcher: .....

Signature: ..... Date: .....

When completed: 1 copy for Participant, 1 copy for Researcher site file, 1 (original) to be kept in CAMHS notes

Appendix M: Parent consent form

MANCHESTER 1824
The University of Manchester

Version 5. 26/10/2018
IRAS ID: 238314

CONSENT FORM

Study Title: Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series
Researcher: Rachel Williams, Trainee Clinical Psychologist

	Please Initial Box
1) I confirm that I have read and understand the Participant Information Sheet dated 26/10/2018 (Version 5) for the above study and have had the opportunity to consider the information.	☐
2) I confirm that I have had the opportunity to ask questions about the study and that these questions have been answered satisfactorily.	☐
3) I understand that my child's participation is completely voluntary and that they are free to withdraw at any time, without giving a reason.	☐
4) I understand that the researcher will have access to my child's relevant notes within Child and Adolescent Mental Health Services in order to make brief entries regarding my child's treatment during the study.	☐
5) I understand that relevant sections of data collected during the study may be looked at by responsible individuals from the University of Manchester, regulatory authorities or the NHS Trust, where it is relevant to my child's taking part in the research. I give permission for these individuals to have access to this data.	☐
6) I consent to my child's GP and CAMHS clinician being informed that they are taking part in this study.	☐
7) I consent to my child participating in the above study.	☐
8) Optional: I consent to my child being contacted by the researcher upon completion of the study regarding their thoughts around the treatment offered. I understand that this part of the study is optional and my child does not have to provide feedback if they do not want to.	☐
9) I understand that the data collected may be published as part of a research project, including direct quotes obtained during any feedback my child provides about the treatment. My child's identity will not be revealed in any publication.	☐
10) Optional: If my child withdraws from the study, I agree to their data being kept and used by the research team for the purposes of evaluating treatment feasibility, acceptability and associated benefits. These results will be included in relevant publications.	☐

PLEASE TURN OVER

Data Protection

The personal information we collect and use to conduct this research will be processed in accordance with data protection law as explained in the Participant Information Sheet and the Privacy Notice for Research Participants.

Name of Child: .....

Name of Parent / Carer: .....

Signature: ..... Date: .....

Name of Researcher: .....

Signature: ..... Date: .....

When completed: 1 copy for Participant, 1 copy for Researcher site file, 1 (original) to be kept in CAMHS notes

Appendix N: Audio recording consent form

MANCHESTER 1824
The University of Manchester

Version 1. 27/11/2017
IRAS ID : 238314

Consent Form for Audio Recordings

Study Title: Metacognitive Therapy for Social Anxiety in Youth
Researcher: Rachel Williams, Trainee Clinical Psychologist
Under the supervision of Adrian Wells, Professor of Clinical and Experimental Psychopathology

The researcher may audio record some of your sessions together. The researcher and their supervisor may then listen to these audio recordings. This is to help the researcher to learn and to make sure that you are receiving the best possible treatment.

All audio recordings will be transferred onto an encrypted memory stick at the end of each session and then deleted from the digital recording device. All audio recordings will be deleted following supervision of the researcher on a weekly basis.

You can decide whether or not you want the session to be recorded. If you do not agree, this will not affect your treatment or your involvement in this study. If you do agree, you can change your mind at any time up.

If you would like to ask a question about any of this, please talk to the researcher.

I have read the information above and I understand it.	YES / NO
I give consent for audio recordings to be made of me and my sessions with the researcher.	YES / NO
I give consent for the audio recording to be used for the purposes of the researcher's supervision.	YES/ NO

Consent for audio recordings

Name of young person: _____

Signature: _____

Date: _____

Name of parent/carer: _____

Signature: _____

Date: _____

Name of researcher: _____

Signature: _____

Date: _____

Appendix O: Individual patient scores at pre-treatment, post-treatment and follow-up

Table 8. Individual patient scores at pre-treatment, post-treatment and follow-up

