Mechanisms of change in successful treatment of childhood anxiety disorders

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Abstract

Randomised control trials (RCT) have shown that Cognitive Behaviour Therapy (CBT) is an effective treatment for Childhood Anxiety Disorders (CADs), yet not superior to active controls. Understanding the mechanisms of change for successful CAD treatment could improve outcomes, yet few studies have examined this. A recent RCT found no significant differences in treatment outcomes for guided parent-delivered CBT (GPD-CBT) and brief Solution Focused Therapy (SFBT). The present study aimed to provide an exploratory investigation of mechanisms of change in these two different, successful CAD treatments. The author developed a novel Mechanism of Change Coding Scheme (MoCCS), which included 15 variables based on cognitive-behavioural theory, examining exposure characteristics, coping skills, coping efficacy and anxiety management strategies. Audio-recordings from two treatment sessions for 91 children (45 GPD-CBT, 46 SFBT) were coded. MoCCS variables relationship to various measures of treatment outcome were examined using hierarchal regressions. Reinforcement of Exposure predicted greater improvement post-treatment for both groups. Conversely, Promotion of Exposure, Promotion of Exposure in Multiple Contexts and Promotion of Distraction predicted less improvement post-treatment. For GPD-CBT, moderate levels of Reinforcement of Coping predicted greater improvement, whereas Promotion of and Use of Cognitive Restructuring predicted less improvement. For SFBT, Promotion and Use of Cognitive Restructuring predicted more improvement. However, findings were not consistent across MoCCS measurement points or outcome measures. Engagement with Exposure, Promotion and Engagement with Exposure with a Variety of Stimuli, Engagement with Exposure in Multiple Contexts, Safety-Seeking Behaviours and Coping Efficacy did not significantly predict treatment outcomes for either intervention. Implications for CAD

treatment, particularly regarding the use of reinforcement are discussed, yet the limitations of this study make conclusions tentative. It is suggested that future research should focus on directly manipulating potential mechanisms of change and evaluating their relationship to treatment outcome.

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Chapter 1. Introduction

1.1 Overview

This study aimed to explore the mechanisms of change in successful treatment of childhood anxiety disorders (CADs) using audio-recorded data from a recent randomised controlled trial (RCT; Creswell et al., 2017). This chapter will begin with a brief overview of the nature and characteristics of CADs and a summary of the evidence base for CAD treatment, including an examination of low-intensity forms. This is followed by an argument for the need for investigations into the mechanisms of change in successful treatment of CADs. The chapter then considers the current evidence base for potential mechanisms of change proposed by two therapeutic models; cognitive behaviour therapy (CBT) and brief Solution Focused Therapy (SFBT), where it will be argued that explorative investigations are needed. Finally, based on the current evidence available, research hypotheses will be proposed.

1.2 Childhood Anxiety Disorders (CADs)

Anxiety disorders are the most common mental health disorders in children (Cartwright-Hatton, McNicol & Doubleday, 2006), with 6.5% of children worldwide likely to meet diagnostic criteria at any one time (Polanczyk, Salum, Sugaya, Caye & Rohde, 2015). The global lifetime prevalence of anxiety disorders is estimated to be 12.9% (Steel et al., 2014), with the average age of onset in early childhood (Kessler et al., 2007) and half of all lifetime cases emerging before age 12 (Merikangas et al. 2010). CADs are chronic conditions that usually do not spontaneously remit over time (Moffitt et al., 2007) and often continue into adulthood (Pine et al., 1998; Kim-Cohen et al., 2003).

CADs present in many forms, such as separation anxiety, generalised anxiety, social anxiety, specific phobia and panic disorder (DSM-V; American Psychiatric Association, 2013). Emerging evidence suggests that CADs are different from those in adolescence, possibly due to differences in developmental stages. For example, adolescents with anxiety disorders were found to have significantly higher levels of threat interpretation and negative emotion than non-anxious adolescents, yet this relationship was not found in children (Waite, Codd & Creswell, 2015). Hence it is important to establish that CADs refers to children age 12 and under. CADs have a significant detrimental impact on children's development in numerous domains, including academic performance, cognitive development and social functioning (Essau, Conradt & Petermann, 2000; Ezpeleta, Keeler, Erkanli, Costello & Angold, 2001). High rates of comorbidity are also present, particularly with other anxiety disorders, depression and externalising disorders (Angold, Costello & Erkanli, 1999; Beidel et al., 2007; Dadds & Barrett, 2001). CADs are associated with the development of subsequent mental health disorders in adulthood, including anxiety disorders (Costello et al., 2005), mood disorders (Bittner et al., 2007) and substance abuse disorders (Goodwin, Fergusson & Horwood, 2004). The high persistence, prevalence and the associated impairments in functioning suggest the need for effective interventions (Higa-McMillan, Franxi, Najarian & Chorpita, 2015).

1.3 Treatment of CADs

Psychological therapies have been evaluated and recommended as a first-line treatment for CADs (Higa-McMillan et al., 2015). The majority follow a CBT approach, which involves a therapist working directly with the child to address anxious thoughts and avoidant behaviours whilst developing coping skills, with or without additional input

from parents (Creswell, Parkinson, Thirlwall & Willets, 2016). Numerous RCTs have found CBT is effective for treating CADs (e.g. Kendall et al., 2008; Walkup et al., 2008) and a recent Cochrane Review concluded that CBT is significantly more effective than waitlist controls (James, James, Cowdry, Soler & Choke, 2013). Research into the efficacy of alternative therapies, such as systemic and psychodynamic, is limited and trailing behind CBT (Carr, 2014; Palmer, Nascimento & Fonagy, 2013).

However, CBT recovery rates vary between 47.6% and 66.4% (Warwick et al., 2017). Moreover, there is some indication that relapse occurs in up to 50% of treatment-responders (Ginsberg et al., 2014). CBT for CADs has also not been found to be superior to active controls or treatment as usual (Barrington et al., 2005; Creswell et al., 2017, James et al., 2013; Southam-Gerow et al., 2010). This differs to CBT for other childhood disorders. Obsessive compulsive disorder (OCD), for example, has very large pre-post effect sizes, outperforms medication and is equivalent to combined treatment (e.g. Romanelli, Wu, Gamba, Mojtabai & Segal, 2014; Stortch et al., 2013). It also contrasts with equivalent anxiety disorders in adults, where CBT consistently outperforms other interventions including medication and other psychological therapies (e.g. Clark et al, 2003; Hoffmann & Smits, 2008). Hence, there is a need to develop more effective treatments and understand what mechanisms need to be targeted in CAD treatment for optimal outcomes.

CBT is also expensive and not widely available (Healthcare Commission, 2006). UK figures suggest only a quarter of children with a mental health problem will see a mental health professional (Layard, 2008). Furthermore, many of these do not access therapists who are trained in or confident delivering CBT (Stallard, Udwin, Goddard & Hibbert,

2007). One way of increasing access is to implement a 'stepped care' treatment approach (Department of Health, 2008). Hence low-intensity forms of psychological therapies have recently been developed and evaluated. These are typically brief, relatively simple, first-line treatments, which are routinely administered to children with simple presentations (Thrilwall et al., 2013).

1.3.1 Low-Intensity Treatments for CADs

The full range of low-intensity treatments for CADs is currently unclear and the evidence-base is arguably in its infancy. A 2014 review indicated that two low-intensity approaches have been empirically investigated; computer-delivered CBT and therapist guided, parent-delivered CBT (GPD-CBT; Creswell, Waites & Copper, 2014). Areas receiving more recent empirical interest are also variants of CBT, including computer-delivered CBT (see Pennant et al., 2015 for review), group CBT (e.g. Donovan, Cobahm, Waters & Occhipinti, 2015; Lee, Victor, James, Roach & Bernstein, 2016) and audio-based CBT (Infantino, Donovan & March, 2016).

GPD-CBT for CADs, which involves therapists working solely with parents, has undergone rigorous empirical investigation. This treatment is proposed to have numerous advantages including reducing the need for children to attend therapy appointments, providing the opportunity to address any parenting practices that may be maintaining the child's anxiety and empowering parents to help their child overcome their difficulties (Creswell et al., 2016). This approach was first evaluated in Australia when parents of 6-12 year olds diagnosed with CAD were randomly assigned to a book-based intervention, standard group CBT involving their child or a no-treatment control condition (Rapee, Abbott & Lyneham, 2006; Lyneham & Rapee, 2006). Findings

showed that providing parents with a book led to 26% of children being diagnosis free, compared to 61% of standard group CBT and 7% of no-treatment controls. This suggested the book-intervention was somewhat effective but not as effective as standard treatment. However, a subsequent trial added telephone therapist support to the book intervention and found very positive outcomes with children in rural populations (79% of children diagnosis free).

Further UK trials have found good outcomes for GPD-CBT. Cartwright-Hatton et al. (2011) delivered 10 sessions of group CBT to 74 parents of anxious children. They found that 57% of children whose parent(s) received the intervention no longer had a diagnosis post-treatment, compared to just 15% of children in the wait-list control condition. However, there was no comparison with an active treatment. Thirlwall et al., (2013), randomly assigned 194 children to full GPD-CBT (four face-to-face sessions and four telephone conversations) and compared this with an even briefer form of GPD-CBT (two face-to-face sessions and two telephone calls). Results found that 50% of children in the full GPD-CBT condition recovered from their primary diagnosis, compared to 39% in the brief condition and 25% in the wait-list control. A small sub-sample of the original RCT (29%) were followed up 3-5 years post-treatment and 79% of children no longer met criteria for their primary diagnosis (Brown et al., 2017). Whilst this is an incomplete picture of the long-term GPD-CBT outcomes, it is promising. Furthermore, 10 sessions of GPD-CBT has been directly compared with the parent and child receiving 10 sessions of CBT each and no significant differences in child outcomes were found. Specifically, 55.3% were diagnosis free after GPD-CBT compared to 54.8% in the parent and child CBT condition and treatment gains were maintained at both 6-month and 12-month follow-up (Waters, Ford, Wharton &

Cobham, 2009). However, these studies did not compare GPD-CBT with other low-intensity approaches and many children were not diagnosis free post-treatment.

There has been a recent initial investigation into who GPD-CBT works for. Thirlwall, Coooper and Creswell (2017) found that younger children and those with a primary diagnosis of Generalised Anxiety Disorder (GAD) had more improvements post-treatment, but older children and those without a primary diagnosis of GAD had better outcomes at 6-month follow-up. Nevertheless, GPD-CBT and other low-intensity CBT treatments currently incorporate all CBT techniques, based on the assumption that they all target mechanisms of change. This is an assumption that has been untested until recently and it remains unclear if GPD-CBT should include all CBT components or if its efficiency could be improved by taking a more targeted approach (Hudson, 2005).

A recent RCT compared GPD-CBT with another low-intensity treatment for CADs; SFBT (Creswell et al., 2017). SFBT is a type of talking therapy based on social constructionist philosophy (de Shazer, 1985). SFBT focusses on working from the client's understanding of their difficulty and what they want to be different, minimising the emphasis on problems (Trepper et al., 2010). It is a flexible approach and as such has been applied across a range of difficulties in various contexts, including treatment of anxiety disorders (Corcoran & Pillai, 2009; Kim, 2008). However, it is often acknowledged that the evidence base for SFBT is insufficiently robust and comprehensive (e.g. Corocran & Pillai, 2009; Kim & Franklin, 2009). Nevertheless, the comparison between SFBT and GPD-CBT found equally positive outcomes. 59% of children in the GPD-CBT condition were 'much' or 'very much' improved, compared to 69% in the SFBT condition post-treatment. At 6-month follow-up, this

increased to 66% and 72% respectively. It would therefore appear that SFBT is also a viable low-intensity treatment for CADs.

1.4 Mechanisms of Change in Successful Treatment of CADs

A mechanism of change is defined as "the reasons why change occurred and how change came about" (Kazdin, 2007, p.3). It is argued that an understanding of mechanisms will have implications for treatment delivery, predicting treatment responses and improving CBT for CADs (Gloster et al., 2009; Weersing, Rozenman & Gonzalez 2009). Mechanisms of change can be divided into four areas: extratherapeutic factors, expectancy effects, specific therapy techniques and common factors (Lambert & Barley, 2001). A need for studies to examine the specific therapy components of CBT for CADs as mechanisms of change is consistently highlighted in the literature (e.g. Kendall, Settipani & Cummins, 2012), whereas other areas such as the therapeutic relationship have received more attention (e.g. Cummings et al., 2013). Furthermore, some recent studies suggest that typical assumptions about what aspects of the CBT model lead to symptom change may be wrong (e.g. Kendall et al., 2016). Hence the focus of the current thesis is limited to model-specific factors, rather than other possible mechanisms of change. It has been suggested that successful psychotherapy treatments may cause change for similar reasons (Kazdin, 2007). Nevertheless, different potential mechanisms of change in CADs are proposed by different models of treatment.

1.4.1 Mechanisms of Change in CADs Proposed by Cognitive-Behaviour Models

The importance of cognitions in the maintenance of anxiety disorders has been emphasised for both adults (Beck, 1976) and children (Kendall, 1985). Theorists propose that maladaptive patterns of perceiving environmental threat and danger leads

to physiological arousal and maladaptive behaviours (escape and/or avoidance). These behaviours are also thought to be key maintaining factors as they prevent the individual from finding out that their negative expectations did not come true. Thus, CBT aims to modify maladaptive thinking, change escape and avoidance behaviours and increase coping skills. CBT for CADs typically involves teaching anxiety management strategies (AMS; e.g. psychoeducation, relaxation techniques, cognitive strategies) combined with exposure to feared stimuli (Chu & Harrison, 2007). Evidence for the following proposed mechanisms of change will be discussed here: exposure to feared stimuli (exposure's relationship to therapeutic change, how exposure works: extinction and inhibitory learning theory, therapeutic techniques to optimise exposure tasks), modifying anxious thinking (evidence that anxious children think differently, modifying anxious thinking relationship to therapeutic change), coping (acquisition of coping skills and coping efficacy) and addressing physiological responses (relaxation).

1.4.1.1 Exposure to feared stimuli.

Avoidance behaviour is a key characteristic of CADs (Kendall, 2012). Although avoidance may reduce anxiety in the short-term, it is not effective in the long-term. Therefore, the consensus in the literature is that exposure to feared stimuli is one of the most, if not the most active ingredient in CBT for anxiety disorders (e.g. Clark, 1999; Crawley et al., 2013). Young people who have completed CBT also describe exposure tasks as important (Kendall & Southam-Gerow, 1996). However, it is imperative that these opinions are supported by scientific research to establish if exposure is a mechanism of change in CADs. Exposure tasks can be in various forms including graduated vs intense, brief vs prolonged, with and without various cognitive and somatic coping strategies and imaginal, interoceptive or in vivo (Craske, Treanor,

Conway, Zbozinek & Vervliet, 2014). As such, questions remain about the optimal use of exposure in successful treatments (King, Heyne & Ollendick, 2005).

1.4.1.1.1 Exposure and its relationship to therapeutic change.

To determine if a treatment ingredient is a mechanism of change, researchers are encouraged to establish a timeline between the proposed critical ingredient of treatment and later therapeutic change (Kazdin & Nock, 2003). A preliminary attempt to examine the timing of therapeutic change in CAD treatment was conducted using a multiple-baseline design with four participants (Nakamura, Pestle & Chorpita, 2009). Each child received modules of CBT in different orders. Results differed between parent and child responses to the Children's Interview for Psychiatric Syndromes (Weller, Weller, Rooney & Fristad, 1999), the Child Behaviour Checklist (Achenach, 2001) and the Phobic Beliefs Questionnaire (Davis & Ollendick, 2005). There was some suggestion from the child-reports only that exposure tasks were a key ingredient for decreasing anxiety symptom scores. However, substantial limitations of this study, including the small sample size and differences in the number of sessions received by participants, make the findings tentative at-best and largely ambiguous.

A more methodologically sound study, due to its large sample size and robust statistical analysis, was recently conducted by Peris et al. (2015). Data was analysed from a RCT in which 488 young people (aged 7-17) received CBT, psychopharmacology, their combination or pill placebo. Longitudinal discontinuity analyses, also known as piecewise linear regressions, were conducted. This evaluated whether a shift in outcome occurred following the onset of an event. Outcome measures included weekly therapist ratings and monthly independent evaluator ratings of anxiety symptom

severity and global functioning. Findings indicated that introducing exposure tasks significantly accelerated the rate of progress on measures of symptom severity and global functioning. However, counter to expectations, exposure tasks did not alter the rate of progress in the specific domain it was intended to target (i.e. avoidance). Notably, age was a significant mediator of the impact of exposure on treatment trajectory; younger participants benefited more from exposure tasks than older participants. This perhaps provides more evidence that CADs are different from anxiety experienced in adolescence. Alternatively, it may suggest that avoidance becomes more entrenched and difficult to treat over time. Treatment condition was also a significant mediator, with those in the CBT only condition demonstrating steeper rates of improvement following exposure tasks. This suggests treatment-driven exposure may be more important in the absence of medication, perhaps because medication leads to more spontaneous exposure. However, the substantial differences in improvement rate across participants suggests other mechanisms not examined in this study may be operating and it does not provide an explanation of *how* exposure works. Nevertheless, this study provides strong evidence that exposure is a mechanism of change in CADs.

1.4.1.1.2 How Exposure Works: Extinction and inhibitory learning theory.

Extinction and inhibitory learning theory, based on a Pavlovian conditioning model, provides an explanation for *how* exposure works as a mechanism of change. The theory suggests that a neutral or conditional stimulus (CS) is followed by an aversive or unconditional stimulus (US). Following numerous repetitions, encountering the CS produces an anticipatory fear reaction, named a conditional response (CR). This procedure is known as fear conditioning. The CR can be reduced by extinction, which involves the CS being presented repeatedly without the presence of the US. When

exposure therapy was first proposed by Wolpe (1958), it was based on early models of extinction learning and thus exposure therapy is proposed to be the clinical proxy of extinction (Craske et al., 2014).

An inhibitory learning model, which is viewed as being central to extinction (Bouton, 1993), proposes that a new, secondary learning about the CS-US develops alongside the original CS-US association learned during fear conditioning. That is, the original CS-US is not removed during extinction and thus the CS possesses two meanings (Craske et al., 2014). The original association can be uncovered, which explains why return of fear, occasions when a CS re-elicits the CR, can occur following exposure therapy (e.g. Craske & Mystowski, 2006). This includes spontaneous recovery (when the fear response is tested after time has passed since extinction; Baum, 1988), fear renewal (if the context is changed between extinction and retest; Bouton, 1993), fear reinstatement (if unpaired US presentations occur in between extinction and retest; Rescorla & Heth, 1975) and fear reacquisition (if the original CS-US pairings are repeated post-extinction; Ricker & Bouton, 1996).

The inhibitory learning model is supported by research into the underlying neural mechanisms of fear extinction in adults (Milad et al., 2007; Milad et al., 2009). Furthermore, systematic reviews and meta-analyses have concluded that impaired extinction learning and memory are apparent in adults with anxiety disorders (e.g. Duits et al., 2015; Milad, Rosenbaum & Simon, 2014). This highlights that they have deficits in the learning processes required for exposure-based treatments to produce sufficient therapeutic change. Hence extinction and inhibitory learning theory is now considered a major mechanism for reducing fear during exposure therapy in adults (Pittig, van den

Berg & Vervliet, 2015). However, as there are considerable differences between anxious adults and young people in terms of neural components (Lau et al., 2011; Britton et al., 2013), generalising adult findings to children is likely to be invalid.

A recent systematic review on threat conditioning and extinction in young people with and without anxiety disorders was conducted (McGuire et al., 2016). Thirty studies were included in the review. They all used a differential conditioning procedure with young people under the age of 18, who were either not anxious, diagnosed with anxiety disorders, OCD, post-traumatic stress disorder (PTSD) and/or related difficulties. Despite discrepancies between objective and subjective outcome measures and generally a limited amount of available research, some interesting findings emerged. Firstly, conditioning studies in non-anxious and anxious young people indicated that several factors, including age, gender and developmental stage, influenced threat conditioning and extinction (e.g. Michalska et al., 2016; Shechner, Hong, Britton, Pine & Fox, 2014). Secondly, children compared to adolescents and adults, demonstrated impairments in two important components for extinction learning; the ability to discriminate between conditional stimuli and/or poor contingency awareness (e.g. Jovanovic et al., 2014). In other words, children were unable to distinguish between a danger stimuli and safety stimuli and struggled to recognise the relationships between stimuli and reinforcements. Thirdly, across both conditioning and extinction studies, young people with anxiety disorders had deficits in extinction learning compared to non-anxious youth (e.g. Craske et al., 2008; Lau et al., 2008; Shechner et al., 2015; Waters, Henry & Neumann, 2009). Hence, using therapeutic strategies to optimise inhibitory learning during exposure therapy and aid its retrieval post-therapy, may improve treatment efficacy for CADs. Proposed techniques will be discussed.

1.4.1.1.3 Therapeutic techniques to maximise exposure.

It has been suggested that many strategies thought to enhance inhibitory learning and its retrieval during exposure tasks are already being implemented by CAD clinicians (McGuire et al., 2016). Nevertheless, a strong evidence base is needed before strategies can justifiably be explicitly taught to CBT therapists. As the current evidence for the use of these strategies in the treatment of CADs is in its infancy, a review will also include studies from the adult literature.

1.4.1.1.3.1 Expectancy violation.

This strategy is based on the idea that a mismatch between expectancy and outcome is critical for new learning and the development of inhibitory expectancies. Hence exposures should be designed to violate frequency or intensity expectations of aversive outcomes (Rescorla & Wagner, 1972). It is hypothesised that the more the expectancy is violated, the greater the inhibitory learning. Thus, exposures are designed to accommodate "what do you need to learn" and end when the expectancy has been sufficiently violated. Learning is consolidated by asking clients for their thoughts on what they learned, focusing on whether the expected negative outcome occurred or was as bad as expected. Exposure tasks can be graded; however, this should be linked to increasing the violation condition, rather than waiting for a reduction in fear before proceeding to the next step (Craske et al., 2014).

In the adult literature, experimental support for the expectancy violation strategy was found by Deacon et al. (2013). Participants were randomised to one of four single-session treatments for panic disorder; low-dose interceptive exposure as prescribed in

a commonly-used treatment manual (Barlow & Craske, 2007) vs low-dose interceptive exposure without controlled breathing or between-trial rest periods vs intensive interceptive exposure (where participants continued to engage in the task until their prediction likelihood ratings were less than 5%) vs expressive writing (control group). They found that intensive interceptive exposure produced significantly greater reductions than all other conditions. Furthermore, this effect was fully mediated by changes in fear toleration and negative outcome expectancies. However, this study used a non-clinical sample of undergraduate students, relied on self-report measures open to bias and used an unrepresentative single session intervention.

A search of the literature yielded a lack of results specifically examining expectancy violation in CADs or an adolescent population. However, a study examining the predictors of outcome in group CBT for CAD found some potentially promising results. Treatment responders rated their level of distress during exposure tasks significantly higher than non-treatment responders. The authors proposed that this higher level of distress strengthened the violation of outcome expectancy (Waters, Potter, Jamesion, Bradley & Mogg, 2015). However, this is merely speculation about the underlying mechanism of change for this result and needs further investigation.

1.4.1.1.3.2 Reinforcement.

A recommended part of post-exposure processing of exposure tasks is reinforcing or rewarding young people for facing anxiety provoking stimuli (Bouchard, Mendlowitz, Coles & Franklin, 2005; Kendall et al., 2006). This is due to a belief that positive reinforcement increases the likelihood that a young person will continue to face their fears, rather than avoid them. Tiwari et al. (2013) were the first researchers to

investigate this empirically in CBT for CADs. They trained independent observers to code child and therapist behaviour post exposure tasks and found that receiving a reward was significantly associated with better treatment outcomes. Discrepancies in reports from different responders is a limitation of this study. Furthermore, the correlational analyses cannot infer direction of the relationship or causation.

1.4.1.1.3.3 Exposure dose.

There is preliminary evidence suggesting that more exposure leads to better outcomes in treatment of CADs. Voort, Svecova, Jacobsen & Whiteside (2010) found improvement in functioning was positively related to the amount of exposure in treatment. However, this study has limitations. Firstly, outcome was based solely on parental reports and thus changes in symptoms may have been missed. Secondly, information regarding treatment components was gained retrospectively from clinical notes, which may have been incomplete. Thirdly, the study only included treatment completers, who were not randomly assigned to treatment. Thus, the validity and generalisability of the findings can be questioned.

Stronger evidence for the link between more exposure and better outcomes comes from independent observer's ratings of exposure practices in an RCT. Treatment responders were more likely to be assigned between-session exposure tasks as "homework" than non-responders (Tiwari, et al., 2013). It is suggested that this encourages young people to continue to face their fears and generalises exposure effects (Bouchard et al., 2005). However, the study measured assignment of between session exposure as a dichotomous variable (yes vs no) and hence little is known about the degree of encouragement to the child to complete the task. Similarly, they did not measure the

child's engagement with the homework and assumed that the set task was completed.

Conversely, Hedtke, Kendall & Tiwari (2009) found that more exposure tasks during therapy sessions, as rated by independently trained observers of therapy video recordings, was related to poorer outcomes. The authors proposed that conducting fewer in-session exposures allowed the therapist to effectively prepare and review the task. In other words, one well prepared and executed exposure task may be better than several poorly planned and executed exposure tasks. However, findings from a recent meta-analysis of 35 CAD RCT's found that treatment outcome was unrelated to the amount of exposure in treatment protocols (Ale et al., 2015). As this was a meta-analysis as opposed to a dismantling study where exposure dose was directly manipulated, the findings are limited; analyses were based on comparing protocols of different studies, rather than the actual exposure dose in individual therapy sessions. Findings were also only based on one outcome measure, which may have missed vital information. The authors suggested future research should examine how therapists implement exposure in CBT for CADs and how patient behaviour during exposure affects outcomes. Exposure dose and its relationship to treatment outcome in low-intensity treatments is also yet to be investigated.

1.4.1.1.3.4 Deepened extinction.

This strategy involves initially conducting exposure to several anxiety cues in isolation (single extinction), before combining them in one exposure task (compound extinction). For example, in panic disorder, interoceptive exposure to a feared bodily sensation and in-vivo exposure to feared external situation would be conducted separately before being combined in an exposure task (Barlow & Craske, 2007). These

effects are presumed to occur through increased expectancy violation.

Initial evidence for the effects of deepened extinction for anxiety came from studies with animals (Janak & Corbit, 2011) and was recently examined in an adult human sample (Culver, Vervliet & Craske, 2015). Participants were presented with single extinction trials only or single extinction trials followed by compound extinction trials. Participants in the compound trials showed significantly less fear at follow-up than those who only received single extinction trials. Similarly, being in the compound extinction condition predicted less fear at the reinstatement test compared to the single extinction condition. This suggests that the effects of exposure treatments for anxiety disorders may be enhanced if individuals are firstly exposed to one fear-provoking stimulus at a time and then exposed to two fear-provoking stimuli in a compound. However, this study is limited by its non-clinical sample of undergraduate psychology students and its use of extinction compounds which are arguably not clinically relevant (geometrical shapes paired with a loud noise), which makes the findings difficult to generalise to clinically anxious individuals. Additionally, a literature search revealed a lack of studies investigating the role of deepened extinction in treatment with young people, suggesting an exploratory investigation is needed.

1.4.1.1.3.5 Occasional reinforced extinction.

Although counter-intuitive, occasional reinforced extinction involves occasional CS-US pairings during extinction training (Bouton, Woods & Pineno, 2004). This may enhance the importance of the CS, which then impacts new learning about it (Pearce & Hall, 1980). Alternatively, another exaggerated expectancy violation effect could be in action, where the individual is less likely to expect the next CS to predict the US

(Bouton et al., 2004).

Again, initial evidence in support of this comes from animal studies (Bouton et al, 2004; Woods & Bouton, 2007) and has since been investigated in adult humans (Culver, 2013). Following fear conditioning procedures, participants were randomly assigned to typical extinction, where all CS presentations were not reinforced (Control group) or to non-typical extinction (Reinforced group), where some CS presentations were reinforced and paired with the US. Based on previous findings by Bouton et al. (2004), two out of eight trials were reinforced in the Reinforced group. This study has similar limitations to those cited previously for expectancy violation and deepened extinction; it used a non-clinical sample and non-clinically representative stimuli (pictures of faces and a scream noise). Post-extinction, skin conductance responses to the CS were significantly higher in the Reinforced group than in the Control group, indicating a higher level of fear. However, regarding change from the end of the extinction to the spontaneous recovery test one week later, the Reinforced group exhibited no significant change whereas the Control group exhibited a significant increase. The same pattern of findings was reported for the subjective US-expectancy ratings to the CS. However, the clinical significance of these findings remains unclear, as the absolute fear level at the spontaneous recovery test was not significantly different for the two groups.

There are also ethical limitations to intentionally utilising occasional reinforced extinction in the treatment of anxiety disorders and it may not even be feasible in some instances. This strategy is also yet to be examined in CAD or low-intensity forms of CBT. Hence the current evidence for and potential use of this strategy is limited.

1.4.1.1.3.6 Reduction of safety-seeking behaviours.

There are many different terms that refer to "safety-seeking behaviours" (SSBs; Hedtke et al., 2009) including "safety behaviours" (Clark, 1988), "subtle avoidance behaviour" (Rapee & Heimberg, 1997) and "cognitive avoidance" (Dugas, Gagnon, Ladouceur & Freeston, 1998). SSBs are deliberate, subtle behavioural tricks or aids that individuals use during exposure tasks, based on their assumptions that these can prevent or minimise a feared outcome (Clark & Wells, 1995; Dugas et al., 1998; Salkovskis, Clark & Gelder, 1996). For example, someone with panic disorder may constantly carry around a bottle of water with them to prevent a panic attack.

In the adult anxiety disorder literature, there is an ongoing debate regarding the use of SSBs during exposure therapy. Some authors argue that SSBs during an exposure task, maintain excessive threat beliefs and result in anxiety returning (e.g. Lovibond, Mitchell, Minard, Brady & Menzies, 2009; Volders, Meulders, De Peuter, Vervliet & Vlaeyen, 2012). Indeed, there is some evidence that SSBs reduce distress in the short term, but fear returns when SSBs are no longer an option (Lovibond, Davis & O'Flaherty, 2000). Craske et al. (2014) suggest this effect is partly due to interference with inhibitory learning; individuals misattribute the absence of the catastrophe to their own behaviour, rather than developing an alternative idea. However, others have argued for the thoughtful use of SSBs in exposure tasks, particularly in the early stages of treatment as it makes treatment less aversive; reducing both refusal and drop-out rates (e.g. Rachman, 2012; Sy, Dixon, Lickel, Nelson & Deacon, 2011).

Initial reviews provided preliminary evidence for the idea that correcting maladaptive beliefs is indeed key to exposure therapy (McMillan & Lee, 2010) and that SSBs might

jeopardise corrective learning (Helbig-Lang & Petermann, 2010). However, the findings of both are limited by their reliance on systematic and narrative methods and thus no certain conclusions could be made. A recent meta-analysis found that there were no significant differences between exposure without SSB and exposure with SSB (Meulders, Van Deale, Volders & Vlaeyen, 2016). Hence the authors concluded that there was no strong evidence in support of either argument.

In the CAD literature, SSB use has received some, yet limited, attention. Kley, Tuschen-Caffier and Heinrichs (2012) found that socially anxious children aged 8 to 13 years, reported more SSB use than non-anxious controls. However, these findings do not have any implications for the use of SSBs in exposure treatment. Hedtke, Kendall & Tiwari (2009) evaluated the extent to which actual SSB use was associated with outcome and examined changes in SSB use over the course of exposure-based treatment. Findings indicated that child use of SSBs was greater during exposure tasks for treatment non-responders than for responders. Although this study needs replicating, it provides preliminary evidence that SSBs should be actively discouraged by therapists when treating CADs. The relationship between SSBs and treatment outcome also has not been examined in low-intensity CAD treatments.

1.4.1.1.3.7 Variability.

Craske et al. (2014) proposed that variability during exposure may prevent context renewal effects after treatment has finished. Indeed, varying a task that needs to be learned has been found to improve learning retention (e.g. Shea & Morgan, 1997). This can be achieved in numerous ways; by varying the exposure stimulus, by completing exposures in multiple contexts or by varying the amount of time between exposures.

i) Variability of Stimuli

Researchers have found that varying the stimuli used during exposure tasks with adults led to reduced spontaneous recovery at follow-up. For example, Rowe and Craske (1997) randomised 28 spider-phobic participants to either exposure with the same tarantula (control group) or exposure with 4 different tarantulas (experimental group). Those in the control group experienced a significant return of fear at 3-week follow-up, whereas the experimental group did not. However, differences were only found for the physiological and self-reported fear measures, with the behavioural assessment test showing no differences between the groups. In addition, the differences were significant but small. Furthermore, there are no similar studies with a child or adolescent population and as such an initial exploratory investigation is warranted.

ii) Multiple Contexts

Research with animals (e.g. Bouton, 1993), normal-population humans (e.g. Neuman, Lipp & Cory, 2008) and clinical-analogue samples (e.g. Mineka, Mystkowski, Hladek & Rodriguez, 1999; Mystkowski, Craske, Echiverii & Labus, 2006) has demonstrated that fear renewal occurs when an anxiety provoking stimulus is encountered outside the therapeutic context. Hence it is proposed that conducting exposure in multiple contexts will improve treatment outcomes by reducing the occurrence of fear renewal.

Studies conducted in laboratories with adults have conflicting results, with some indicating that exposure in multiple contexts reduces return of fear (e.g. Balooch, Neumann & Boschen, 2012; Neumann, 2006) and others indicating that exposure in multiple contexts does not reduce return of fear (e.g. Neumann, Lipp & Cory, 2007).

This may be due to methodological differences. For example, Bandarian-Balooch et al. measured self-reported shock and startle blink response and used a fear-relevant stimulus of photographs of spiders in multiple contexts. Neumann et al. (2007) on the other hand, only used a self-report measure of expectation, used an electric shock as the US and varied the context by changing lighting colour and sounds in the room, which are all arguably less ecologically valid than the Bandarian-Balooch et al. study.

Furthermore, clinical-analogue studies have consistently demonstrated that conducting exposure tasks in multiple contexts significantly improves outcomes at follow-up, when compared to conducting exposure tasks in a single context (e.g. Mystowski et al., 2006; Vansteenwegen et al., 2007; Olatunji, Tomarken, Wentworth & Fritzsche, 2017). However, these studies all have their own limitations. The findings from Mystowski et al. (2006) for example, were limited to self-reported distress scores and failed to generalise to measures of phobic cognitions, heart-rate and behavioural avoidance. The applicability of some of these studies to clinical exposure therapy are also limited as they did not use real-life contextual changes. For example, Olatunji et al. (2017) used video recordings to vary the exposure contexts.

Bandarian-Balooch et al. (2015) attempted to replicate previous clinical-analogue findings whilst addressing their limitations, by investigating if conducting exposure in multiple real-life contexts with a real-life spider increases the generalisability to novel contexts. Participants were randomly allocated to a control group (exposure in one context and follow-up in the same context), single context exposure group (exposure in one context and follow-up in novel contexts) or multiple context exposure groups (exposure in multiple contexts and follow-up in novel contexts). Findings from verbal

and behavioural measures indicated that renewal of fear can be decreased by conducting exposure tasks in multiple real-life contexts. The physiological measure (heart-rate) only supported a partial reduction in fear renewal and this study was not without its own limitations; a small sample of 46 participants, multiple contexts all taking place on a university campus, the therapist conducting the follow-up measures and use of a clinical analogue-sample. Nevertheless, these findings were in-line with a previous study conducted with adults from a clinical setting (Shiban, Pauli & Muhlberger, 2013). Currently, there do not appear to be studies examining the effect of exposure in multiple contexts on outcomes for CADs and therefore explorative studies are needed.

iii) Variability of time between exposures

Another method of manipulating exposure variability is to compare the effects of different timings between exposure sessions (Craske et al., 2014). Traditionally, anxiety treatment is administered weekly, although interest has also grown in "massed" or One-Session-Treatment (OST) for specific phobias (Öst, 1989). Ollendick and Davis (2013) reviewed OST for specific phobias in children and found that OST is more effective than eye-movement desensitization and reprocessing (e.g. Muris, Merckelbach, Holdrinet & Sijsenaar, 1998), wait-list controls (e.g. Leutgeb, Schafer, Kochel & Schienle, 2012; Öst, Svensson, Hellstron & Lindwall, 2001) and a psycho-education control group (Ollendick et al., 2009). Findings have been fairly robust across behavioural and self-report measures, across a variety of phobias (e.g. spiders, dogs, insects, heights, water), across a range of ages (7-17) and comorbidities. The authors concluded that OST is a "well-established" treatment for specific phobias with children.

Since the review, further evidence for OST for childhood specific phobias has been

found in a large RCT (Ollendick et al., 2015) and numerous smaller clinical trials (e.g. Nielsen, Andreasen & Thastum, 2016; Oar, Farrell, Waters, Conlon & Ollendick, 2015; Waters et al., 2014). Recent evidence also suggests that OST can target symptoms of co-morbid anxiety problems including social and generalised anxiety disorder (Ryan, Strege, Oar & Ollendick, 2017). Nevertheless, OST has not been compared to 'non-massed' or traditional weekly exposure and cannot be classed as superior. Future studies also need to address the lack of research into the variability of time between exposures in traditional CBT treatment, including low-intensity versions.

1.4.1.1.3.8 Retrieval cues.

Retrieval cues are distinctive stimuli that are present during exposure tasks (Dibbets et al., 2013), thought to improve the retrieval of extinction learning and preventing context renewal (Dibbets & Maes, 2011). Craske et al. (2014) suggest that during anxiety disorder treatment, cues can prompt clients to remind themselves about what they learned during exposure tasks when they are faced with a fear. Alternatively, they can carry cues with them post-treatment to remind them of what they learned during exposure therapy, providing the cues do not become SSBs.

Initial investigations of this in exposure therapy with adults have produced mixed results. Several experiments have tested the impact of a retrieval cue in computerised tasks (e.g. Dibbets, Havermans & Arntz, 2008; Dibbets & Maes, 2011) and found that post-extinction fear renewal decreased when a retrieval cue from the extinction context was present. An instructional retrieval cue, where participants are instructed to mentally recall what was learned during exposure, has shown some effects in reducing context renewal (Mystkowski et al., 2006). However, a later study found the effects of distinct

retrieval cues (a white lab coat, a pen and clipboard) on context renewal were very weak (Culver, Stoyanova & Craske, 2011). This may be because the cues were not explicitly encoded as part of the exposure context or because the cue was not presented between exposure and follow-up (Dibbetts et al., 2013). Nevertheless, these studies investigated a normal-population sample and generalisability to clinical samples cannot be assumed.

A later study examined the impact of linking retrieval cues to the exposure in a sample of adults with spider-phobia (Dibbets et al., 2013). Similar to Culver et al. (2011), no evidence was found for a retrieval cue preventing fear renewal. This study was arguably underpowered to find an effect, with only nine participants in each testing group. However, to make retrieval cues clinically relevant, one could argue that they should be effective for all participants regardless of sample size (Dibbetts et al., 2013). Alternatively, it is possible that the bracelet used as a retrieval cue was not important enough and may have been over-powered by other retrieval cues in the environment (e.g. the experimenter). Even so, evidence for the benefit of using retrieval cues in exposure is scarce, particularly with children and adolescents. Hence exploratory research is needed to assess the effects of retrieval cue use in CAD treatment.

1.4.1.1.4 Summary of exposure and CAD literature.

There is evidence that introducing exposure tasks in therapy leads to changes in CAD symptomology, indicating that exposure is a key mechanism of change. However, this does not tell us *how* exposure works. There is preliminary evidence that extinction and inhibitory-learning theory is applicable to CADs (McGuire et al., 2016), which has led to the suggestion of several strategies to optimise the effectiveness of exposure in CAD treatment. Whilst most strategies have undergone initial investigations with adults,

many studies are limited by their use of non-clinical population samples and non-clinically relevant extinction compounds. Furthermore, there is a lack of examination of their applicability to anxiety treatment for young people. This is despite many of these strategies already being included in CBT for CADs (McGuire et al., 2016). Ale et al. (2015) specifically suggest a need to distinguish between how therapists implement exposure in CBT for CADs and how patient behaviour during exposure effects outcomes, which is yet to be investigated. In addition, none of the identified strategies have been examined as mechanisms of change in GPD-CBT, which arguably may be different to the mechanisms of change in individual CBT with the child.

1.4.1.2 Modifying anxious thinking.

1.4.1.2.1 Evidence that anxious children think differently.

CBT theory suggests that anxious individuals have negative expectations and their thoughts become focused on future danger or threat. Consequently, they experience physiological arousal and behavioural avoidance, which inhibits new learning and maintains anxiety (Beck & Clark, 1997). Hence, modifying anxious thinking has been proposed as a mechanism of change in CAD treatment. However, it is unclear if anxious children perceive events or stimuli as more threatening than non-anxious children.

Negative automatic thoughts (NATs), which are images or mental activity that occur spontaneously as a response to a trigger (Beck, 1967), have consistently been associated with greater levels of anxiety in children (e.g. Schniering & Rapee, 2002.) Anxious self-talk is a type of NAT that has received specific attention. The association between anxious self-talk and increased anxiety in children is consistent across samples and developmental levels, using various assessment methods (e.g. Kendall & Chansky,

1991; Prins, 1986; Ronan & Kendall, 1997).

A review of early studies investigating if anxious children interpret situations more negatively than non-anxious controls concluded that support for an interpretation bias in anxious children was "minimal" and unconvincing (Alfano, Beidel & Turner, 2002). Moreover, when samples have been restricted to pre-adolescent samples, studies have usually failed to find significant differences in threat interpretation between anxious and non-anxious children (Creswell, Murray & Copper, 2014; Waite et al., 2015; Waters Craske, Bergman & Treanor, 2008;). However, there is some evidence that anxious children as young as four exhibit a threat interpretation bias (Dodd, Hudson, Morris & Wise, 2012). Differential findings could be explained by a difference in sample age, as one study found that group responses to ambiguous stories became significantly different with increasing age (Creswell et al., 2013). Differential findings could also be explained by differences in anxiety diagnosis, with some indication that children with social anxiety disorder are significantly more likely than other anxious children and non-anxious controls to view ambiguous situations as threatening (Alkozei, Cooper & Creswell, 2014). Nevertheless, further research is required to truly establish if anxious children interpret ambiguous situations as more threatening than non-anxious controls and if this is specific to certain ages and/or diagnoses.

1.4.1.2.1.2 Modifying anxious thinking and its relationship with therapeutic change.

In CBT for CADs, children are traditionally helped to modify anxious thoughts by identifying threat focused thoughts and re-evaluating them by developing more 'balanced' or 'helpful' thoughts (Creswell et al., 2016). The cognitive techniques

followed by exposure model has dominated the CADs literature, with 93% of studies in a meta-analysis using this approach (Reynolds, Wilson, Austin & Hopper, 2012).

However, in the adult anxiety literature, adding AMS strategies does not appear to improve exposure treatments for some anxiety disorders (e.g. Deacon & Abramowtiz, 2004; Hope et al., 1995). There is even some evidence that adding AMS *reduces* the effectiveness of some exposure treatments (e.g. Craske, Hermans & Vansteenwegen, 2006). As previously discussed, Craske et al (2014) suggest that implementing cognitive strategies may reduce the impact of exposure tasks. Hence, they recommend that cognitive interventions are only used in post-exposure questioning to facilitate new memory consolidation. However, we cannot assume that the successful components of treatment for adults with anxiety disorders transfer to CADs (Hudson, 2005).

Initial studies for CADs found that symptoms did not improve during the cognitive phase of CBT but only after exposure was introduced half-way through treatment (Kendall et al., 1997; Ollendick, 1995; Ollendick, Hagopian, & Huntzinger, 1991). Also, cognitive techniques do not appear to increase the effectiveness of exposure for specific phobias in children (Ollendick & King, 1998). Further studies suggest that cognitive techniques were no more effective than no treatment (Muris, Meesters & Gobel, 2002; Muris, Meesters & van Melick, 2002). Thus, early studies indictae that modifying cognitions is not a mechanism of change for successful treatment of CADs. These findings are supported by a recent meta-analysis (Ale et al., 2015). Thirty-five CAD RCT's were included, which had participants under the age of 19 with elevated levels of anxiety, involved randomisation into one of at least two conditions designed to reduce anxiety and provided outcome data to calculate effect sizes. They found that

delaying exposures until after the introduction of cognitive techniques does not increase the efficacy of exposure treatments. This study is limited by its inclusion of both adolescents and children. Furthermore, all the above studies are limited by their inability to examine the independent effect of different cognitive strategies, as they were combined. A measure of the child's engagement with AMS strategies was also not included and hence authors assume that by introducing these techniques children start using them, which is not necessarily the case.