Measure	Patient 1			Patient 2			Patient 3			Patient 5			Patient 6		
	Pre[†]	*Post*	*F/U*	*Pre*[†]	*Post*	*F/U*	*Pre*[†]	*Post*	*F/U*	*Pre*[†]	*Post*	*F/U*	*Pre*[†]	*Post*	*F/U*
SPAI-C	43.4	18	15	32.5	20	20	43.5	40	39	38.5	31	33	40.8	41	34
R-SPRS Distress	4.4	0	1	4.6	2	4	4.5	4	6	5.6	7	3	6	6	6
R-SPRS Avoidance	2.4	0	0	2.4	2	1	5.1	5	5.5	4.2	2	2	6.3	7	6
R-SPRS S-C	5.4	0	1	4.75	1	2	6	4	6.5	6.4	3	3	6	6	5
R-SPRS SBs	94	6	4	42.8	23	24	85.9	48	41	63.4	40	29	64.3	60	54
R-SPRS UCBs	1158	71	35	692	240	250	1165	410	790	946	580	580	1070	1180	1070
R-SPRS dwell/worry	4.6	0	0	5.8	2	3	6.1	5	6.5	7.3	2	3	6.2	6	6
R-SPRS threat	1.4	0	0	4.2	2	3	5.5	4	6	5	2	1	7	6	6
R-SPRS Positive MCBs	286	70	40	136	50	30	230	90	100	150	120	130	255	210	230
R-SPRS Negative MCBs	280	50	15	208	40	30	292.5	50	110	250	150	210	300	300	330
RCADS	81.4	31	22	47.8	39	36	69.4	48	62.5	75.8	61	70	74.8	74	68
SDQ (-prosocial)	17.4	5	8	18.4	19	18	21.1	18	21	27.6	22	26	19.3	21	19

[†]*Mean score across baseline*

SPAI-C, Social Phobia and Anxiety Inventory for Children; R-SPRS, Revised Social Phobia Rating Scale; MCBs, metacognitive beliefs; RCADS, Revised Children's Anxiety and Depression Scale; SDQ, Strengths and Difficulties Questionnaire (not including prosocial subscale)

Appendix P: NHS Research Ethics Committee and HRA Approval

NHS
Health Research Authority

North West - Preston Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

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

22 June 2018

Professor Adrian Wells
University of Manchester, School of Psychological Sciences
Section of Clinical and Health Psychology, Rawnsley Building, MRI
Manchester
M13 9WL

Dear Professor Wells

Study title:	**Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series**
REC reference:	**18/NW/0326**
Protocol number:	**N/A**
IRAS project ID:	**238314**

Thank you for your letter of 13th June 2018 responding to the Committee's request for further information on the above research and submitting revised documentation

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

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

Confirmation of ethical opinion

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

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

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

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

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System, at www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

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

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

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

Registration of Clinical Trials

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

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

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

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will

be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

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

Ethical review of research sites

NHS sites

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

Non-NHS sites

The Committee has not yet completed any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. We will write to you again as soon as an SSA application(s) has been reviewed. In the meantime no study procedures should be initiated at non-NHS sites.

Approved documents

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

Document	*Version*	*Date*
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [UoM ClinPsyD Research Subcommittee Letter]		20 November 2017
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [UoM Insurance Certificate]		01 June 2017
GP/consultant information sheets or letters [GP Letter]	2	18 February 2018
Interview schedules or topic guides for participants [Exit Interview Questions]	2	18 February 2018
IRAS Application Form [IRAS_Form_10042018]		10 April 2018
IRAS Checklist XML [Checklist_10042018]		10 April 2018
Letter from sponsor [Sponsor Letter]		05 March 2018
Non-validated questionnaire [R-SPRS]	1	07 February 2018
Other [Presentation for CAMHS staff to aid recruitment]	1	18 February 2018
Other [Distress Protocol]	1	02 February 2018
Other [PanMan form]	1	19 December 2017
Other [Research Data Management Plan]	3	18 February 2018
Other [Debriefing Sheet]	1	18 February 2018
Other [Thank You Letter Baseline]	1	17 November 2017
Other [Thank You Letter Follow-Up]	2	18 February 2018
Other [Thank You Letter Exit Interview]	1	18 February 2018
Other [Questionnaire Pack Baseline]	2	07 February 2018
Other [Questionnaire Pack Follow-Up]	2	07 February 2018

Other [Demographic Information Questionnaire]	1	07 February 2018
Other [Risk Assessment]	1	26 February 2018
Other [Combined Liability Confirmation Letter]		25 May 2017
Other [Certificate of Employers Liability Insurance]		01 June 2017
Other [Public Liability Insurance]		30 May 2017
Other [UoM Insurance Confirmation Letter]		05 March 2018
Other [ADIS-IV Interview Schedule Page 1 Scan]		
Other [ADIS-IV Interview Schedule Page 2 Scan]		
Other [ADIS-IV Interview Schedule Page 3 Scan]		
Other [Response to REC letter]		13 June 2018
Participant consent form [Audio recording consent form]	1	27 November 2017
Participant consent form [Consent to contact form]	1	17 November 2017
Participant consent form	4	13 June 2018
Participant consent form [Parent Consent Form]	4	13 June 2018
Participant information sheet (PIS) [Young Person's Participation Information Sheet]	4	13 June 2018
Participant information sheet (PIS) [Parent/ Carer Participant Information Sheet (ages 13-15)]	4	13 June 2018
Participant information sheet (PIS) [Parent /Carer Participant Information Sheet (ages 16-17)]	4	13 June 2018
Research protocol or project proposal [Research protocol]	2	18 February 2018
Summary CV for Chief Investigator (CI) [CI CV]		27 November 2017
Summary CV for student [Student CV]		19 November 2017
Summary CV for supervisor (student research) [Supervisor CV]		27 November 2017
Validated questionnaire [RCADS]		
Validated questionnaire [Session Feedback Questionnaire]		
Validated questionnaire [Credibility Expectancy Questionnaire]		
Validated questionnaire [SDQ Initial]		
Validated questionnaire [SDQ Follow-up]		
Validated questionnaire [SPAI-C]		