Changes in anxious self-talk have been found to be related to successful treatment outcomes. For example, an RCT with 71 clinically anxious children found that anxious self-statements significantly predicted anxiety severity after treatment (Kendall & Treadwell, 2007). However, studies are limited as they did not examine dose-dependent relationships and mediators were not experimentally manipulated, nor did they examine other potential mediators. Hence, change in self-talk may have been a result of change in anxiety levels, rather than be an indication of a mechanism of change. Hogendoorn et al. (2014) provided contradictory evidence, suggesting it is an increase in positive thoughts, rather than a decrease in negative thoughts, that precede a change in symptom reduction. Furthermore, a recent, more methodologically sound study with a larger sample and robust mediational analyses, suggests that previous findings regarding anxious self-talk are demonstrating only associations between a reduction in anxious self-talk and a reduction in anxiety symptoms rather than a causal relationship (Kendall et al., 2016). They found that anxious self-talk did not predict changes in anxiety symptoms, nor was it associated with treatment assignment. Hence, it appears that reducing anxious self-talk is not a mechanism of change. Research is needed to clarify if this is also the case with low-intensity treatments.

Cognitive restructuring is a technique that has received some individual attention, with conflicting results. Tiwari et al. (2013) found that preparing young people for exposure tasks by discussing cognitive restructuring skills did not predict treatment outcome. This can be explained by extinction and inhibitory learning theory, which as discussed suggests that exposure is more effective when the outcome does not match the clients' expectation. However, Peris et al. (2015) found that introducing cognitive restructuring accelerated improvements in anxiety symptom severity and overall functioning. Nevertheless, cognitive restructuring did not have a specific effect on the occurrence of anxious thoughts and the effect was much smaller than introducing exposure tasks. Research is required into the role of cognitive restructuring in low-intensity CBT and the distinction between therapist encouragement of cognitive-restructuring and child use of this strategy is lacking.

A preliminary RCT made an initial step in determining if removing AMS from CBT for CADs has the potential to increase the effectiveness and efficiency of treatment (Whiteside et al., 2015). Fourteen children with CAD received either six sessions of AMS or six sessions of parent-coached exposure therapy. Findings suggest that parent-coached exposure is associated with greater improvement than AMS only. Given that the study was underpowered to detect significance, this significant difference is very large. In addition, findings indicate that an exposure–only treatment is safe and tolerable; no adverse events were recorded, the drop-out rate of 15% was low and identical across conditions and parents reported high levels of satisfaction and therapeutic alliance. The main limitations of this study are its small sample size and its inability to disentangle the effects of exposure and parent-involvement. Nevertheless,

this study contributes to a growing literature suggesting that AMS is not required in successful treatment of CADs. As a result, practitioners have begun to move away from an explicit focus on helping children to evaluate and change threat-based thoughts in low-intensity versions (e.g. Creswell et al., 2016).

1.4.1.2.1.3 Summary of modifying anxious thinking and CAD literature.

The association between anxious self-talk and higher levels of anxiety in children is robust. However, it remains unclear if anxious children interpret situations as more threatening than non-anxious controls and this may be due to differences in age or anxiety diagnosis. Examination of combined AMS strategies provide unconvincing results for their role as a mechanism of change in CAD treatment. Similarly, there is a lack of evidence for the use of two specific anxiety managements strategies; changing anxious self-talk and cognitive restructuring. Nevertheless, AMS as mechanisms of change in low-intensity CBT has yet to be examined and warrants clarification as clinicians begin to move away from using them. A distinction between therapist encouragement of AMS and child actual use of these strategies is also required.

1.4.1.3 Coping.

1.4.1.3.1 Acquisition of coping skills.

CBT also aims to improve coping skills or change coping styles in CADs (Prins & Ollendick, 2003). 'Coping' is defined as moving from inactive, passive strategies (e.g. escape) to more active strategies (e.g. problem solving) to address stressful situations (Chu & Harrison, 2007). Coping as a mechanism of change is relatively understudied compared to cognitive mediators (Chu & Harrison, 2007) but evidence is emerging.

Following an RCT for the effectiveness of CBT in anxious Chinese youth, the relationships between coping variables and outcome were examined (Lau, Chan, Li & Au., 2010). A multiple mediator model found that changes in coping, measured by the Coping-Questionnaire-Child/youth report and the Coping Questionnaire-Parent report (Kendall, 1994), mediated treatment outcome. However, causality cannot be assumed as temporal precedence was not established (MacKinnon, Fairchild & Fritz, 2007). In addition, results may have been effected by subjective biases in the outcome measures.

More recently, a study examined if change in coping strategies preceded reductions in anxiety symptoms (Hogendoorn et al., 2014). Findings indicated higher use of coping strategies, including problem solving, cognitive restructuring and distraction, mediated a reduction in anxiety symptoms. However, this study examined both children and adolescents together, which is a limitation due to recent suggestions that these age groups experience anxiety differently (e.g. Waite et al., 2015). The use of self-report questionnaires to measure coping strategies, which may be open to subjective biases, is a further limitation. Nevertheless, this study supports previous research that found treatment responders use more coping behavior during exposure tasks than treatment non-responders (Hedtke et al., 2009).

Problem solving is a specific coping strategy that is often a key part of CBT protocols for CADs (e.g. Kendall & Hedtke, 2006), yet it is an area that has received relatively little individual research attention (Creswell et al., 2016). Preliminary evidence suggests that children with higher levels of anxiety use more avoidant solutions to hypothetical social situations (Wilson & Hughes, 2011) and are more likely to choose avoidant responses in ambiguous situations (e.g. Waters et al., 2008; Waite et al., 2015).

This is despite having a similar level of problem solving skills as children with lower anxiety levels (Wilson & Hughes, 2011). Children who worry a lot seem to have lower confidence in their problem-solving abilities (Parkinson & Creswell, 2011). It is therefore possible that those with CADs have adequate problem solving skills but lack the confidence to put them into practice. Hence a potential mechanism of change may be encouragement from an adult to engage in problem solving and/or the child engaging in more problem solving. Nevertheless, there is a clear need for further research into the relative influence of problem solving in successful treatment of CADs.

1.4.1.3.2 Coping efficacy.

'Coping efficacy' is defined as the perception of one's ability to manage stressful events (Kendall et al., 2016). It has been suggested that coping efficacy plays a more central role in the maintenance of CADs than thoughts focused on threat or danger (e.g. Creswell & O'Connor, 2011; Waters et al., 2008). A child with greater coping efficacy is proposed to be less likely to avoid an anxiety provoking situation and thus coping efficacy is a potential mechanism of change (Kendall et al., 2016). It has been suggested that exposure tasks facilitate the development of coping efficacy (Kendall et al., 2006).

Associations between symptom improvement and coping efficacy have been found following CBT, from both child and parent reports (e.g. Kendall, 1994; Barrett, Dadds & Rappee, 1996). Post-treatment changes in coping have also been found to have higher effect sizes than changes in cognition (Prins and Ollendick, 2003). There is also some evidence that coping efficacy is particularly important for older children (Creswell et al., 2014). However, such associations cannot imply causation.

A recent examination of previous RCT data provides further support for the importance of increasing coping efficacy in CAD treatment (Kendall et al., 2016). 488 young people with an anxiety disorder were randomised to CBT, pharmacotherapy, their combination or pill placebo. Gains in coping efficacy, measured by child and parent reports, mediated improvements in anxiety symptoms in the CBT, pharmacotherapy and combination conditions. This study builds on previous research by establishing temporal precedence and using control conditions. Thus, there is growing evidence that a child's perception of their ability to cope is an active mechanism of change; anxiety symptoms reduce as children begin to view themselves as a person who can cope with difficult situations. Nevertheless, this is yet to be examined in low-intensity treatments.

1.4.1.3.3 Reinforcement of coping.

It is widely recommended that young people are reinforced for completing an exposure (e.g. Bouchard et al., 2004; Kendall et al., 2006). However, it appears to be less common to recommend that young people are reinforced for coping. This is despite, as discussed above, the proposition of coping efficacy playing a central role in the maintenance of CADs. As such, there is a lack of research directly investigating reinforcement of coping as a potential mechanism of change and hence exploratory investigations are warranted.

1.4.1.3.4 Summary of coping and CAD literature.

There is preliminary evidence suggesting that both acquisition of coping skills and gains in coping efficacy are mechanisms of change in successful treatment of CADs. However, most of the evidence for acquisition of coping skills relies on child and parent questionnaire measures (e.g. Hogendoorn et al., 2014; Lau et al., 2010). Only one study

utilised independent-observer ratings of the child's use of coping strategies (Hedtke et al., 2009). However, this did not investigate the role of encouragement to use coping strategies. Additionally, there is a lack of specific research into problem solving, a coping skill that is arguably a key part of CBT for CADs. The role of reinforcement of coping is also yet to be examined, which is surprising given its potential to be a mechanism of change. Furthermore, the role of coping skills and coping efficacy have yet to be evaluated in relation to outcome in low-intensity CBT treatment. As it cannot be assumed that mechanisms of change in low-intensity CBT are the same as those in full CBT, research is warranted in this area.

1.4.1.4 Addressing Physiological Arousal

Traditionally, CBT has involved teaching and practicing relaxation exercises. This was on the basis that physiological arousal is a key maintaining feature of anxiety and that relaxation helps anxious individuals to reinterpret body sensations in a less threatening way (Beck, 1976). However, CAD clinicians have commented that parents and children rarely practice relaxation at home and find it a difficult task to engage with (Creswell et al., 2016). Moreover, research evidence suggests that the assumption that those with CAD misinterpret their body sensation may not be accurate (e.g. Alkozei et al., 2014). As previously discussed, there is also emerging evidence that it is important to experience increased anxiety for exposure tasks to be effective (e.g. Craske et al., 2014).

Treatments that have removed relaxation have found similar outcomes to those that have included it (e.g. Rapee, 2000; Creswell et al., 2010). However, no study is yet to compare effects of CBT with and without a relaxation component. Nevertheless, families generally report that physiological symptoms subside without these being a

direct focus of treatment (Creswell et al., 2016). Furthermore, a recent meta-analysis and a comprehensive study found that introducing relaxation was not associated with significant improvements in treatment outcomes (Ale et al, 2015; Peris et al., 2015). Thus, relaxation is highly unlikely to be a mechanism of change of successful treatment in CADs. Relaxation's relationship to treatment outcome in low-intensity CBT is yet to be evaluated. Confirmation that relaxation is not a mechanism of change would provide further justification for removing this from low-intensity treatments.

1.4.2 Mechanisms of Change Proposed by SFBT

Potential mechanisms of change proposed for SFBT are (a) development of a cooperative and therapeutic alliance; (b) creating a solution versus problem focus; (c) the setting of measurable changeable goals; (d) focusing on the future through future-oriented questions and discussions; (e) scaling the continuous achievement of goals to get the clients perception of the progress they are making; (f) focusing on exceptions to the client's problems (Trepper et al., 2010).

There has been a sufficient lack of investigation into the mechanisms of change of SFBT (Grant et al., 2012). A systematic review was recently conducted looking at SFBT process change studies for all disorders and all clients' groups (Franklin, Zhang, Froerer & Johnson, 2016). Only 33 studies were found, with just 12 utilising an experimental design that investigated both techniques and outcomes. Furthermore, only a small percentage of these used standardised outcome measures. Most empirical support was found for strength-orientated techniques. However, none of the studies found by the review specifically examined the mechanisms of change in SFBT for anxiety disorders or SFBT with children. Hence, given the recent evidence of success

of this brief treatment for CADs, there is an imperative need for examination of the potential mechanisms of change in SFBT with this population.

1.5 The Current Study

Data from a recent RCT comparing GPD-CBT and SFBT presents a unique opportunity to examine the mechanisms of change in two successful low-intensity treatments for CADs (Creswell et al., 2017). As research in this area is still in its infancy, the current study aimed to be exploratory in nature. Findings will have implications for successful low-intensity treatments of CADs.

Based on the above literature review, a novel coding scheme to identify possible mechanisms of change in the successful treatment of CADs was developed (Mechanisms of Change Coding Scheme; MoCCS). Due to a lack of clarification and operationalisation in the literature of potential SFBT mechanisms of change, the MoCCS focused on the mechanisms of change proposed by CBT models. The SFBT group was still included in the analysis for numerous reasons. Firstly, the treatments produced similar clinical outcomes in the original RCT (Creswell et al., 2017) and it has been suggested that successful psychotherapy treatments bring about change for similar reasons (Kazdin, 2007). However, this is yet to be investigated for CAD treatments and hence the comparative element of study increases its originality. Secondly, similarities between CBT and SFBT have previously been noted (Trepper et al., 2010). For example, in the current treatments, it is possible that having future-orientated conversations and focusing on exceptions to the problems in SFBT, leads clients to face their fears. Thus, the MoCCS focused on the mechanisms of change proposed by CBT models, with the expectation that these would also predict outcomes

in SFBT. There is a need to examine how techniques are implemented and how patient use of techniques affects outcomes (e.g. Ale et al., 2015) and it cannot be assumed that when a child is encouraged to use a technique they then do so. Hence the MoCCS included variables for both the encouragement the child received to engage in specific therapeutic techniques and the child's actual engagement with these.

Audio-recordings of two selected therapy sessions from 91 children with a primary presenting problem of anxiety were coded. Four outcome measures were used to determine the impact of the identified treatment components; Clinical Global Impressions of Improvements (CGI-I; Guy, 1976), recovery from diagnosis of the primary presenting anxiety disorder based on the Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Albano, 1996), Spence Children's Anxiety Scale - parent (SCAS-P; Nauta et al., 2004) and child (SCAS-C, Spence, 1998).

Specifically, the hypotheses of the current study were as follows:

1. The promotion of and engagement with exposure will predict improvements in scores on outcome measures relating to anxiety (CGI-I, ADIS-C/P, SCAS-P/C) for GPD-CBT and SFBT.
2. The promotion of and engagement with strategies to optimise inhibitory learning during exposure will predict improvements in scores on outcome measures relating to anxiety (CGI-I, ADIS-C/P, SCAS-P/C) for GPD-CBT and SFBT. Specifically, the set-up and processing of expectancy violation, reinforcement of exposure, less safety-seeking behaviour use, and exposure with a variety of stimuli, numerous stimuli simultaneously and in multiple contexts.
3. The promotion of and use of coping strategies (problem solving, distraction) will

predict improvements in scores on outcome measures relating to anxiety (CGI-I, ADIS-C/P, SCAS-P/C) for GPD-CBT and SFBT.

4. Reinforcement of coping and higher levels of coping efficacy will predict improvements in scores on outcome measures relating to anxiety (CGI-I, ADIS-C/P, SCAS-P/C) for GPD-CBT and SFBT.
5. The promotion and use of anxiety management strategies (cognitive restructuring, positive self-talk and relaxation) will *not* predict improvements in scores on outcome measures relating to anxiety (CGI-I, ADIS-C/P, SCAS-P/C) for GPD-CBT and SFBT.

Chapter 2. Method

2.1 Context

The current study used data collected as part of a larger RCT for the treatment of CADs conducted in Primary Care Child and Adolescent Mental Health Services (PCAMHS) across Oxfordshire (Creswell et al., 2017). Original RCT data were collected between December 2011 and January 2015 and its primary aim was to compare GPD-CBT with SFBT. The author of the current study was not part of the original RCT.

For the current study, the author collected data for the primary outcomes of interest (mechanisms of change) by creating a novel coding scheme and coding audio-recordings of therapy sessions from the original RCT. This data were then combined with other variables of interests (i.e. demographics and measures of child anxiety) collected in the original RCT.

2.2 Ethical approval

Ethical approval for the current study was granted by the Ethics Committee at the Psychology Department, Royal Holloway University of London. Previously, the study was approved by the University of Reading (12/02) and Oxford Health NHS Foundation Trust (11/SC/0472) Research Ethics Committees for use of the data as outlined in the current study (Appendix 1).

2.3 Participants

2.3.1 Eligibility and Selection Criteria

For the original RCT, 136 participants were recruited from referrals to four NHS PCAMHS within Oxfordshire. Participating families had a child between the ages of 5

and 12 years, with a primary presenting problem of anxiety (separation anxiety, social phobia, generalized anxiety, specific phobia, panic, agoraphobia). The presenting problem was associated with clinical impairment, as assessed by the ADIS-C/P (see measures). Participants were not required to meet diagnostic criteria for an anxiety disorder as researchers wanted to be inclusive of all children referred for anxiety problems. Nevertheless, 90% of the original sample met criteria for an anxiety disorder diagnosis. Families were excluded from the study based on characteristics that may have interfered with their ability to participate in assessment and/or treatment. This included the parent or child having a poor understanding of English or a known physical or intellectual impairment, including autism spectrum disorder.

Audio-recordings of treatment sessions were available for 123 (GPD-CBT n=58 (47.2%); SFBT n=65 (52.8%)) out of 136 participants from the RCT (GPD-CBT n=69 (50.7%); SFBT n=67 (49.3%)). Explanations of missing audio-recordings can be found in Table 1. Ninety-one of the 123 participants had audio-recordings available of both therapy sessions of interest, which were all included in the completers-only sample of the present study. Those included in the sample did not statistically significantly differ from those not included in regards to child gender (χ^2 (1) = 1.06, p = .303), child ethnicity (χ^2 (1) = 0.51, p = .473), age of child at assessment (t(134) = 0.80, p = 424), marital status of parents (χ^2 (1) = 0.01, p = .919), social economic status (χ^2 (1) = 2.02, p = .155) or severity of primary diagnosis (CSR; (χ^2 (4) = 3.21, p = .523).

Table 1

Explanation of Missing Audio-Recordings from Original RCT

Number (n)	Reason audio-recordings unavailable
5	Withdrawn from the RCT due to wanting a different treatment
2	Withdrawn from the RCT due to not being contactable/not attending
1	Withdrawn from the RCT as they no longer required treatment
1	Withdrew from the RCT after 2 sessions – reason unknown
4	Audio-recordings not made by the therapist

2.3.2 Power Analyses

Power was calculated using G*power version number 3.1.9.2 (Faul, Erdfelder, Buchner & Lang, 2009). Previous research examining relationships between treatment variables and outcome for CADs have generally found a medium to large effect size. For example, Tiwari et al. (2013) found a medium to large effect size for post-exposure processing (f^2 = .25). Similarly, Kendall et al. (2016) found a medium effect size (R^2 = .42) for perceived coping as a mediator of treatment outcome. Therefore, a medium effect size was considered appropriate for the present study. The sample of 91 gave the conventional 80% power to detect a moderate effect size (i.e. F=0.15) with a significance level of p=0.05, with four predictor variables.

2.4 Design

The current study was prospective and examined associations between observer-rated treatment components and therapeutic outcome, within and between two treatment groups (GPD-CBT and SFBT). The dependent variables (DV) were treatment

outcome(s) (see measures). The predictor variables were the treatment group (GPD-CBT and SFBT), possible mechanisms of change discussed in the literature review as identified by the MoCCS (see measures) and their interaction.

2.5 Measures

2.5.1 Socio-demographic Information

At the point of referral, child date of birth and gender were provided. The primary care-giver reported child ethnicity, their own marital status, educational level and employment of themselves and their partner. Educational level and employment were used to calculate socio-economic status.

2.5.2 Child Anxiety Measures

Outcome measures in the original RCT were issued at baseline (pre-randomisation), post-treatment (June 2012-September 2014) and 6 months after the end of treatment (November 2012-December 2014). The current study examined mechanisms of change in relation to post-treatment outcomes only.

2.5.2.1 Clinical global impressions of improvements (CGI-I; Guy, 1976).

The Clinical Global Impression – Improvement Scale (CGI-I; see Appendix 2) is a 7-point scale (range 1: 'very much improved' to 7 'very much worse'), used to indicate the child's improvement from initial assessment to post-treatment. All participants were assessed by an independent assessor, who was blind to treatment condition and trained to a high level of reliability (mean Kappa = .92). This measure has been used in previous CAD trials, with a score of 1 or 2 indicating successful treatment (Walkup et al., 2008).

The CGI-I was established based on parent and child reports on the Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Albano, 1996; see below). For the present study, scores were collapsed into a dichotomous outcome variable of 'improved or very much improved vs not much improved, the same or worse', which indicated treatment response. This mirrors the main outcome measure of the original RCT (Creswell et al., 2017).

2.5.2.2 Anxiety disorders interview schedule (ADIS-C/P; Silverman & Albano, 1996).

The child and parent versions of the Anxiety Disorders Interview Schedule (ADIS-C/P) are semi-structured interviews designed specifically for the diagnosis of the presence and severity of anxiety disorders (Social Anxiety Disorder, Separation Anxiety Disorder, Specific Phobia, Agoraphobia with Panic Disorder, Panic Disorder without Agoraphobia, Generalised Anxiety Disorder and Anxiety Disorder Not Otherwise Specified). The ADIS-C/P was administered before and after the intervention, by an independent assessor, to establish diagnoses and assess change post-treatment. Interrater reliability for anxiety disorder diagnosis in the original RCT was high (mean Kappa = .86). The psychometric properties of the ADIS-C/P are well established, demonstrating between good and excellent test-retest reliability for diagnoses and symptom patterns (k = 0.63-0.88; Silverman, Saavedra & Pina, 2001). As the ADIS-C/P has not been validated for children below 7 years old, parents of those children completed the full ADIS and children were administered a brief version. In the present study, for the subgroup of children who met diagnostic criteria for an anxiety disorder pre-treatment (n = 82; 90%), the ADIS-C/P was used to examine recovery from primary anxiety disorder as a dichotomous outcome measure (recovered vs not recovered).

2.5.2.3 Spence children's anxiety scale – parent report (SCAS-P; Nauta et al., 2004) and child (SCAS-C; Spence, 1998).

The Spence Children's Anxiety Scale (parent and child- report; SCAS-P/C; see Appendix 3) is a self-report questionnaire of anxiety symptoms across six domains (generalised anxiety, panic/agoraphobia, social phobia, separation anxiety, obsessive compulsive disorder and physical injury fears). Both parent and child versions consist of 45 items on a 4-point frequency scale (never, sometimes, often, always; range 0-3). Items were summed to create a total anxiety symptomology score. All parents and children aged 7 years or above completed the relevant version of the questionnaire. The SCAS-P/C has high internal consistency, high test-retest reliability, high concurrent validity and can distinguish clinically anxious children from non-anxious children (Nauta et al., 2004; Spence, 1998). Both child and parent report were analysed during the present study as using multiple informants is arguably more robust methodology than single informant (McLeod, Weisz & Wood, 2007). Cronbach's alpha in the current study was .84 pre-treatment and .84 post-treatment for SCAS-P and .89 pre-treatment and .93 post-treatment for SCAS-C.

2.5.3 Mechanisms of Change Coding Scheme (MoCCS)

Potential mechanisms of change in treatment were measured using a novel coding scheme developed by the author. A guide for developing and modifying behavioural coding schemes in pediatric psychology was followed (Chorney, McMurtry, Chambers & Bakeman, 2014). A summary of the steps taken can be found in Table 2.

The MoCCS included the potential CBT mechanisms of change identified in Chapter 1. Each code referred to either the adult(s) behaviour or the child's behaviour. In the GPD-CBT condition, the parent(s) behaviour was coded, rather than the therapist, as they were the adult implementing the intervention with their child. In the SFBT condition, only the therapists behaviour was coded. The coding manual was refined at several points during its development. In the original draft, 25 codes were present and each was rated on a 5-point Likert scale. However, following several points of revision (see Table 2), the final coding scheme included 15 codes. Nine of these remained as 5-point Likert scales, three were ratio-scales and the remaining three were categorical codes with two (n=1) or three (n=2) categories. A brief description of the final 15 codes can be found in Table 3. Table 4 describes the codes removed and the reasons for this decision. The full and final MoCCS can be found in Appendix 4.

Table 2

Steps Taken to Develop the Mechanisms of Change Coding Scheme (MoCCS)

Step	Further details
Developed a list of codes with operational definitions	- 25 codes with operational definitions were developed based on the CBT literature review and discussions with lead supervisor.
Developed instructions for implementing the coding scheme	- General guidelines to be applied to all codes were drafted. - Each code was described further in terms of 'what' the code referred to, 'how' the coder was to code information and 'key factors to consider'. - Examples for each code in each treatment condition were found where possible.
Received feedback from focus group of CAD experts	- A focus group (n=10) of CAD experts and researchers working at the clinic were consulted on the design of the study, initial definitions of codes and coding instructions.
Changes made to MoCCS	- Codes were developed further based on written and verbal feedback of focus group.
Detailed feedback received	- Detailed feedback was provided by the lead supervisor of the project.

Applied MoCCS to sample audio-recordings	-	Eight audio-recordings (GPD-CBT = 4, SFBT = 4) were coded as a 'pilot'.
Second coder trained by the author	-	The second coder was identified (an undergraduate placement student).
	-	Each MoCCS item was discussed in detail. Examples from audio-recordings were listened to.
	-	The second coder independently rated each sample audio-recording. The ratings were compared to those of the author and discrepancies were discussed in detail.
MoCCS adapted based on early recordings	-	Two codes with multiple elements were changed to four separate ratio-scale codes, making a new total of 27 codes.
Coded sub-sample of audio-recordings and checked agreement	-	24 randomly chosen audio-recordings (GPD-CBT = 12, SFBT = 12) were independently rated by coders and reliability analysis was conducted across treatment modality.
	-	Codes demonstrating poor Intraclass correlation coefficients (ICC < .60) were converted into categorical variables (not present vs present) and reliability was re-calculated using Kappa coefficients.

MoCCS adapted based on findings from initial reliability analysis	- Converting the variables from 5-point Likert scales to categorical variables improved interrater reliability for one variable and hence this was changed. - 10 codes were removed due to low frequency across treatment conditions and/or poor reliability (see Table 4 for further details). - Discrepancies in the first 14 audio-recordings for the remaining MoCCS variables with poor reliability (n=7) were identified and discussed by the two coders.
Coded second sub-sample of audio-recordings and checked agreement on combination of sub-samples (n=20)	- 12 additional audio-recordings (GPD-CBT = 6, SFBT = 6), chosen at random by an online programme, were coded by both coders for the remaining MoCCS variables with poor reliability (n=7). - Reliability analysis was conducted on a total of 20 sessions (12 from the second sub-sample of coding and 8 from the first sub-sample of coding for which discrepancies were not discussed). - ICC improved sufficiently (to .60 or above) for three codes. - A further two codes were removed from the MoCCS due to low frequency and poor reliability (see Table 4 for further details). One 5-point Likert scale variable and one ratio scale variable were converted to categorical variables as this sufficiently improved reliability (to .60 or above).

	- Final total of 15 variables remained in the MoCCS
Coders independently rated audio-recordings	- Remaining audio-recordings (n=142) were randomly allocated to one of the two coders (author rated 102, second-coder rated 40). - Coders met on a regular basis to discuss queries and prevent coder drift.

Table 3

Predictors Included in the Final MoCCS

Predictor Name	Adult(s) or child behaviour?	Rating Scale	Brief Description
Promotion of Exposure	Adult(s)	5-point Likert	The extent to which the child was positively encouraged (verbally) or facilitated (behaviorally) to face their fears.
Reinforcement of Exposure	Adult(s)	5-point Likert	The degree to which the child was acknowledged or rewarded for facing a fear.

Promotion of Exposure in Multiple Contexts	Adult(s)	Ratio scale	The number of contexts which the child was actively encouraged/facilitated to face a fear in.
Promotion of Exposure with a Variety of Stimuli	Adult(s)	Categorical (0 stimuli vs 1 variety of stimuli vs 2 or more varieties of stimuli)	The number of different stimuli which the child was actively encouraged/facilitated to face a fear with.
Promotion of Reduction of Safety-Seeking Behaviours	Adult(s)	5-point Likert	The extent to which the adult attempted to address the child's use of one or more Safety-Seeking Behaviours.
Promotion of Cognitive Restructuring	Adult(s)	5-point Likert	The extent to which the adult encouraged the child to use cognitive restructuring by asking questions to identify and/or challenge anxious thoughts.
Promotion of Distraction	Adult(s)	Categorical (not present vs present)	Whether the adult actively encouraged the child to use distraction as a coping strategy or not.
Reinforcement of Coping	Adult(s)	Categorical (none vs moderate vs extensive)	The degree to which the child was acknowledged or rewarded for coping with anxiety provoking stimuli and/or situations.

Engagement in Exposure	Child	5-point Likert Scale	The reported extent to which the child faced their fear(s) between sessions.
Engagement with Exposure in Multiple Contexts	Child	Ratio scale	The reported number of different environments which the child faced their fear in.
Engagement with Exposure with a Variety of Stimuli	Child	Ratio scale	The reported number of different anxiety provoking stimuli the child faced their fear with.
Use of Safety-Seeking Behaviours	Child	5-point Likert	The reported extent to which the child used safety-seeking behaviours when facing their fears.
Use of Cognitive Restructuring	Child	5-point Likert	The reported extent to which cognitive restructuring was reported as being utilised by the child to manage their anxiety.
Use of Distraction	Child	5-point Likert	The reported extent to which the child used distraction as a coping strategy.
Evidence of Coping Efficacy	Child	5-point Likert	The degree to which the child believed they could manage anxiety provoking situations.

Table 4

Predictors Removed from the MoCCS

Predictor Name	Adult(s) or child behaviour?	Brief Description	Reason for Removal
Promotion of Massed Exposure	Adult(s)	The extent to which the child was actively encouraged to engage in massed exposure.	Rated as "not at all" for 85% of cases during reliability analysis, resulting in poor ICC (.15).
Promotion of Retrieval Cue Use	Adult(s)	The extent to which the child was actively encouraged to use a retrieval cue during exposure.	Consistently rated as 'not at all' by both coders during reliability analysis.
Promotion of Problem Solving	Adult(s)	The extent to which the child was encouraged to identify, analyse and find solutions to actual difficulties.	Rated as "not at all" for 80% of cases during reliability analysis, resulting in poor ICC (.10).

Promotion of Relaxation	Adult(s)	The extent to which the child was encouraged to use relaxation as a coping strategy.	Consistently rated as 'not at all' by both coders in the reliability analysis.
Pre-exposure Set-Up and Post-Exposure Processing	Adult	The extent to which the adult elicited the child's expectations before and/or after the exposure task.	Interrater reliability was poor when it was coded as both a Likert scale (ICC = .014) and categorical variable (Kappa = .129)
Occasional Reinforced Extinction	Child	The extent to which it was reported that there was occasional reinforcement of child's negative expectations of facing feared stimuli.	Rated as "not at all" for 92% of cases during reliability analysis, resulting in poor ICC (-.08).
Engagement with Massed Exposure	Child	The extent to which it was reported that the child was facing fears in a massed way.	Interrater reliability was poor (.16) and did not make theoretical sense as a categorical variable.
Use of Retrieval Cues During Exposure	Child	The extent which it was reported that the child used a retrieval cue when facing feared stimuli.	Consistently rated as 'not at all' by both coders in the reliability analysis.

Use of Problem Solving	Child	The extent which it was reported that the child used problem solving to manage their anxiety.	Rated as “not at all” for 90% of cases during reliability analysis and hence interrater reliability was poor (-.11)
Use of Relaxation	Child	The extent to which it was reported that the child used relaxation as a coping strategy.	Consistently rated as ‘not at all’ by both coders in the reliability analysis
Use of Positive Self-Talk	Child	The extent to which it was reported that the child used positive self-talk as a coping strategy to manage their anxiety.	Rated as “not at all” for 88% of cases during reliability analysis and hence interrater reliability was poor (.28)
Actual Expectancy Violation During Exposure	Child	The extent to which it was reported that the child’s negative expectation of facing their fear occurred.	Interrater reliability was poor as both a Likert scale (ICC =.137) and a categorical variable (Kappa = .439)

2.5.3.1 Interrater reliability analysis.

To ensure the coding scheme was used reliably, an initial subsample (n=24) of therapy audio-recordings were coded independently by the author and second coder. For codes rated using a Likert or ratio scale, two-way mixed, absolute agreement, single-measures Intraclass correlation coefficients (ICCs) were conducted. For categorical codes, a Kappa coefficient was calculated to verify the amount of agreement between the two coders. To be considered reliable the ICC or Kappa had to be equal or greater than .60. This indicated good reliability for ordinal codes (Cicchetti, 1994) and substantial agreement for categorical codes (Landis & Koch, 1977). Following the first interrater reliability analyses, some codes were not reliable. Hence coders met to discuss coding discrepancies in the first 14 audio-recordings. They then coded an additional 10 audio-recordings and interrater reliability was re-calculated for the most recent (n=20) codes. Interrater reliability coefficients for the final codes can be found in Table 5 and can be viewed for removed codes in Table 4.

Table 5

Interrater Reliability for MoCCS Predictors

Code	**ICC/Kappa**
Promotion of Exposure	.666*
Reinforcement of Exposure	.666
Promotion of Exposure in Multiple Contexts	.644
Promotion of Exposure with a Variety of Stimuli	.643*
Promotion of Reduction of Safety-Seeking Behaviour	.660*

Promotion of Cognitive Restructuring	.705
Promotion of Distraction	.619
Reinforcement of Coping	.613
Engagement in Exposure	.777
Completion of Exposure in Multiple Contexts	.758
Completion of Exposure with a Variety of Stimuli	.848
Use of Safety-Seeking Behaviour	.714
Use of Cognitive Restructuring	.752*
Use of Distraction	.719
Evidence of Coping Efficacy	.734

Note: *indicates interrater reliability statistic from the second sub-sample

2.6 Procedure

2.6.1 Original RCT Data Collection

The clinical-research team from a university clinic initially assessed children using the measures described above. Those meeting eligibility criteria for the study were invited to participate and informed consent was taken from the primary caregiver and child (see Appendix 5 for information sheets and consent forms). Children were then randomly allocated to GPD-CBT or therapist-delivered SFBT. This was done using a secure online minimisation tool to balance the two treatment groups for child age, gender, anxiety severity and level of parental anxiety (DASS-21; Lovibond & Lovibond, 1995). Assessments of treatment outcome were conducted by independent assessors' blind to treatment condition.

2.6.2 Interventions

Both treatments were implemented by 19 Primary Mental Health Workers (PMHW's) employed in participating services. PMHW's had varying experience of working with parents and children (none to several years) and came from a range of backgrounds, including nursing, social work, health visiting, clinical psychology and psychology graduate. Both treatments were manualised. PMHW's received two days of training in each treatment and fortnightly supervision. The manual for GPD-CBT can be found at http://centaur.reading.ac.uk/65537/ and the SFBT manual was adapted from 'Briefer: A solution focused practice manual'. The original study monitored therapist adherence to the manuals. An independent rater analysed a sample of 52 audio-recordings of treatment sessions. Session content was found to be significantly different, with GPD-CBT having more CBT content than SFBT ($t(50)=16.88$, $p<.001$) and SFBT having more SFBT content than GPD-CBT ($t(50)=22.31$, $p<.0001$). All participants received approximately 5 hours of treatment in total.

2.6.2.1 Brief guided parent-delivered CBT (GPD-CBT).

Parents were issued with a self-help book prior to treatment starting (Creswell & Willets, 2007). They received up to eight weekly sessions of therapist supported GPD-CBT. Four of these were 60-minute face-to-face appointments and four were 15-minute telephone reviews (see Appendix 6 for a session-by-session outline). Treatment included psychoeducation about CADs, identifying and testing anxious thoughts, graded exposure and problem solving. The therapist supported and encouraged parents to read the self-help book, rehearse skills and problem solve difficulties. Parents were asked to complete homework tasks, independently and with their child, between

sessions. The effectiveness of this intervention for CAD treatment has previously been established (e.g. Thirlwall et al., 2013).

2.6.2.2 Solution focused brief therapy (SFBT).

SFBT is a form of counselling that emphasises constructing solutions, rather than resolving problems. As such, sessions focus on helping clients imagine how they would like their life to be different (Gingerich & Eisengart, 2000). In this case, SFBT involved an initial face-to-face session with the parent and child, four face-to-face sessions with the child and a final session with the parent and child. Each session was between 45 and 60 minutes (see Appendix 7 for session-by-session outline). At the time of the RCT, this was commonly used to treat a wide range of child difficulties within the participating services.

2.6.3 Current Study

2.6.3.1 Selection of audio-recordings.

Time constraints of conducting a DClinPsy thesis meant that not all treatment sessions could be coded. I initially immersed myself in the audio-recordings to determine which sessions would be coded for each intervention. This involved listening to all sessions for a small number (n=5) of randomly selected participants. Telephone calls were excluded from the possible sessions to be coded in the GPD-CBT condition due to some therapists encountering technical difficulties with recordings. The final two face-to-face sessions in each condition (4th and 7th in GPD-CBT, 5th and 6th in SFBT) were selected for coding under the premise that by this stage, adults and children would have had the opportunity to actively engage in all the components of treatment. Ninety-one

participants (45 GPD-CBT, 46 SFBT) had audio-recordings available for the targeted sessions.

2.6.3.2 Coding.

Coding was conducted by the author and an undergraduate placement student. The student was trained to use the coding scheme by the author. Whilst coding, coders were blind to patient data other than that on the tapes (i.e. they were blind to baseline and outcome date). Coders met frequently during the coding period to prevent coding drift.

2.7 Data Analysis

2.7.1 Data Treatment

2.7.1.1 Data reduction.

MoCCS predictors were considered for reduction prior to analysis. Predictors that were highly correlated ($r > .80$) with other theoretically and/or conceptually similar predictors were combined for analysis. MoCCS ratings for the penultimate face-to-face session and final face-to-face session were also considered for reduction prior to analysis. MoCCS ratings that were highly correlated ($r > .80$) for the two sessions were combined for analysis.

2.7.1.2 Calculating change scores.

Change scores have been used in previous mechanism of change research in CAD (Tiwari et al., 2013) and have been argued to be reliable measures of change (e.g. Zimmerman & Williams, 1998). For continuous questionnaire outcome measures (SCAS-P/C), change from baseline to post-treatment was calculated by subtracting baseline scores from post-treatment scores. Hence negative change scores indicated improved anxiety symptomology.

2.7.1.3 Identifying outliers.

Prior to analysis, outliers were identified as any data point at least 3 standard deviations away from the mean of that variable for each treatment group (Field, 2013). All analyses were run with and without outliers to check if the inclusion of outliers changed the interpretation of the results.

2.7.1.4 Testing normality of distributions.

The normality of the distribution of each continuous outcome-variable was examined. This was achieved by visual inspection of distribution plots and calculating the significance levels of skew and kurtosis. Scores were converted to z scores and scores less than 2.58 were deemed to be normally distributed (Field, 2013). Predictor variables in regressions do not need to be normally distributed (Field, 2013), hence the normality of these was not formally assessed.

2.7.2 Preliminary Analyses

2.7.2.1 Socio-demographic characteristics.

To establish whether the treatment groups (GPD-CBT vs SFBT) were comparable at baseline, treatment group differences in sociodemographic characteristics and baseline clinical presentation were examined using t-tests (continuous variables) and Pearson Chi-Square (categorical variables).

2.7.2.2 Confirming the effect of treatment on child anxiety outcomes.

Differences in treatment outcome for both groups were examined to establish if outcomes for this subsample were similar to the larger study (Creswell et al., 2017). Pearson Chi-Square investigated treatment differences on categorical outcome measures (CGI-I, recovery from primary anxiety disorder diagnosis based on the ADIS-C/P). Treatment (GPD-CBT vs SFBT) x time (pre-treatment vs post-treatment vs 6-month follow-up) mixed model ANOVA's were conducted to investigate group-differences in the effect of treatment on continuous outcome measures (SCAS-P/C).

2.7.2.3 Exploration of possible predictors of treatment outcome.

The effect of gender, age and baseline anxiety were examined in relation to treatment outcome to establish if they needed to be controlled for in subsequent analyses. Simple logistic regressions examined these variables in relation to categorical outcome measures (CGI-I, recovery from primary anxiety disorder diagnosis based on the ADIS-C/P) and simple linear regressions examined these variables in relation to change in continuous outcome measures (SCAS-P/C).

2.7.3 Testing Hypotheses

As the study was exploratory in nature with an un-validated coding scheme, it could not be assumed that the MoCCS variables were mutually exclusive and thus a series of regressions were conducted. Each regression examined a single predictor variable from the MoCCS (e.g. Promotion of Exposure, Engagement with Exposure) at a certain time-point in treatment (penultimate face-to-face session or final face-to-face session), in relation to outcome, with the interaction term of treatment group, whilst controlling for covariates found to be significant in the preliminary analysis (gender, age and baseline anxiety). Interaction terms were created following the guidance of Aken and West

(1991). Due to the exploratory nature of this study, it was paramount that the risk of Type II error was minimised. Hence controls for multiple testing were not implemented.

Each predictor from the coding scheme was run in four regressions to examine effects on different measures of treatment outcome. A binary logistic regression is an appropriate statistical test when the research question wants to assess if a set of independent variables predict a dichotomous dependent variable (Field, 2013). This type of analysis can be used when the predictor variables are continuous, discrete or a combination of continuous and discrete. CGI-I and recovery from primary diagnosis based on the ADIS-C/P are dichotomous variables relating to outcome and so binary logistical regressions were conducted. The overall binary logistic model significance was examined using the χ^2 omnibus test of model coefficients. Hosmer and Lemeshow's R^2 was examined to assess the model's goodness of fit, Nagelkerke R^2 assessed the percentage of variance accounted for by the independent variables and the predicted probabilities of an event occurring were determined by Exp (β). The Variance Inflation Factor (VIF) assessed multi-collinearity, with values higher than 10 a cause for concern (Myers, 1990). The remaining assumption of logistic regression of linearity of the logit was also tested following guidance from Field (2013).

A linear regression is an appropriate statistical test when the research question asks the extent of a relationship between a set of independent variables on an interval dependent variable (Field, 2013). This type of analysis can be used when the predictor variables are continuous, discrete or a combination of continuous and discrete. Hence, linear regressions were conducted for SCAS-P/C outcome measures. The *F*-test was used to

assess whether the independent variables predict the dependent variable. Adjusted R^2 was examined to assess the percentage of variance accounted for by the predictor variables, if the model had been derived from the normal population. Beta coefficients were examined to determine the magnitude and direction of the relationship. The assumptions of linearity and homoscedasticity were assessed by examining scatter plots. The assumption of independent errors was assessed using the Durbin-Watson test, with values less than 1 or greater than 3 a cause for concern. The assumption of normally distributed errors was explored by investigating skew and kurtosis values of residuals (Field, 2013). The Variance Inflation Factor (VIF) was examined to assess multi-collinearity, with values higher than 10 a cause for concern (Myers, 1990).

Regression diagnostics were also examined for all regression models. Standardised residuals were examined to identify outliers. Values greater than 3.29 indicated that this value is unlikely to happen by chance. More than 1% of residuals being above 2.58 was indicative of the regression model being a poor fit for the data (Field, 2013). To identify potential influential cases, standardised DFFIT values were explored. Maholanobis distances were also examined. In line with guidance from Barnett and Lewis (1978), values greater than 20 indicated cause for concern. In addition, Cook's distance was examined for each model, with values greater than 1 indicating a single case had a significant influence on the regression model (Cook & Weisberg, 1982).

Chapter 3. Results

3.1 Data Treatment

3.1.1 Data Reduction

Pearson's correlations between the MoCCS predictors (r = -.50 to r = .77) indicated that they were not highly correlated with each other (r < .80) and therefore MoCCS predictors were not combined for analyses. Pearson's correlations for each MoCCS predictor for each session (e.g. Promotion of Exposure in the penultimate face-to-face session vs. Promotion of Exposure in the final face-to-face session) indicated that ratings for each predictor for each session were not highly correlated (r = -.48 to r = .08) and therefore MoCCS ratings for each session were analysed separately.

3.1.2 Missing Data

Four participants had missing data on ADIS-C/P and CGI-I measures due to no-response or refusal of follow-up. This is less than 5% of the data and is not concerning (Tabachnick & Fidell, 2013). Missing questionnaire data, due to no-response, refusal of follow-up or running out of time in the assessment was 8-10%. Missing values analyses examined patterns in missing questionnaire data. Separate variance t-tests showed no systemic relationship between missing data and other variables (child gender, child age, child ethnicity, parental marital status, type and severity of diagnosis at baseline). Little's Missing Completely At Random (MCAR) tests indicated that the probability that the pattern of missing diverges from randomness is greater than .05. Hence data MCAR was inferred and findings reported are for completed data only. As suggested by Tabachnick & Fidell (2013) for longitudinal data, the last observation carried forward (LOCF) was imputed for all missing data and this was used as a sensitivity analysis. No differences in significance were observed unless specified.

3.1.3 Normality and Outliers

Change scores from baseline to post-treatment on questionnaire measures (SCAS-P/C) were normally distributed. Parametric tests were therefore conducted on the data. None of the results were significantly altered with the removal of outliers. Therefore, to retain statistical power, the results presented were for analyses with outliers included.

3.2 Sample Characteristics

3.2.1 Socio-Demographic Characteristics

Socio-demographic characteristics of the sample are in Table 6. Children were aged between 5 and 12 years old. The majority were of 'white' ethnicity, had married parents and lived in families classified as middle to higher socio-economic status (based on parental education level and employment). No significant differences between the treatment groups were found for any of these variables. Hence the groups were well balanced in terms of their socio-demographic characteristics.