Statement of compliance

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

After ethical review

Reporting requirements

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

- Notifying substantial amendments

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

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

User Feedback

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

HRA Training

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

18/NW/0326	**Please quote this number on all correspondence**

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

Yours sincerely

pp

Professor Carol Haigh
Chair

Email:nrescommittee.northwest-preston@nhs.net

Enclosures: "After ethical review – guidance for researchers" *[SL-AR2]*

Copy to: *Ms Lynne Macrae*
Ms Lynne Webster, Manchester University NHS Foundation Trust

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS
Health Research Authority

Professor Adrian Wells
University of Manchester, School of Psychological Sciences
Section of Clinical and Health Psychology, Rawnsley Building, MRI
Manchester
M13 9WL

Email: hra.approval@nhs.net
Research-permissions@wales.nhs.uk

22 June 2018

Dear Professor Wells

HRA and Health and Care Research Wales (HCRW) Approval Letter

Study title:	**Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series**
IRAS project ID:	**238314**
REC reference:	**18/NW/0326**
Sponsor	**The University of Manchester**

I am pleased to confirm that HRA and Health and Care Research Wales (HCRW) Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

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

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

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

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

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

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

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

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

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

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

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

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

The sponsor contact for this application is as follows:

Name: Rachel Williams
Tel: 07792573560
Email: rachel.williams-7@postgrad.manchester.ac.uk

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

Your IRAS project ID is **238314**. Please quote this on all correspondence.

IRAS project ID	238314

Yours sincerely

Simon Connolly
Senior Assessor

Email: hra.approval@nhs.net

Copy to: *Lynne Macrae, University of Manchester*
Lynne Webster, Manchester University NHS Foundation Trust

Appendix Q: Local NHS Site Approval

NHS
Manchester University
NHS Foundation Trust

Research Office
Research and Innovation Division
1st Floor – Nowgen Centre
29 Grafton Street
Manchester
M13 9WU

☎: 0161 276 3565
: 0161 276 5766
e✉: R&D.Applications@mft.nhs.uk

Rachel Williams
Division of Psychology and Mental Health
Faculty of Biology, Medicine and Health
The University of Manchester
2.01, 2nd Floor Zochonis Building
Brunswick Street
Manchester
M13 9PL

MFT Study Ref: B00209
Date: 24/07/2018

Dear Rachel,

Letter of access for research
Title of project: Metacognitive Therapy for Social Anxiety in Youth: A Systematic Replication Series

This letter confirms your right of access to conduct research through Manchester University NHS Foundation Trust (MFT) for the purpose and on the terms and conditions set out below. This right of access commences on **24/07/2019** and ends on **30/04/2019** unless terminated earlier in accordance with the clauses below.

As an existing NHS employee you do not require an additional honorary research contract with MFT. MFT is satisfied that the research activities that you will undertake in the organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this organisation that the necessary pre-engagement checks are in place in accordance with the role you plan to carry out in MFT. Evidence of checks should be available on request to MFT.

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

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

While undertaking research through MFT, you will remain accountable to your employer **University of Manchester** but you are required to follow the reasonable instructions of your nominated manager **Dr. Mark Knowles** in this organisation or those given on her/his behalf in relation to the terms of this right of access.

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

You must act in accordance with MFT policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with MFT in discharging its/their duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on the organisations premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

If you have a physical or mental health condition or disability which may affect your research role and which might require special adjustments to your role, if you have not already done so, you must notify your employer and this NHS organisation prior to commencing your research role at each site.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

No organisation will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

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

This NHS organisation may revoke this letter may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. You must not undertake regulated activity if you are barred from such work. If you are barred from working with adults or children this letter of access is immediately terminated. Your employer will immediately withdraw you from undertaking this or any other regulated activity and you MUST stop undertaking any regulated activity immediately.

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

If your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager and the Research Office in this NHS organisation.

Yours sincerely,

Elizabeth Mainwaring
Research Support Manager

cc: Alison Robinson (Divisonal Research Manager), Adrian Wells (Principal Investigator), Mark Knowles (Field Supervisor), Richard Brown (Psychology Programme Director)