Table 6

Socio-Demographic Characteristics by Group (n (% of group total), unless otherwise stated) and Significance Statistics.

Characteristic	GPD-CBT (n = 45)	SFBT (n = 46)	Statistic
Child Age			
(years; mean(SD))	8.82 (1.81)	8.78 (2.32)	t(89) = 0.09, p = .93
Child Gender			

Male	19	(42.2%)	21	(45.7%)	$\chi^2(1) = 0.11$, p = .74
Female	26	(57.8%)	25	(54.3%)	
Child Ethnicity					
White British	41	(91.1%)	43	(93.5%)	$\chi^2(1) = 0.18$, p = .67
Any other white	1	(2.2%)	0	(0.0%)	
Non-white	3	(6.7%)	3	(6.5%)	
Parent marital status					
Two-parent family	41	(91.1%)	38	(82.6%)	$\chi^2(1) = 1.44$, p = .23
Other	4	(8.9%)	8	(17.4%)	
Parent education level					
School completion	5	(11.1%)	4	(8.7%)	$\chi^2(3) = 6.76$, p = .08
Further education	16	(35.6%)	26	(56.5%)	
Higher education	9	(20.0%)	9	(19.6%)	
Postgraduate	14	(31.1%)	5	(10.9%)	
Not recorded	1	(2.2%)	2	(4.3%)	
Parental employment					
Higher/professional	33	(73.3%)	31	(67.4%)	$\chi^2(7) = 0.22$, p = .64
Other employed	12	(26.6%)	14	(30.4%)	
Not recorded	0	(0.0%)	1	(2.2%)	

3.2.2 Baseline Anxiety

Treatment groups did not statistically differ in the type or severity of primary anxiety diagnosis. Similarly, treatment groups did not differ significantly on baseline anxiety symptomology reported by parent and child. Table 7 displays statistics.

Table 7

Baseline Anxiety Measures (Primary anxiety diagnosis and CSR presented as n (% of group total), SCAS presented as mean (SD))

Anxiety measure	GPD-CBT		SFBT		Statistic
Primary anxiety diagnosis					
Separation Anxiety Disorder	7	(15.6%)	9	(19.6%)	$\chi^2(7) = 7.23$, $p = .41$
Social Phobia	3	(6.7%)	5	(10.9%)	
Specific phobia	11	(24.4%)	8	(17.4%)	
Panic Disorder w/o Agoraphobia	1	(2.2%)	0	(0.0%)	
Panic Disorder with Agoraphobia	1	(2.2%)	0	(0.0%)	
Generalised Anxiety Disorder	22	(48.9%)	24	(52.2%)	
Primary diagnosis severity					
Mild (CSR 3)	4	(8.9%)	5	(10.9%)	$\chi^2(4) = 4.53$, $p = .34$
Moderate (CSR 4)	9	(20.0%)	3	(6.5%)	
Moderate (CSR 5)	12	(26.9%)	18	(39.1%)	
Severe (CSR 6)	17	(37.8%)	18	(39.1%)	
Severe (CSR 7)	3	(6.7%)	2	(4.3%)	
SCAS total score					
Parent-report	36.88	(17.73)	31.25	(13.61)	$t(85) = 1.67$, $p = .10$

Child-report	39.35	21.17	35.59	19.27	t(73) = .081, p = .42

Note: Primary anxiety diagnosis as determined by ADIS C-P; CSR = Clinical Severity Rating.

3.3 Preliminary Analyses

3.3.1 Confirming the Effect of Treatment on Child Anxiety Outcomes

Treatment outcomes for both groups were examined to establish if outcomes in this subsample were similar to the larger study (Creswell et al., 2017). Treatment groups did not significantly differ in the presence of primary anxiety diagnosis at post-treatment on the ADIS (no diagnosis: GPD-CBT = 57.8%, SFBT = 63.0%) ($\chi^2(1) = 0.15$, $p = .700$), or 6-month follow-up (no diagnosis: GPD-CBT = 82.2%, SFBT = 76.1%; $\chi^2(1) = 1.37$, $p = .241$). Similarly, they did not differ on CGI-I rating for improvement at post-treatment (much or very much improved: GPD-CBT = 68.9%, SFBT = 78.3%; $\chi^2(1) = 0.76$, $p = .384$) or 6-month follow-up (much or very much improved GPD-CBT = 80.0%, SFBT = 82.6%; $\chi^2(1) = 0.01$, $p = .918$).

Treatment (GPD-CBT vs SFBT) x time (pre-treatment vs post-treatment vs 6-month follow-up) mixed model ANOVA analyses showed a significant main effect of time for SCAS-P/C. Fisher's protected t-tests showed anxiety symptomology improved from baseline to post-treatment and from post-treatment to 6-month follow-up. There were no significant main effects for treatment or interaction effects of time and treatment. Results therefore supported those reported by Creswell et al. (2017) that there were similar, significant improvements from pre to post-treatment for both groups. Statistics can be found in Table 8. Where Mauchley's test of sphericity was significant, Huynh-Feldt statistics are reported.

Table 8

Means and Standard Deviations of Anxiety Symptomology Across Groups and Time-Points with Statistics

	GPD-CBT			*SFBT*					
Measure	*Pre M (SD)*	*Post M (SD)*	*FU M (SD)*	*Pre M (SD)*	*Post M (SD)*	*FU M (SD)*	*F and t Values*		
							Time	*Treatment*	*Interaction*
SCAS-P	36.11 (17.73)	26.64 (12.90)	23.39 (12.19)	33.05 (13.69)	25.22 (13.73)	23.62 (14.99)	$F(1.65,117.23) = 35.55$, $p < .001$; $t(79) = 7.14$, $p < .001$a; $t(77) = 6.97$, $p < .001$b; $t(75) = 2.14$, $p < .05$c.	$F(1,71) = 0.23$, $p = .633$	$F(1.65,117.23) = 0.71$, $p = .494$
SCAS-C	39.96 (19.84)	31.04 (24.41)	23.88 (19.88)	34.75 (19.17)	24.31 (19.34)	20.08 (16.33)	$F(1.90,114.18) = 33.16$, $p < .001$; $t(79) = 5.37$, $p < .001$a; $t(67) = 5.46$, $p < .001$b; $t(65) = 7.74$, $p < .001$c.	$F(1,60) = 1.32$, $p = .255$	$F(1.90,114.18) = 0.30$, $p = .734$

Note: Pre = pre-treatment; Post = post-treatment; FU = 6-month follow-up; GPD-CBT = guided parent-delivered cognitive-behavioural therapy condition; SFBT = solution focused brief therapy condition; SCAS-P/C = Spence Children's Anxiety Scale Parent/Child version; [a]Pre-treatment to post-treatment; [b]Pre-treatment to 6-month follow-up; [c]Post-treatment to 6-month follow-up

3.3.2 Exploration of Frequencies of MoCCS Variables

As the MoCCS variables were proposed by CBT theory, means and standard deviations for each continuous variable and frequencies for each categorical variable were examined to ensure variance in both treatment conditions. Values are in Table 9.

Table 9

Means and Standard Deviations for Continuous MoCCS Predictors and Frequencies for Categorical MoCCS Predictors by Treatment Condition

MoCCS predictor	Session	Mean (SD)	
		GPD-CBT	SFBT
Po. Exposure	Pen.	2.77 (1.01)	1.93 (0.98)
	Final	3.09 (1.02)	2.17 (1.12)
Ew. Exposure	Pen.	2.71 (1.08)	3.02 (1.22)
	Final	3.44 (0.99)	3.09 (1.13)
Reinforcement of	Pen.	2.38 (1.59)	2.21 (1.32)
Exposure	Final	3.22 (1.44)	2.35 (1.12)
Ew. Exposure with	Pen.	1.09 (0.63)	1.15 (0.76)
Variety of Stimuli	Final	1.40 (0.75)	1.09 (0.69)
Po. Exposure in	Pen.	1.07 (0.62)	0.65 (0.64)
Multiple Contexts	Final	1.33 (0.77)	0.72 (0.66)
Ew. Exposure in	Pen.	1.16 (0.71)	1.21 (0.70)
Multiple Contexts	Final	1.38 (0.72)	1.24 (0.74)
Po. Reduction of	Pen.	2.40 (1.07)	1.70 (0.96)
SSB	Final	2.69 (1.18)	1.71 (1.03)

Use of SSBs	Pen.	3.69 (1.26)	2.91 (1.44)
	Final	2.98 (1.25)	2.61 (1.26)
Use of Distraction	Pen.	1.40 (1.05)	1.98 (1.31)
	Final	1.40 (0.96)	2.28 (1.38)
Evidence of Coping	Pen.	2.16 (0.85)	2.98 (0.93)
Efficacy	Final	2.84 (1.00)	3.28 (1.07)
Po. Cognitive	Pen.	2.76 (1.40)	1.80 (1.09)
Restructuring	Final	2.69 (1.18)	1.78 (0.96)
Use of Cognitive	Pen.	2.13 (1.18)	1.82 (1.14)
Restructuring	Final	2.24 (1.19)	1.80 (1.07)
Po. Exposure with	Pen.	0 stimuli =5; 1 stimuli =	0 stimuli =14; 1 stimuli =
Variety of Stimuli		34; 2 or more stimuli =6	32; 2 or more stimuli = 0
	Final	0 stimuli =1; 1 stimuli =	0 stimuli =15; 1 stimuli =
		36; 2 or more stimuli =8	28; 2 or more stimuli =3
Po. Distraction	Pen.	No = 42; Yes = 3	No = 37; Yes = 9
	Final	No = 39; Yes = 6	No = 36; Yes = 10
Reinforcement of	Pen.	None = 26;	None = 3;
Coping		Slight/Moderate = 13;	Slight/Moderate = 28;
		Extensive = 6	Extensive = 15
	Final	None = 15;	None = 6;
		Slight/Moderate =	Slight/Moderate = 23;
		23; Extensive = 7	Extensive = 17

Note: Po. = Promotion of, Ew = Engagement with, Pen. = penultimate face-to-face session, Final = final face-to-face session, SSB = safety-seeking behaviours

3.3.3 Exploration of Possible Predictors of Treatment Outcome

Other possible predictors of treatment outcome were explored to establish if they needed to be controlled for in subsequent analyses. Simple regressions indicated that age and gender were not significantly associated with outcome (see Appendix 8 for statistics). Hence gender and age were not controlled for in subsequent analyses. However, baseline anxiety significantly predicted post-treatment diagnosis ($\chi^2(1) = 9.07$, $p < .01$; B = 0.93, SE = 0.32), SCAS-P change ($F(1,78) = 35.92$, $p < .001$) and SCAS-C change ($F(1,66) = 4.17$, $p = .045$). Adjusted R^2 values and regression co-efficients are in Table 10. Baseline anxiety was therefore controlled for in subsequent analyses testing hypotheses for these outcomes. Baseline anxiety did not significantly predict post-treatment CGI-I ($\chi^2(1) = 0.60$, $p = .438$) and was therefore not controlled for in subsequent analyses for this outcome.

Table 10

Simple Linear Regression Coefficients for Continuous Outcome Measures and Baseline Anxiety

Measure	Adjusted R^2		B	SE B	ß
SCAS-P	.307	Constant	4.56	2.41	
		Baseline anxiety	-0.39	0.07	-.56
SCAS-C	.045	Constant	-3.05	3.76	
		Baseline anxiety	-0.18	0.09	-.24

3.4 Testing Hypotheses

A series of hierarchical regressions were conducted. Each examined a single MoCCS predictor variable at a specific treatment time-point, in relation to an outcome measure

with the interaction term of treatment group. Where applicable, baseline anxiety was entered as a first step in the regression model. The MoCCS predictor variable and condition were entered as second steps in the regression model and interaction term was entered as the third step in the model. Hierarchal logistic regressions were conducted for categorical outcomes (Treatment response: 0 = treatment responder, 1 = treatment non-responder; Recovery from primary anxiety disorder: 0 = recovered, 1 = not recovered) and hierarchical multiple linear regressions were conducted for changes in continuous outcome measures.

Regression diagnostics were examined for each regression and indicated no significant outliers or influential cases, unless otherwise stated. The logistic regression assumption of linearity of the logit was met for each regression model, unless otherwise stated. Multiple-regression assumptions of linearity, non-zero variance, homoscedasticity, independent errors and normally distributed errors were met for each regression, unless otherwise stated. As the goal of the regression models was prediction, problems with multi-collinearity were ignored (Tabachnick & Fidell, 2013).

3.4.1 Results for Penultimate Face-to-Face Session

3.4.1.1 Results for Hypothesis 1

It was hypothesised that the promotion of and engagement with exposure would predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and SFBT. After controlling for other variables, there was a significant interaction between Promotion of Exposure x treatment condition for recovery from primary anxiety disorder. Figure 1 illustrates the effect, reflecting that higher ratings of Promotion of Exposure predicted less recovery from the primary anxiety disorder for GPD-CBT, yet

more recovery for SFBT.. However, the findings should be interpreted with caution as a test for linearity of logit showed the model may violate this assumption. Regression coefficients are in Table 11. After controlling for other variables, there were no significant main effects or interaction effects for Promotion of Exposure with other outcome measures or Engagement with Exposure for any outcome measure. Non-significant statistics are in Table 12.

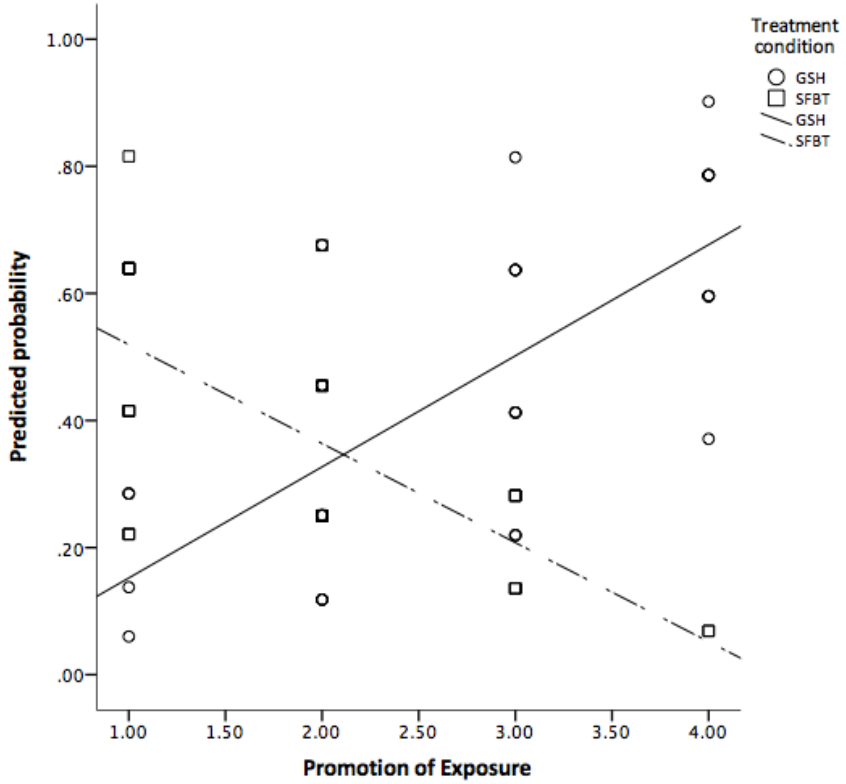

Figure 1. Significant interaction effect of Promotion of Exposure in the penultimate face-to-face session and recovery from primary anxiety disorder diagnosis.

Table 10

Regression Coefficients for Promotion of Exposure in the Penultimate Face-To-Face Session and Recovery from Primary Anxiety Disorder Diagnosis

		95% CI for Odds Ratio		
	B(SE)	Lower	Odds Ratio	Upper

Step 3	Constant	-4.17	(2.00)			
	Baseline Anxiety	-1.49**	(0.58)	1.30	2.50	4.80
	PoE	2.24*	(0.87)	1.71	9.35	51.27
	Tx	-2.99*	(1.39)	0.00	0.50	0.77
	PoE x Tx	-1.49*	(1.49)	0.07	0.22	0.70

Note: R^2 = .76 (Hosmer & Lemeshow), .26 (Nagelkerke); PoE = Promotion of Exposure, Tx = Treatment Condition, PoE x tx = interaction term; *p <.05 **p <.01

Table 11

Non-significant Hierarchal Regression Analyses for Penultimate Face-to-Face Session: Hypothesis 1

MoCCS predictor Measure	MoCCS main effect statistic	MoCCS x Treatment Interaction term statistics
PoE		
CGI-I	B = 0.40, SE = 0.26, p = .119	B = -0.06, SE = 0.39, p = .096
SCAS-P	$F(2,76) = 0.07$, p = .935	$F(1,75) = 0.28$, p = .598
SCAS-C	$F(2,64) = 1.28$, p = .285	$F(1,63) = 0.27$, p = .869
EwE		
CGI-I	B = 0.29, SE = 0.22, p = .309	B = 0.48, SE = 0.45, p = .289
Diagnosis	B = -0.05, SE = 0.20, p = .800	B = -0.55, SE = 0.41, p = .185
SCAS-P	$F(2,76) = 0.07$, p = .935	$F(1,75) = 0.28$, p = .598
SCAS-C	$F(2,64) = 0.67$, p = .518	$F(1,63) = 0.00$, p =.954

Note: PoE = Promotion of Exposure, EwE = Engagement with Exposure

3.4.1.2 Results for Hypothesis 2.

It was hypothesised that the promotion of and engagement with strategies to optimise inhibitory learning whilst completing exposure would predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and SFBT. After controlling for other variables, there was a significant interaction effect for Reinforcement of Exposure x treatment condition for post-treatment CGI-I. The effect is illustrated in Figure 2, reflecting that higher ratings of Reinforcement of Exposure predicted being a treatment non-responder for GPD-CBT, yet a treatment responder for SFBT. Notably, this finding was not significant in the LOCF imputed data set.

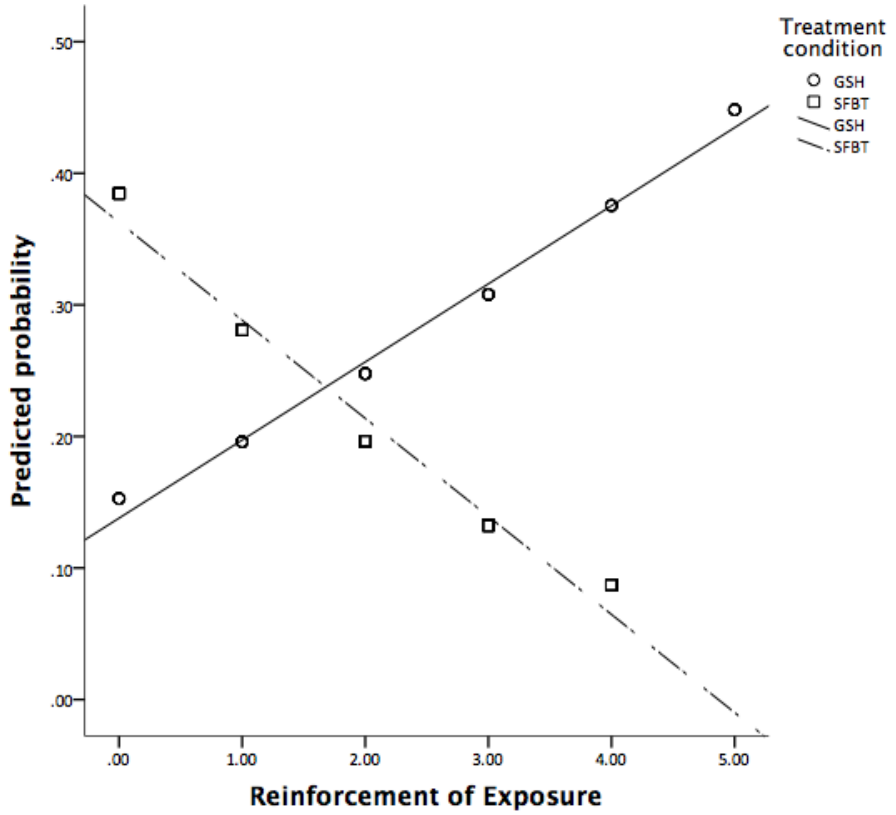

Figure 2. Significant interaction effect of Reinforcement of Exposure in the penultimate face-to-face session and treatment response.

There was also a significant main effect for Promotion of Exposure in Multiple Contexts for post-treatment CGI-I. The effect is illustrated in Figure 3, reflecting that

higher ratings of Promotion of Exposure in Multiple Contexts predicted being a treatment non-responder across both treatments. There was also a significant interaction effect for Promotion of Exposure in Multiple Contexts x treatment condition for recovery from primary anxiety disorder diagnosis. The effect is illustrated in Figure 4, reflecting that promotion of exposure with more contexts predicted less recovery from primary anxiety diagnosis for GPD-CBT, yet more recovery for SFBT. Regression coefficients for all significant penultimate face-to-face session Hypothesis 2 results are in Table 13.

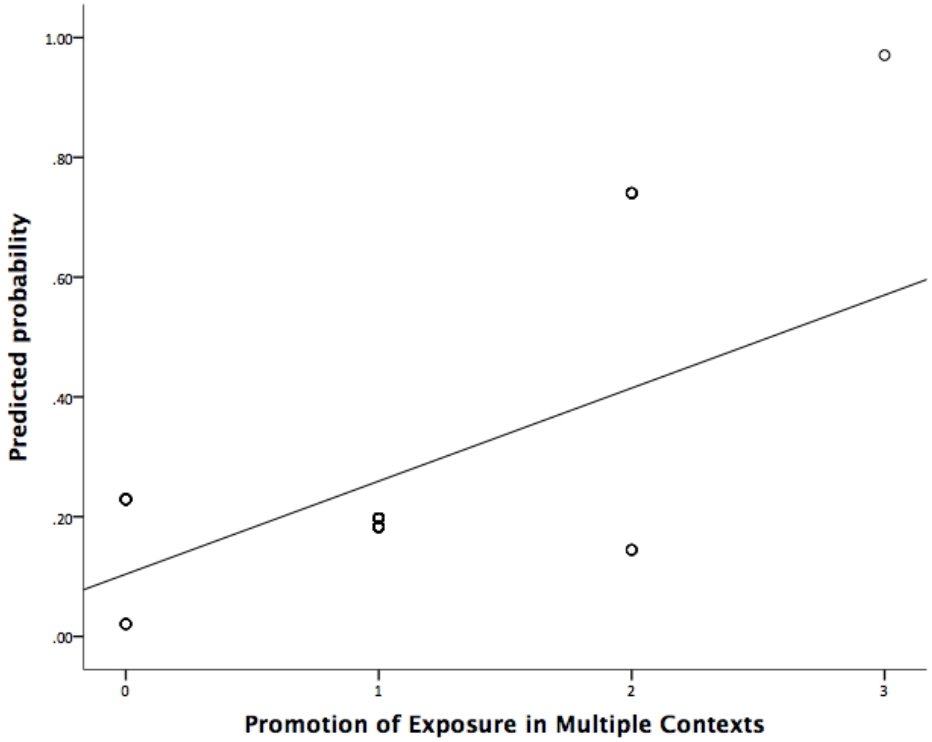

Figure 3. Significant main effect for Promotion of Exposure in Multiple Contexts in the penultimate face-to-face session and treatment response.

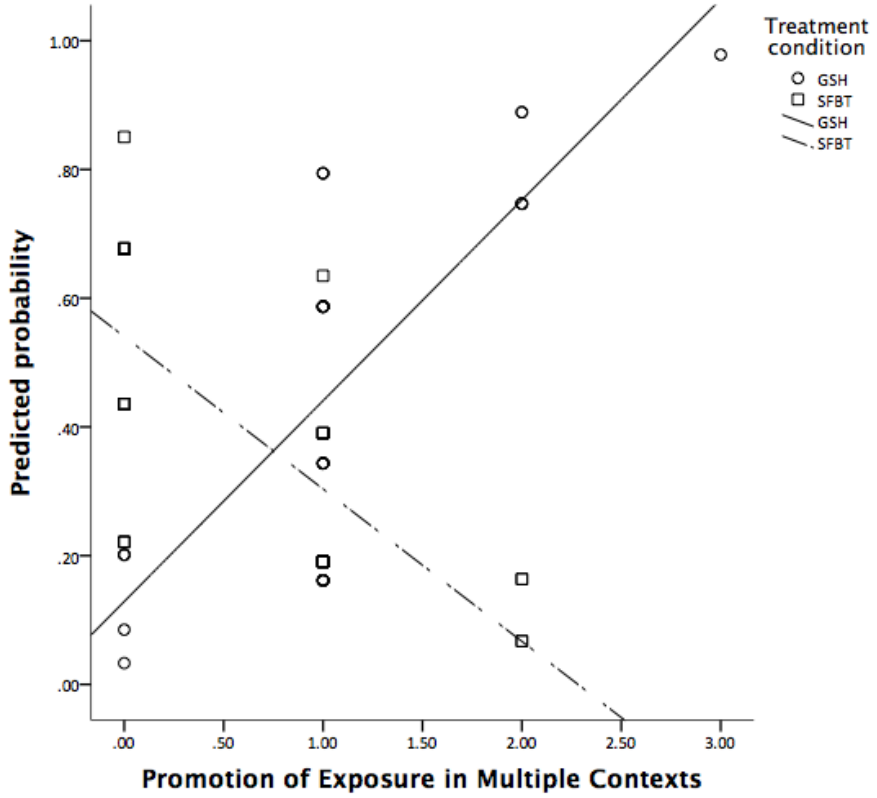

Figure 4. Significant interaction effect for Promotion of Exposure in Multiple Contexts in the penultimate face-to-face session recovery from primary anxiety disorder diagnosis.

Table 12

Regression Coefficients for Significant Main and Interaction Effects for MoCCS Predictors in the Penultimate Face-to-Face Session: Hypothesis 2

					95% CI for Odds Ratio		
MoCCS predictor - Measure	Step		B(SE)		Lower	Odds Ratio	Upper
(a)RoE	1	Constant	-0.47	(0.65)			
- CGI		RoE	-0.47	(0.30)	0.35	0.63	1.12
		Tx	-1.24	(0.94)	0.05	0.29	1.84

		RoE x Tx	0.77*	(0.37)	1.04	2.16	4.48
(b) PoEMC - CGI-I	1	Constant	-2.02	(0.52)			
		PoEMC	0.85*	(0.41)	1.04	2.39	5.24
		Tx	0.11	(0.54)	0.39	1.11	3.19
- Diagnosis	3	Constant	-5.25	(1.93)			
		Baseline anxiety	1.00**	(0.34)	1.39	2.72	5.29
		PoEMC	4.64**	(1.70)	3.72	103.98	2910.72
		Tx	-2.12*	(1.00)	0.02	0.12	0.91
		PoEMC x Tx	-2.92**	(1.00)	0.01	0.05	0.39

Note: (a) R^2 = .99 (Hosmer & Lemshow),.09 (Nagelkerke); RoE = Reinforcement of Exposure, Tx = Treatment Condition, RoE x Tx = interaction term
(b) CGI-I R^2 = .44 (Hosmer & Lemeshow), .09 (Nagelkerke); Diagnosis R^2 = .938 (Hosmer & Lemeshow), .311 (Nagelkerke); PoEMC = Promotion of Exposure in Multiple Contexts, Tx = Treatment Condition, PoEMC x tx = interaction term;
*p<.05, ** p<.01

However, there were no significant main effects or interaction effects for Reinforcement of Exposure or Promotion of Exposure in Multiple Contexts for any other outcome measures. Furthermore, after controlling for other variables, there were no significant main effects or interaction effects with any outcome measure for Promotion of or Engagement with Exposure with Variety of Stimuli, Engagement with Exposure in Multiple Contexts, Promotion of Reduction of SSB's or Use of SSB's. Notably, Promotion of Exposure with Variety of Stimuli significantly predicted CGI-I outcome in the LOCF imputed data set. A test for linearity of the logit for Use of SSB and diagnosis/CGI-I models suggests this assumption may be violated. Statistics of all non-significant results for Hypothesis 2 are in Table 14.

Table 14

Non-Significant Hierarchal Regression Analyses for the Penultimate Face-to-Face Session: Hypothesis 2

MoCCS predictor Measure	MoCCS main effect statistic	MoCCS x Treatment Interaction term statistic
RoE		
Diagnosis	B = -0.61, SE = 0.16, p = .703	B = -0.63, SE = 0.34, p = .051
SCAS-P	$F(2,76) = 0.15$, p = .861	$F(1,75) = 1.89$, p = .174
SCAS-C	$F(2,64) = 0.82$, p = .447	$F(1,63) = 1.08$, p = .302
PoEVoS		
CGI	One Stimuli: B = -1.98, SE = 1.18, p = .093; Two or more stimuli: B = -1.52, SE = 1.18, p = .125	B = -20.35, SE = 17974.72, p = .999
Diagnosis	One stimuli: B = -1.15, SE = 1.36, p = .400; Two or more stimuli: B = -2.02, SE = 1.26, p = .110	B = -2.42, SE = 1.49, p = .103
SCAS-P	$F(3,75) = 0.72$, p = .542	$F(1,74) = 0.00$, p = .993
SCAS-C	$F(3,63) = 1,46$, p = .234	$F(1,62) = 0.04$, p = .842
EwEVoS		
Diagnosis	B = 0.45, SE = 0.35, p = .194	B = -1.60, SE = 0.85, p = .060
SCAS-P	$F(2,76) = 0.00$, p = .998	$F(1,75) = 0.16$, p = .688
SCAS-C	$F(2,64) = 0.75$, p = .476	$F(1,63) = 0.17$, p = .682

PoEMC		
SCAS-P	$F(2,76) = 0.17$, p = .846	$F(1,75) = 0.90$, p = .345
SCAS-C	$F(2,64) = 1.41$, p = .253	$F(1,63) = 0.91$, p = .344
EwEMC		
CGI-I	B = 0.68, SE = 0.36, p = .057	B = 0.19, SE = 0.73, p = .796
Diagnosis	B = 0.27, SE = 0.34, p = .430	B = -0.43, SE = 0.69, p = .529
SCAS-P	$F(2,76) = 0.03$, p = .968	$F(1,75) = 0.01$, p = .910
SCAS-C	$F(2,64) = 0.60$, p = .553	$F(1,63) = 0.03$, p = .873
PoRoSSB		
CGI-I	B = -0.16, SE = 0.26, p = .522	B = -0.43, SE = 0.51, p = .395
Diagnosis	B = 0.04, SE = 0.23, p = .861	B = -0.37, SE = 0.47, p = .937
SCAS-P	$F(2,76) = 0.92$, p = .405	$F(1,75) = 0.41$, p = .523
SCAS-C	$F(2,64) = 0.59$, p = .555	$F(1,63) = 1.65$, p = .204
UoSSB		
CGI-I	B = -0.20, SE = 0.19, p = .291	B = -0.12, SE = 0.36, p = .738
Diagnosis	B = -0.13, SE = 0.18, p = .474	B = 0.71, SE = 0.35, p = .840
SCAS-P	$F(2,76) = 0.43$, p = .650	$F(1,75) = 0.13$, p = .723
SCAS-C	$F(2,64) = 1.61$, p =.207	$F(1,63) = 0.14$, p = .705

Note: RoE = Reinforcement of exposure, PoEVoS = Promotion of exposure with variety of stimuli, EwEVoS = Engagement with exposure with variety of stimuli, PoEMC = Promotion of exposure in multiple contexts, EwEMC = Engagement with exposure in multiple contexts, PoRoSSB = Promotion of reduction of safety-seeking behaviours, UoSSB = Use of safety-seeking behaviours.

3.4.1.3 Results for Hypothesis 3.

It was hypothesised that the promotion of and use of coping strategies would predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and SFBT. After controlling for other variables, there were no significant main effects or

interaction effects for the MoCCS variable x treatment condition with any outcome measure for Promotion of Distraction or Use of Distraction. Statistics are in Table 15. Regression diagnostics indicated significant outliers (Maholanobis Distance range 1.15 – 78.01). However, none of these outliers were influential cases (maximum Cook's distance range 0.00 - 0.19), suggesting there was no real need to address the outlier(s) since they did not have a large effect on the regression model (Stevens, 2002).

Table 15

Non-Signiant Hierarchal Regression Analyses for the Penultimate Face-to-Face Session: Hypothesis 3

MoCCS predictor	Main effect statistic	MoCCS x Treatment interaction term statistic
PoD		
CGI-I	B = -0.39, SE = 0.76, p = .606	B = -0.84, SE = 1.72, p = .627
Diagnosis	B = -0.43, SE = 0.79, p = .586	B = -1.86, SE = 1.75, p = .287
SCAS-P	$F(2,76) = 0.16$, p = .851	$F(1,75) = 1.24$, p = .269
SCAS-C	$F(2,64) = 0.79$, p = .458	$F(1,63) = 0.03$, p = .865
UoD		
CGI-I	B = 0.22, SE = 0.21, p = .294	B = 0.14, SE = 0.42, p = .740
Diagnosis	B = 0.00, SE = 0.20, p = .999	B = 0.02, SE = 0.44, p = .965
SCAS-P	$F(2,76) = 0.86$, p = .428	$F(1,75) = 0.09$, p = .768
SCAS-C	$F(2,64) = 0.54$, p = .583	$F(1,63) = 0.83$, p = .367

Note: PoD = Promotion of distraction, UoD = Use of distraction

3.4.1.4 Results for Hypothesis 4.

It was hypothesised that reinforcement of coping and increased levels of perceived coping would predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and SFBT. After controlling for other variables, there were no significant main effects or interaction effects for the MoCCS variable x treatment condition with any outcome measure for Reinforcement of Coping or Evidence of Coping Efficacy. Statistics are in Table 16. Notably, a test for linearity of the logit suggests this assumption may be violated for the Evidence of Coping Efficacy and post-treatment diagnosis/CGI-I models. Hence they may be unreliable.

Table 16

Non-Significant Hierarchal Regression Analyses for the Penultimate Face-to-Face Session: Hypothesis 4

MoCCS predictor	Main effect statistic	MoCCS x Treatment interaction term statistic
RoC		
CGI-I	Moderate: B = -0.89, SE = 0.76, p = .240; Extensive: B = -0.40, SE = 0.63, p = .523	B = 0.92, SE = 1.13, p = .416
Diagnosis	Moderate: B = -1.00, SE = 0.77, p = .197; Extensive: B=-1.05, SE = 0.63, p = .098	B = -0.01, SE = 0.93, p = .996
SCAS-P	$F(3,75) = 0.30$, p = .823	$F(2,73) = 0.71$, p = .494
SCAS-C	$F(3,63) = 0.56$, p = .641	$F(2,61) = 1.77$, p = .180

EoCE		
CGI-I	B = 0.40, SE = 0.30, p = .176	B = 0.64, SE = 0.60, p = .914
Diagnosis	B = 0.06, SE = 0.27, p = .835	B = -0.27, SE = 0.54, p = .617
SCAS-P	$F(2,87) = 0.23$, p = .795	$F(1,86) = 1.40$, p = .240
SCAS-C	$F(2646) = 2.18$, p = .121	$F(1,63) = 0.02$, p=.883

Note: RoC = Reinforcement of coping, EoCE = Evidence of coping efficacy

3.4.1.5 Results for Hypothesis 5.

It was hypothesised that the promotion and use of AMS would *not* predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and SFBT. After controlling for other variables, there was a significant interaction effect for Promotion of Cognitive Restructuring x treatment condition for recovery from post-treatment diagnosis. The effect can be seen in Figure 5, reflecting that higher ratings of Promotion of Cognitive Restructuring in the penultimate face-to-face session predicted less recovery from primary diagnosis for GPD-CBT, yet more recovery for SFBT. Regression coefficients are in Table 17.

However, there were no significant main effects or interaction effects for Promotion of Cognitive Restructuring for any other outcome measure. Similarly, after controlling for other variables, there were no significant main effects or interaction effects for Use of Cognitive Restructuring for any outcome measure. Non-significant statistics can be found in Table 18. A test for linearity of logit indicated that the Promotion of Cognitive Restructuring and CGI-I model may have violated this assumption.

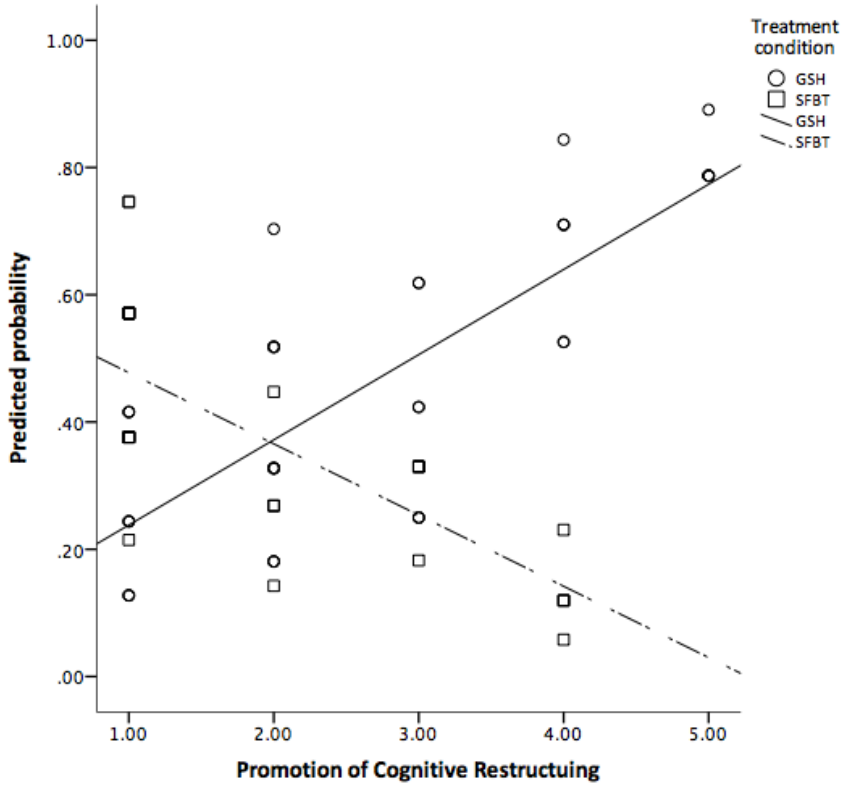

Figure 2. Significant interaction effect for Promotion of Cognitive Restructuring in the penultimate face-to-face session and recovery from primary anxiety disorder diagnosis.

Table 17

Regression Coefficients for Significant Interaction Effects for Promotion of Cognitive Restructuring in the Penultimate Face-to-face Session for Recovery from Primary Anxiety Disorder Diagnosis

				95% CI for Odds Ratio		
		B(SE)		Lower	Odds Ratio	Upper
Step 3	Constant	-3.97	(2.00)			
	Baseline Anxiety	0.79*	(0.34)	1.13	2.21	4.30
	PoCR	1.32*	(0.67)	1.01	3.75	13.86

Tx	-1.54	(1.07)	0.03	0.22	1.75
PoCR x Tx	-0.91*	(0.46)	0.17	0.40	0.98

Note: R^2 = .811 (Hosmer & Lemeshow), .222 (Nagelkerke); PoCR = Promotion of Cognitive Restructuring, Tx = Treatment Condition, PoCR x tx = interaction term; *p <.05

Table 18

Non-Significant Hierarchal Regression Analyses for the Penultimate Face-to-Face Session: Hypothesis 5

MoCCS predictor	Main effect statistic	MoCCS x Treatment Interaction term statistic
PoCR		
CGI-I	B = -0.19, SE = 0.21, p = .381	B = 0.19, SE = 0.47, p = .679
SCAS-P	$F(2,76) = 0.00$, p = .998	$F(1,75) = 0.05$, p = .820
SCAS-C	$F(2,64) = 1.51$, p = .228	$F(1,63) = 0.24$, p = .626
UoCR		
CGI-I	B = 0.21, SE = 0.22, p = .349	B = -0.85, SE = 0.46, p = .063
Diagnosis	B = 0.31, SE = 0.22, p = .166	B = -0.54, SE = 0.46, p = .240
SCAS-P	$F(2,76) = 0.73$, p = .486	$F(1,75) = 0.28$, p = .600
SCAS-C	$F(2,64) = 1.80$, p = .174	$F(1,63) = 0.02$, p = .882

Note: PoCR = Promotion of cognitive restructuring, UoCR = Use of cognitive restructuring

3.4.2 Results for Final Face-to-Face Session

3.4.2.1. Results for Hypothesis 1.

It was hypothesised that the promotion of and engagement with exposure would predict improvements in scores on outcome measures relating to anxiety for GPD-CBT and

SFBT. After controlling for other variables, there was a significant main effect for Promotion of Exposure and recovery from the primary anxiety disorder. The effect can be seen in Figure 6, reflecting that greater ratings of Promotion of Exposure predicted less recovery from the primary anxiety diagnosis across treatments. However, the findings should be interpreted with caution as a test for linearity of logit showed the model may violate this assumption. Regression coefficients are in Table 19.

However, after controlling for other variables, there were no significant main effects or interaction effects for Promotion of Exposure with other outcome measures. Similarly, there were no significant main effects or interaction effects for Engagement with Exposure for any outcome measure. Non-significant statistics can be found in Table 20.

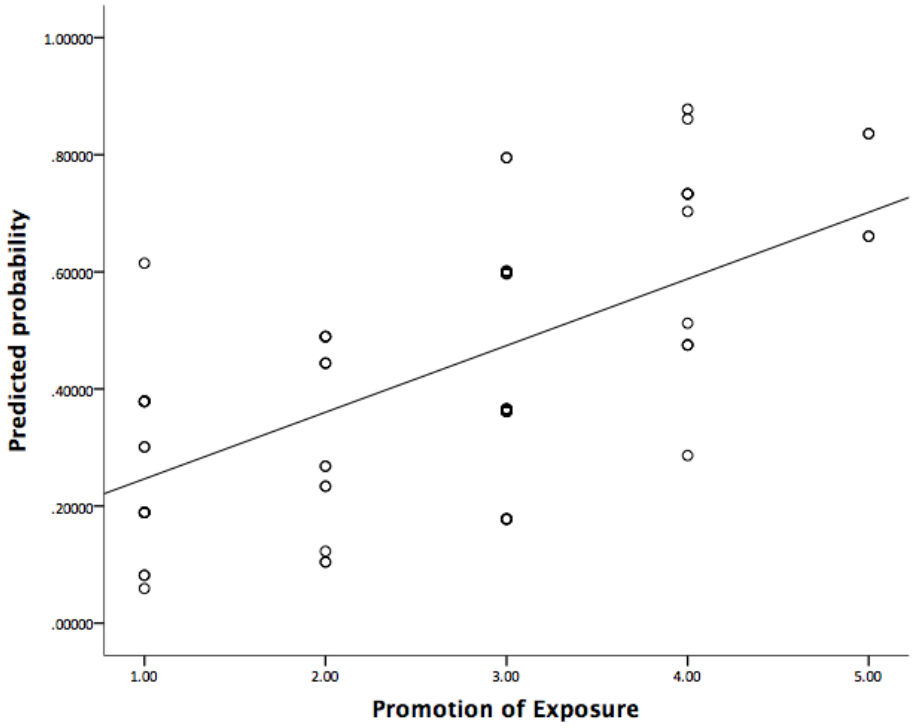

Figure 3. Significant main effect for Promotion of Exposure in final face-to-face session and recovery from primary anxiety disorder diagnosis.

Table 19.

Regression Coefficients for Significant Main Effect for Promotion of Exposure in Final Face-to-Face Session and Recovery from Primary Anxiety Disorder Diagnosis

				95% CI for Odds Ratio		
		B(SE)		Lower	Odds Ratio	Upper
Step 2	Constant	-6.94	(2.07)			
	Baseline Anxiety	0.97**	(0.35)	1.35	2.65	5.21
	PoE	0.53*	(0.24)	1.06	1.69	2.71
	Tx	-0.07	(0.54)	0.33	0.94	2.68

Note: R^2 = .54 (Hosmer & Lemeshow), .232 (Nagelkerke); PoE = Promotion of Exposure, Tx = Treatment Condition, PoE x tx = interaction term; *p <.05 **p <.01

Table 20

Non-Significant Hierarchal Regression Analyses for Final Face-to-Face Session: Hypothesis 1.

MoCCS predictor	Main effect statistic	MoCCS x Treatment Interaction term statistics
PoE		
CGI-I	B = 0.23, SE = 0.24, p = .346	B = -0.42, SE = 0.48, p = .378
SCAS-P	$F(2,76) = 0.19$, p = .826	$F(1,75) = 1.40$, p = .240
SCAS-C	$F(2,64) = .30$, p = .741	$F(1,63) = 0.01$, p = .939
EwE		
CGI-I	B = 0.12, SE = 0.24, p = .630	B = -0.13, SE = 0.48, p = .784

Diagnosis	B = 0.37, SE = 0.24, p = .116	B = -0.55, SE = 0.41, p = .185
SCAS-P	$F(2,76) = 0.19$, p = .826	$F(1,75) = 1.40$, p = .240
SCAS-C	$F(1,63) = 0.43$, p = .654	$F(1,63) = 0.08$, p = .781

Note: PoE = Promotion of exposure, EwE = Engagement with exposure

3.4.2.2. Results for Hypothesis 2.

It was hypothesised that the promotion of and engagement with strategies to optimise inhibitory learning whilst completing exposure would predict improvements in scores on outcome measures for GPD-CBT and SFBT. After controlling for other variables, there was a significant main effect for Reinforcement of Exposure and change in SCAS-C. Figure 7 illustrates the effect, reflecting that higher levels of Reinforcement of Exposure in the final face-to-face session predicted more improvement in child reported anxiety symptomology across treatments. Regression coefficients are in Table 21.

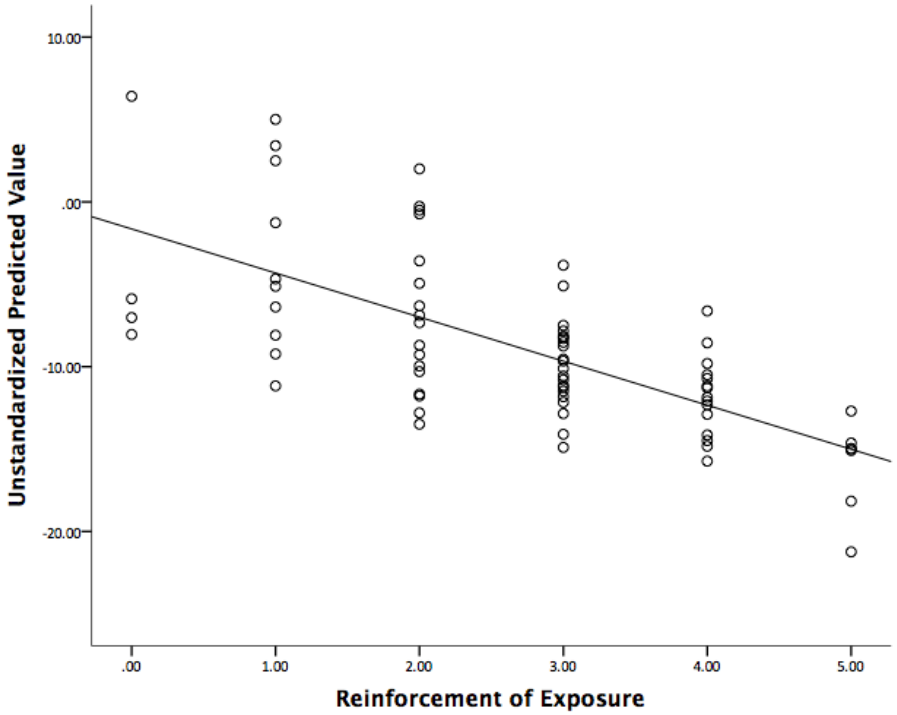

Figure 4. Significant main effect for Reinforcement of Exposure in the final face-to-face session and SCAS-C.

Table 21

Regression Coefficients for Reinforcement of Exposure in the Final Session and SCAS-C

		B	SE B	ß
Step 1	Constant	7.54	7.92	
	Reinforcement of Exposure	-3.24	1.32	-.32*
	Treatment Condition	-5.06	3.55	-.18

Note: $F(2,65) = 3.15$; adjusted $R^2 = .061$; *p <.05

After controlling for other variables, there was a significant main effect for Promotion of Exposure in Multiple Contexts for recovery from the primary anxiety disorder. The effect is illustrated in Figure 8, indicating that higher ratings of Promotion of Exposure in Multiple Contexts in the final face-to-face session predicted less recovery from the primary anxiety disorder. Regression coefficients are in Table 22.

After controlling for other variables, there were no significant main effects or interaction effects for Reinforcement of Exposure or Promotion of Exposure in Multiple Contexts with other outcome measures. Similarly, there were no significant main effects or interaction effects for MoCCS variable x treatment condition interactions with any outcome measure for Promotion of Exposure with a Variety of Stimuli, Engagement with Exposure in Multiple Contexts, Promotion of Reduction of SSB or Use of SSB. Statistics of non-significant findings can be found in Table 23. A test for linearity of the logit indicated that the Reinforcement of Exposure and CGI-I

model violates this assumption. Regression diagnostics indicated significant outliers for all measures for Promotion of Exposure with a Variety of stimuli (Maholanobis distance range 39.10 – 89.01). However, none of these outliers were influential cases (Cook's distance range 0.09 – 0.45), suggesting there was no real need to address the outlier(s) since they did not have a large effect on the regression model (Stevens, 2002). Also notably, findings for the LOCF imputed data was significant for this variable.

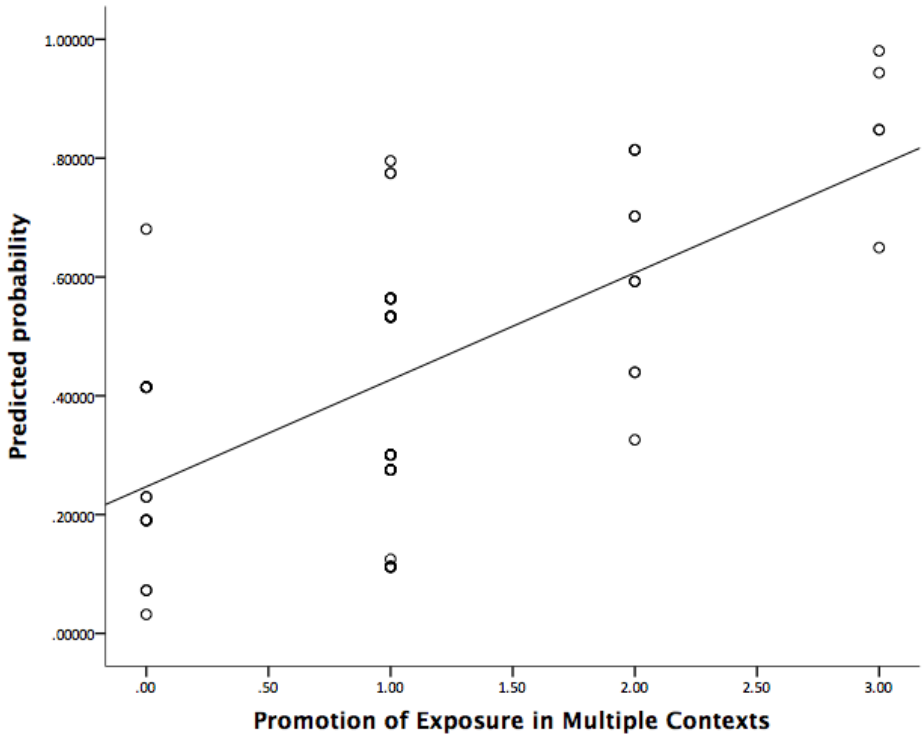

Figure 8. Significant main effect for Promotion of Exposure in Multiple Contexts in the final face-to-face session and recovery from primary anxiety disorder diagnosis.

Table 22

Regression Coefficients for Significant Main Effects of Promotion of Exposure in Multiple Contexts in the Final Face-to-Face Session and Recovery from Primary Anxiety Disorder Diagnosis

				95% CI for Odds Ratio		
		B(SE)		Lower	Odds Ratio	Upper
Step 2	Constant	-7.09	(2.11)			
	Baseline Anxiety	1.08	(0.36)	1.45	2.93	5.92
	PoEMC	0.98*	(0.38)	1.27	2.67	5.64
	Tx	-0.13	(0.54)	0.31	0.88	2.53

Note: R^2 = .619 (Hosmer & Lemeshow),.264 (Nagelkerke); PoEMC = Promotion of Exposure in Multiple Contexts, Tx = Treatment Condition, PoEMC x tx = interaction term; *p <.05

Table 23

Non-Significant Hierarchal Regression Analyses for Final Face-to-Face Session: Hypothesis 2

MoCCS predictor Measure	Main effect statistic	MoCCS x Treatment Interaction term statistic
RoE		
CGI-I	B = -0.11, SE = 0.19, p = .580	B = -0.37, SE = 0.35, p = .388
Diagnosis	B = 0.08, SE = 0.19, p = .679	B = 0.30, SE = 0.38, p = .441
SCAS-P	$F(2,76) = 0.58$, p = .560	$F(1,75) = 0.93$, p = .337

PoEVoS		
CGI-I	Moderate: B = -20.56, SE = 100047.85 p = .998; Extensive: B = -0.24, SE = 0.77, p = .532	B = 0.92, SE = 1.74, p = .598
Diagnosis	Moderate: B = -1.95, SE = 1.01, p = .053; Extensive: B = -1.35, SE = 0.80, p = .091	B = -0.99, SE = 1.36, p = .467
SCAS-P	$F(3,75) = 2.44$, p = .071	$F(2,73) = 0.88$, p = .418
SCAS-C	$F(1,62) = 021.$, p = .890	$F(1,62) = 2.93$, p = .092
EwEVoS		
CGI-I	B = 0.57, SE = 0.34, p = .089	B = -0.35, SE = 0.69, p = .612
Diagnosis	B = 0.63, SE = .35, p = .072	B = -0.41, SE = 0.70, p = .563
SCAS-P	$F(2,76) = 1.33$, p = .270	$F(1,75) = 3.83$, p = .054
SCAS-C	$F(2,64) = 0.38$, p = .688	$F(1,63) = 0.36$, p = .552
PoEMC		
CGI-I	B = 0.67, SE = .35, p = .053	B = -0.26, SE = 0.73, p = .722
SCAS-P	$F(2,76) = 0.00$, p = .999	$F(1,75) = 2.99$, p = .064
SCAS-C	$F(2,64) = 0.61$, p = .549	$F(1,63) = 0.18$, p = .672
EwEMC		
CGI-I	B = 0.35, SE = 0.34, p = .295	B = -0.18, SE = 0.67, p = .793
Diagnosis	B = 0.58, SE = 0.34, p = .091	B = -0.36, SE = 0.69, p = .601
SCAS-P	$F(2,76) = 0.06$, p = .943	$F(1,75) = 0.15$, p = .924
SCAS-C	$F(2,64) = 1.20$, p = .308	$F(1,63) = 1.30$, p = .259
PoRoSSB		

CGI-I	B = -0.27, SE = 0.22, p = .213	B = -0.49, SE = 0.45, p = .281
Diagnosis	B = 0.17, SE = 0.20, p = .398	B = 0.02, SE = 0.42, p = .970
SCAS-P	$F(2,76) = 0.793$, p = .398	$F(1,75) = .04$, p = .844
SCAS-C	$F(2,64) = 0.49$, p = .635	$F(1,63) = 0.04$, p = .844
UoSSB		
CGI-I	B = 0.10, SE = 0.20, p = .636	B = -0.12, SE = 0.40, p = .765
Diagnosis	B = -0.05, SE = 0.19, p = .810	B = -0.06, SE = 0.39, p = .882
SCAS-P	$F(2,76) = 0.05$, p = .956	$F(1,75) = 0.11$, p = .740
SCAS-C	$F(2,64) = 0.30$, p = .740	$F(1,63) = 0.00$, p = .987

Note: RoE = Reinforcement of Exposure, PoEVoS = Promotion of Exposure with Variety of Stimuli, EwEVoS = Engagement with Exposure with Variety of Stimuli, PoEMC = Promotion of Exposure in Multiple Contexts, EwEMC = Engagement with Exposure in Multiple Contexts, PoRoSSB = Promotion of Reduction of Safety-Seeking Behaviour, UoSSB = use of Safety-Seeking Behaviour.

3.4.2.3 Results for Hypothesis 3.

It was hypothesised that the promotion of and use of coping strategies would predict improvements in scores on outcome measures for GPD-CBT and SFBT. After controlling for shared variance with other variables, there was a significant main effect for Promotion of Distraction and change in SCAS-C. The effect is illustrated in Figure 9, reflecting that the presence of Promotion of Distraction predicted less improvement in child reported anxiety symptomology. Regression coefficients are in Table 24. After controlling for other variables, there were no significant main or interaction effects for Promotion of Distraction with other outcome measure. There were no significant main or interaction effects for Use of Distraction. Non-significant statistics are in Table 25.

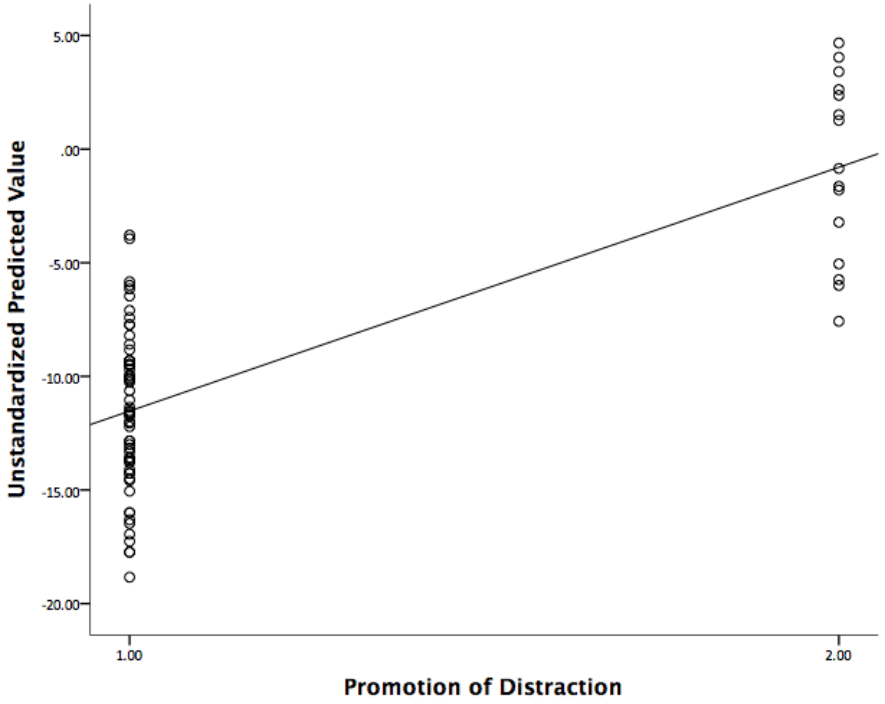

Figure 9. Significant main effect of Promotion of Distraction in the final face-to-face session and change in SCAS-C.

Table 24

Regression Coefficients for Promotion of Distraction During the Final Face-to-Face Session and Change in SCAS-C

		B	SE B	ß
Step 2	Constant	-11.77	7.48	
	Baseline Anxiety	-0.17	0.81	-.24*
	Promotion of Distraction	12.08	3.80	.37**
	Treatment Condition	-3.87	3.22	-.14

Note: $F(2,64) = 5.41$; adjusted $R^2 = .134$; *$p < .05$ **$p < .01$

Table 25

Non-Significant Hierarchal Regression Analyses for Final Face-to-Face Session: Hypothesis 3

MoCCS predictor	Main effect statistic	MoCCS x Treatment Interaction term statistics
PoD		
CGI-I	B = 0.31, SE = 0.70, p = .656	B = 0.75, SE = 1.46, p = .608
Diagnosis	B = 0.15, SE = 0.65, p = .817	B = -0.66, SE = 1.38, p = .589
SCAS-P	$F(2,76) = 0.13$, p = .878	$F(1,75) = 1.29$, p = .260
UoD		
CGI-I	B = -0.09, SE = 0.22, p = .695	B = -0.61, SE = 0.59, p = .302
Diagnosis	B = -0.16, SE = 0.20, p = .427	B = 0.45, SE = 0.44, p = .305
SCAS-P	$F(2,76) = 0.16$, p = .853	$F(1,75) = 2.36$, p = .129
SCAS-C	$F(2,64) = 2.42$, p = .097	$F(1,63) = 0.00$, p = .950

Note: PoD = Promotion of Distraction, UoD = Use of Distraction

3.4.2.4 Results for Hypothesis 4.

It was hypothesised that reinforcement of coping and increased levels of perceived coping would predict improvements in scores on outcome measures for GPD-CBT and SFBT. After controlling for other variables, there was a significant interaction effect for Reinforcement of Coping x treatment condition for child reported anxiety symptomology. The interaction effect is illustrated in Figure 10, reflecting that slight/moderate ratings of Reinforcement of Coping (vs no reinforcement) predicted more improvement in child reported anxiety symptomology for GPD-CBT condition,

yet did not predict SFBT. Regression coefficients are in Table 26. After controlling for other variables, there were no significant main or interaction effects for Reinforcement of Coping with other outcome measures. There were no significant main or interaction effects for Evidence of Coping Efficacy. Non-significant findings are in Table 27.

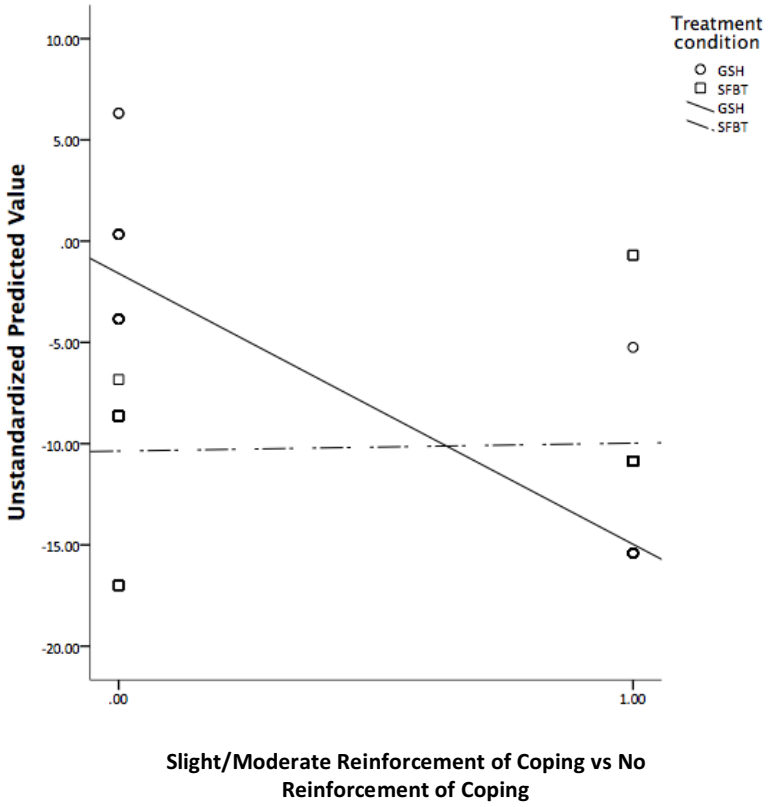

Figure 10. Significant interaction effect for slight/moderate vs. no Reinforcement of Coping in the final face-to-face session and change in SCAS-C.

Table 26

Regression Coefficients for Reinforcement of Coping in the Final Face-to-Face Session and Change in SCAS-C

		B	SE B	ß
Step 2	Constant	9.30	8.74	

Slight/Moderate RoC vs No RoC	-29.26	11.46	-1.07*
Extensive RoC vs No RoC	10.17	6.26	0.19
Tx	-13.15	6.59	-0.48
Slight/Moderate RoC x Tx	17.70	8.03	1.12*
Extensive RoC x Tx	4.19	3.39	0.30

Note: $F(5,67) = 1.77$, adjusted $R^2 = .089$; RoC = Reinforcement of Coping, Tx = Treatment Condition, Roc x Tx = Interaction effect; *p< .05

Table 27

Non-Significant Hierarchal Regression Analyses for Final Face-to-Face Session: Hypothesis 4

MoCCS predictor Measure	Main effect statistic	MoCCS x Interaction term statistics
RoC		
CGI-I	Moderate: B = 0.13, SE = 0.74, p = .863; Extensive = -0.12, SE = 0.64, p = .850	B = .04, SE = 0.79, p = .961
Diagnosis	Moderate: B = -0.71, SE = 0.71, p = .317; Extensive: B = -0.42, SE = 0.60, p = .486	B = -0.42, SE = 0.74, p = .574
SCAS-P	$F(3,75) = 0.17$, p = .916	$F(2,73) = 2.03$, p = 0.138
EoCE		
CGI-I	B = -0.24, SE = 0.25, p = .342	B = -0.33, SE = 0.50, p = .516

Diagnosis	B = -0.28, SE = 0.24, p = .255	B = -0.17, SE = 0.49, p = .726
SCAS-P	$F(2,76) = 0.98$, p = .381	$F(1,75) = 0.00$, p = .970
SCAS-C	$F(2,64) = 0.30$, p = .741	$F(1,63) = 0.37$, p = .545

Note: RoC = Reinforcement of Coping, EoCE = Evidence of Coping Efficacy

3.4.2.5 Results for Hypothesis 5.

It was hypothesised that the promotion and use of AMS would *not* predict improvements in outcome measures for GPD-CBT and SFBT. After controlling for other variables, there were significant interaction effects for Promotion of Cognitive Restructuring x treatment condition and Use of Cognitive Restructuring x treatment condition for recovery from primary anxiety disorder. The effects are in Figure 11 and Figure 12, respectively. They reflect that higher levels of Promotion of and Use of Cognitive Restructuring in the final face-to-face session predicted less recovery from primary anxiety diagnosis for GPD-CBT, yet more recovery for SFBT. Regression coefficients are in Table 28. Linearity of logit tests revealed that the Promotion of Cognitive Restructuring model may violate this assumption. After controlling for variance with other variables, there were no significant main effects or interaction effects for Promotion or Use of Cognitive Restructuring with any other outcome variables. Non-significant statistics are in Table 29.

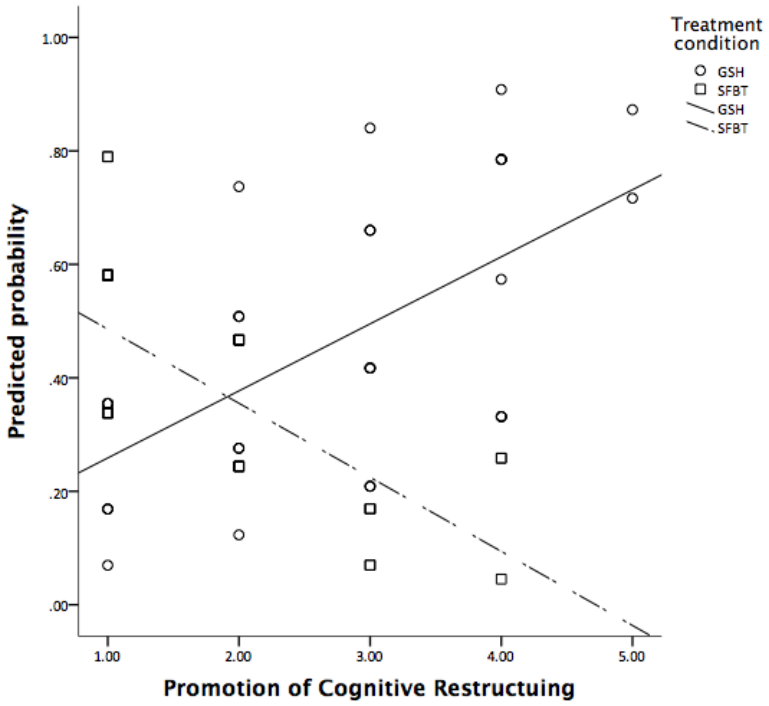

Figure 11. Significant interaction effect for promotion of cognitive restructuring in the final face-to-face session and presence of post-treatment diagnosis.

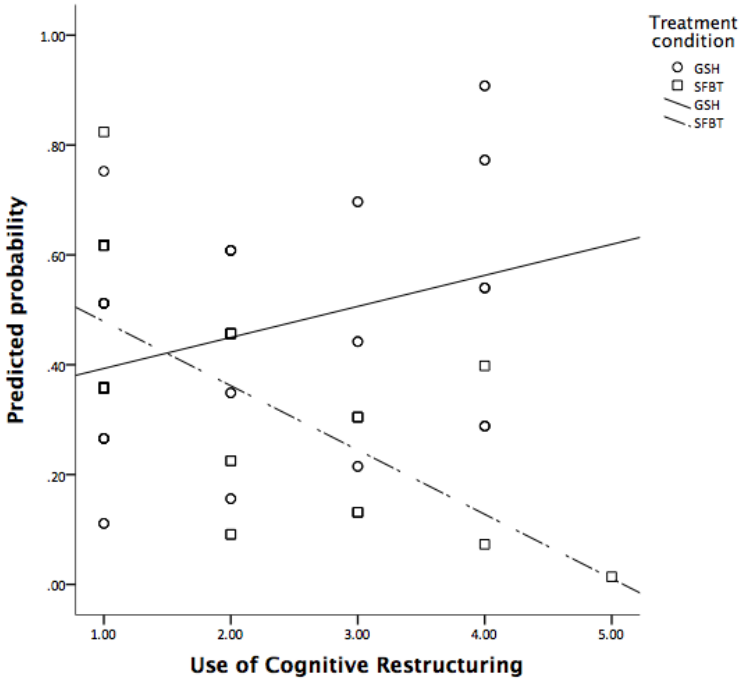

Figure 12. Significant interaction effect for use of cognitive restructuring in the final face-to-face session and presence of post-treatment diagnosis.

Table 28

Regression Coefficients for Promotion of Cognitive Restructuring in the Final Face-to-Face Session and Recovery from Primary Anxiety Disorder Diagnosis

MoCCS predictor			B(SE)		95% CI for Odds Ratio Lower	Odds Ratio	Upper
PoCR	Step 3	Constant	-5.20	(2.11)			
		Baseline Anxiety	1.00**	(0.35)	1.38	2.71	5.34
		PoCR	1.72*	(0.74)	1.30	5.59	24.04
		Tx	-2.02	(1.17)	0.01	0.13	1.31
		PoCR x Tx	-1.09*	(0.52)	0.12	0.34	0.93
UoCR	Step 3	Constant	-5.25	(2.02)			
		Baseline Anxiety	1.06**	(0.36)	1.45	2.90	5.81
		UoCR	1.44	(0.74)	0.98	4.21	18.03
		Tx	-1.48	(1.05)	0.03	0.23	1.78
		UoCR x Tx	-1.05*	(0.52)	0.13	0.35	0.98

Note: PoCR R^2 = .239 (Hosmer & Lemeshow) .244 (Nagelkerke); UoCR R^2 = .485 (Hosmer & Lemeshow) .224 (Nagelkerke); PoCR = Promotion of Cognitive Restructuring, UoCR = Use of Cognitive Restructuring, Tx = Treatment Condition, PoCR/UoCR x tx = interaction term; *p <.05 **p <.01

Table 29.

Non-Significant Statistics for Final Face-to-Face Session: Hypothesis 5.

MoCCS predictor	Main effect statistic	MoCCS x Treatment Interaction term statistics

PoCR		
CGI-I	B = 0.07, SE = 0.2, p = .767	B = -0.31, SE = 0.47, p = .520
SCAS-P	$F(2,876) = 0.05$, p = .949	$F(1,75) = 0.00$, p = .949
SCAS-C	$F(2,64) = 0.73$, p = .485	$F(1,63) = 0.33$, p = .565
UoCR		
CGI-I	B = -0.07, SE = 0.23, p = .758	B = -0.25, SE = 0.46, p = .586
SCAS-P	$F(2,76) = 0.01$, p = .994	$F(1,75) = 0.13$, p = .719
SCAS-C	$F(2,64) = 0.31$, p = .738	$F(1,63) = 0.05$, p = .819

Note: PoCR = Promotion of cognitive restructuring, UoCR = Use of cognitive restructuring

3.5 Summary of Results

The results of the study can be summarised as follows:

- Higher ratings of Promotion of Exposure in the penultimate face-to-face session predicted less recovery from primary anxiety disorder diagnosis for GPD-CBT but more recovery for SFBT. Higher ratings of Promotion of Exposure in the final face-to-face session predicted less recovery from primary anxiety disorder diagnosis for both treatments.
- Ratings of Engagement with Exposure did not predict any treatment outcome.
- Higher ratings of Reinforcement of Exposure in the penultimate face-to-face session negatively predicted treatment response for GPD-CBT, but positively predicted treatment response for SFBT. Higher ratings of Reinforcement of Exposure in the final face-to-face session predicted more improvement in child-reported anxiety symptomology for both treatments.
- Ratings of Promotion of and Engagement with Exposure with a Variety of Stimuli did not predict treatment outcome.

- Ratings of Promotion of Exposure in Multiple Contexts in the penultimate face-to-face session negatively predicted treatment-response for both treatments. Ratings of Promotion of Exposure in Multiple Contexts in the penultimate face-to-face session also predicted less recovery from primary anxiety disorder diagnosis for GPD-CBT, but more recovery for SFBT. Ratings of Promotion of Exposure in multiple contexts in the final face-to-face session predicted less recovery from primary anxiety disorder diagnosis for both treatments.
- Ratings of Engagement with Exposure in Multiple Contexts did not predict treatment outcome.
- Ratings of Promotion of Reduction of SSBs and Use of SSBs did not predict treatment outcome.
- Ratings for Promotion of Distraction in the final face-to-face session predicted less improvement in child reported anxiety symptomology.
- Ratings for Use of Distraction did not predict any treatment outcome.
- Ratings of moderate levels vs. slight levels of Reinforcement of Coping in the final face-to-face session, predicted more improvement in child-reported anxiety symptomology for GPD-CBT and appeared to have no effect for SFBT.
- Ratings of Evidence of Coping Efficacy did not predict any treatment outcome.
- Higher ratings of Promotion of Cognitive Restructuring in both sessions predicted less recovery from primary anxiety disorder diagnosis for GPD-CBT and more recovery for SFBT.
- Higher ratings of Use of Cognitive Restructuring in the final face-to-face session predicted less recovery from the primary anxiety disorder for GPD-CBT and more recovery for SFBT.

Chapter 4. Discussion

4.1 Overview

This was a novel opportunity to examine potential mechanisms of change and their ability to predict outcome across two different, successful CAD treatments, which has not been done before. Several hypotheses were tested, including (a) the promotion of and engagement with exposure would predict improvements in scores on outcome measures; (b) promotion of and engagement with strategies to optimise inhibitory learning whilst completing exposure would predict improvements in scores on outcome measures; (c) the promotion of and use of coping strategies would predict improvements in scores on outcome measures; (d) greater reinforcement of coping and coping efficacy would predict improvements in scores on outcome measures; (e) promotion and use of AMS would *not* predict improvements in scores on outcome measures. Due to substantial content differences in the coded sessions and low correlations between the ratings of MoCCS predictors for the penultimate face-to-face session and the final face-to-face session, analyses were conducted separately for each session.

There was some evidence that greater Promotion of Exposure predicted poorer treatment outcome, whereas Engagement with Exposure did not predict treatment outcome. In terms of strategies to optimise inhibitory learning, there was evidence that Reinforcement of Exposure predicted better treatment outcomes, whereas Promotion of Exposure in Multiple Contexts predicted poorer treatment outcome. Regarding coping strategy use, Promotion of Distraction predicted poorer treatment outcome, yet Use of Distraction did not predict treatment outcome. Slight/moderate amounts of Reinforcement of Coping, compared to no Reinforcement of Coping, predicted better

treatment outcome for GPD-CBT, yet this appeared to have no effect for SFBT. Evidence of Coping Efficacy did not predict any treatment outcome. The Promotion and Use of Cognitive Restructuring predicted poorer treatment outcome for GPD-CBT, yet better treatment outcome for SFBT. However, findings were not consistent across different outcome measures or the different sessions that were rated.

4.2 Main Findings

4.2.1 Exposure Dose and Treatment Outcome

4.2.1.1. Promotion of Exposure.

Hypothesis 1 expected that Promotion of Exposure would predict improvements in treatment outcome measure(s). Results partly supported this, as higher ratings of Promotion of Exposure in the penultimate face-to-face session predicted greater recovery from primary anxiety disorder for SFBT but not for GPD-CBT. Contrary to the hypothesis, higher ratings of Promotion of Exposure in the final face-to-face session predicted less recovery from primary anxiety disorder for both treatments.

These findings contrast with previous CBT for CAD research by Tiwari et al. (2013), who examined the predictive value of assigning children between-session exposure tasks as homework. This is arguably a form of promoting exposure. They found that treatment responders were more likely to have been assigned between-session exposure tasks than non-responders. Methodologically, this study was similar in that it used independent observer's ratings of exposure practices in an RCT. However, exposure encouragement was operationalised differently, with the present study rating Promotion of Exposure on a 5-point Likert scale, whereas the previous study dichotomously examined whether children were set exposure tasks as homework or not. The studies

also differed on who delivered the treatment to the child, and hence there may be differences in the effects of promotion of exposure based on whether it is from the therapist or the parent. This may indicate that promoting exposure effectively requires a level of skill that therapists presumably have and parents do not.

Whilst there are methodological issues (discussed below) that may account for the unexpected GPD-CBT findings in the present study, an alternative interpretation is that promoting exposure at certain times during treatment is counter-productive to treatment outcome for CADs. Notably, in the penultimate face-to-face GPD-CBT session, parents had not yet been introduced to the concept of exposure. Hence Promotion of Exposure ratings for this session are based on the parents behaviour *before* they have been given a rationale or guidance from the therapist. McGuire et al. (2016) suggested it is important to provide psychoeducation to clients and families to ensure they understand the rationale of different therapeutic strategies. Therefore, it is possible that the parents lack of competence in promoting exposure effectively is an explanation of this finding.

The finding that greater Promotion of Exposure in the penultimate face-to-face session predicted better treatment outcome for SFBT also warrants consideration. Focusing on the future and creating a solution focused environment for the client have previously been proposed as potential mechanisms of change for SFBT (Trepper at el., 2010). It is possible that as part of this, therapists encourage the child to face their fears. However, due to a lack of research into these proposed SFBT mechanisms of change (Grant et al., 2012), particularly with anxiety disorders and children, these are merely speculative explanations and are not based on any research evidence.

The finding from the final face-to-face session, that greater Promotion of Exposure was associated with lower rates of recovery from the primary anxiety disorder for both treatments, may indicate that those not doing well in treatment are still being encouraged to engage in exposure at a late stage. It is possible that those who are doing better are no longer being encouraged. Further research is needed to clarify this.

The findings for GPD-CBT may also be explained by methodological limitations of the coding scheme item. Both verbal and behavioural promotion of exposure were coded in the same variable. This assumes that they have the same effect on treatment outcome but there is no research evidence to suggest this. Whilst this was also the case for SFBT Promotion of Exposure ratings, the nature of the treatment meant that therapists were most likely to provide the child with verbal encouragement to face their fears, rather than setting up situations where the child would need to face their fears. Hence it may be that explicit encouragement is helpful at times but implicit encouragement is not. Future research could investigate this.

4.2.1.2 Engagement with Exposure.

Hypothesis 1 also expected that engagement with exposure would predict improvements in treatment outcome. Results do not support this as ratings of Engagement with Exposure were found to be unrelated to treatment outcome. Nevertheless, the current results are consistent with those of Ale et al.'s (2015) meta-analysis, which found the amount of exposure in CBT for CADs treatment protocols was unrelated to treatment outcome. The current study overcame some limitations of the meta-analysis by using independent observer's ratings of the actual amount of exposure reported by parents or the child at different time-points during treatment and

investigating relationships across different outcome measures. However, the findings differ from Hedtke et al.'s (2009) study, which also used independent observer ratings and found that more exposure was related to poorer outcomes. They rated actual videos of in-session exposure, whereas the present study relied on accurate reports of between-session exposure from the parent and/or child, which may explain the difference in findings. Conversely, Voort et al. (2010) found improvement in functioning was positively related to the amount of exposure in treatment. However, they relied on information gained retrospectively from clinical notes, which may have been incomplete and therefore this study is arguably less reliable than the Hedtke et al. study.

A potential explanation for the lack of a significant association between treatment outcome in GPD-CBT and Engagement with Exposure is that it is the characteristics of the exposure tasks, rather than the quantity, that are important for treatment outcome. A similar notion has been proposed previously by Hedtke et al. (2009), who suggested that conducting one exposure task well, with time spent on set-up and processing, is better than several poorly planned and executed exposure tasks. Additionally, the GPD-CBT treatment included a relatively strong focus on cognitive restructuring and this was found to be counter-productive to treatment outcome. This is significant as it has been previously suggested that cognitive restructuring reduces the effectiveness of exposure (e.g. Craske et al., 2014). Previous research has also found that exposure tasks are more important for younger children (Peris et al., 2015) and differences according to child age were not examined in the current study. The lack of a significant association between Engagement with Exposure and treatment outcome for SFBT suggests it is not a mechanism of change. This may be unsurprising given that it is not specifically proposed as a mechanism of change by SFBT theory (Trepper et al., 2010). Alternative

explanations for all null findings, relating to methodological issues in the study, are discussed in the limitations section.

4.2.2 Use of Strategies to Optimise Inhibitory Learning During Exposure

Hypothesis 2 predicted that the promotion and engagement with strategies to optimise inhibitory learning whilst completing exposure would predict improvements in scores on outcome measures relating to anxiety. This hypothesis was partially supported as *one* strategy predicted improvements on *one* outcome measure at one measurement time-point, for both treatment groups.

4.2.2.1 Reinforcement of Exposure.

Findings for Reinforcement of Exposure partially support Hypothesis 2, as greater ratings in the penultimate face-to-face session positively predicted treatment response on the CGI-I for SFBT, yet negatively predicted treatment response for GPD-CBT. However, ratings of Reinforcement of Exposure in the final face-to-face session predicted more improvement in child-reported anxiety symptomology in both treatments. It is worth noting that the percentage of variance explained by the model was small (6.1%). This suggests that whilst the current finding remains potentially important, there will inevitably be other mechanisms of change in action.

In CBT protocols, it is widely recommended that children are reinforced for completing an exposure, with the premise that this increases the likelihood that they will continue to face their fears (e.g. Bouchard et al., 2004; Kendall et al., 2006). Tiwari et al. (2013) conducted the first empirical examination of this and found that reinforcement of exposure was significantly associated with being a treatment responder. This contrasts

to the current finding that higher ratings of Reinforcement of Exposure in the penultimate face-to-face session negatively predicted treatment response for GPD-CBT. However, the Tiwari et al. finding appears similar to the current finding that higher ratings of Reinforcement of Exposure in the final face-to-face session predicted better treatment outcomes. Yet, Tiwari et al. found that reinforcing exposure was significantly associated with being a treatment responder based on the ADIS-C/P, whereas the present study found that Reinforcement of Exposure only predicted improvements in child reported anxiety and not the ADIS-C/P. The difference in ADIS-C/P outcome may be explained by variations in the operationalisation of reinforcement. For example, Tiwari et al. only looked at the presence or absence of a tangible reward, whereas the present study used a 5-point Likert scale that included both verbal praise and tangible rewards as reinforcement. This assumes that praise and tangible rewards are similar in their effects on treatment outcome, which has not been evidenced. Differences may also be explained by the child conducting the exposure with the therapist in the Tiwari et al study, which was not the case in either treatment in the present study. Furthermore, coding in the GPD-CBT treatment of the present study relied on accurate reporting of reinforcement levels by the parents, whereas Tiwari et al. directly rated reinforcement from video-recordings of actual exposures conducted with therapists. Hence the findings of the current study are more open to bias.

An explanation for the different findings for the different GPD-CBT sessions coded is warranted. Notably in the penultimate face-to-face session, parents had not yet received therapist guidance about the importance of reinforcing their child when they face a fear. This provides a similar explanation to that already discussed for the Promotion of Exposure findings. Regarding SFBT, Trepper et al. (2010) suggested that focussing on

exceptions to the client's problems is a mechanism of change. It is possible that Reinforcement of Exposure was a proxy measure for this, which could explain the finding that greater Reinforcement of Exposure in the penultimate face-to-face session positively predicted treatment response for SFBT.

A possible explanation for the finding that greater Reinforcement of Exposure in the final face-to-face session predicted more improvement in child-reported symptomology for both treatment groups is that being reinforced provided the child with a sense of accomplishment and mastery. This in turn may have led to a reduction in the symptoms the child reported. On the other hand, the finding could be explained by social-desirability bias. It has been previously found that young people who are anxious and have a specific worry about being negatively evaluated may also provide socially desirable responses, rather than valid self-reports (Dadds, Perrin & Yule, 1998).

4.2.2.2 Promotion of and Engagement with Exposure with a Variety of Stimuli.

Hypothesis 2 also expected that promotion and exposure with a greater variety of stimuli would positively predict treatment outcome. Findings do not support this as Promotion of and Engagement with Exposure with a Variety of Stimuli did not predict treatment outcome(s). Comparisons to previous research are difficult due to a lack of similar investigations. Findings do however contrast to a study conducted by Rowe and Craske (1997) with an adult population, which is arguably the most similar study to date. They found that exposing spider-phobic adults to four different tarantulas resulted in a reduction in return of fear, which was not the case for the control group exposed to one tarantula. It is possible that mechanisms of change in successful CAD treatment

are different to those in treatment of adults with anxiety disorders, which would explain the discrepant findings. Alternatively, it may be that variability of stimuli only influences the reduction of return of fear, which was not assessed in the current study. The present study also had a wide range of anxiety diagnoses, whereas Rowe and Craske only included spider-phobic participants. Rowe and Craske also directly manipulated variability of stimuli, whereas the present study did not. As mentioned previously, it is also possible that a strong presence of cognitive restructuring in the present study contributed to the unexpected findings for exposure. Alternatively, the null findings could be due to methodological limitations of the study discussed below.

4.2.2.3 Promotion of and Engagement with Exposure in Multiple Contexts.

The findings for Promotion of and Engagement with Exposure in Multiple Contexts did not support Hypothesis 2, which anticipated that more promotion and engagement would predict improvements in outcome(s). Contrary to the hypothesis, results showed that Promotion of Exposure in Multiple Contexts in the penultimate face-to-face session negatively predicted treatment response for both treatments and predicted less recovery from primary anxiety disorder for GPD-CBT, yet more recovery for SFBT. Promotion of Exposure in Multiple Contexts in the final face-to-face session predicted less recovery from primary anxiety disorder diagnosis for both treatment groups. However, *engagement* with exposure in multiple contexts did not predict treatment outcome for either group at any measurement time-point.

It is difficult to compare the findings to previous research due to a lack of previous investigation in CADs and adult studies differ on several key features as outlined above

for variety of stimuli studies (e.g. Bandarian-Balooch et al., 2015; Mystowski et al., 2006; Vansteenwegen et al., 2007). Other possible explanations of the current finding that Promotion of Exposure in Multiple Contexts negatively predicted treatment outcome are similar to those discussed for Promotion of Exposure and will not be repeated here. In addition, the Promotion of Exposure in Multiple Contexts coding scheme variable was somewhat reductionist as it was merely a frequency count of number of contexts promoted. In other words, the degree of encouragement for exposure in multiple contexts was not considered for the ratings. This assumes that brief promotion of exposure in multiple contexts is the same as extensive promotion of exposure in multiple contexts, yet there is no evidence to support this. Possible explanations for the null findings for Engagement with Exposure in Multiple Contexts are discussed in the limitations section.

4.2.2.4 Promotion of Reduction of Safety-Seeking Behaviours and Use of Safety-Seeking Behaviours.

Results indicated that Promotion of Reduction of SSB by the adult and actual Use of SSB by the child did not predict outcome. These findings do not support Hypothesis 2. CBT theorists suggest SSB use during exposure tasks contribute to the maintenance of anxiety and hence reducing SSB use is imperative for successful treatment (e.g. Lovibond et al., 2009; Volders et al., 2012). Craske et al. (2014) suggest this is partly due to SSBs interfering with inhibitory learning. Results of the current study do not support this. Similarly, they contrast to the earlier findings of Hedtke et al. (2009), who found that children's use of SSBs was greater during exposure tasks for treatment non-responders than for responders. The differences in findings can be explained by the methodological differences between the two studies, which were previously examined

in the Engagement with Exposure discussion.

One explanation of the null findings for both treatments is that SSBs do not maintain anxiety and therefore Promotion of Reduction of SSBs and Use of SSBs in exposure tasks does not affect treatment outcome. This is in-line with SFBT theory, which does not cite targeting SSBs as a mechanism of change (Trepper et al., 2010). For GPD-CBT, the null findings are in-line with a recent meta-analysis of the adult CBT anxiety literature, which found that there were no significant differences between exposure with or without SSB (Meulders et al., 2016). Alternatively, the findings could be explained by methodological limitations that may have contributed to all null findings of the study, which are discussed below. It is also possible that *change* in the extent to which SSBs are used is what is important for treatment outcome, which the current study was unable to investigate.

4.2.3 Use of Coping Strategies and Treatment Outcome

4.2.3.1 Promotion and Use of Distraction.

Hypothesis 3 anticipated that the promotion of and use of coping strategies would predict improvements in scores on outcome measures. Results did not support this, as Promotion of Distraction in the final face-to-face session predicted less improvement in child-reported anxiety symptomology for both treatments and Use of Distraction was unrelated to treatment outcome.

This is the first investigation of Promotion of Distraction in relation to treatment outcome and hence comparisons with previous research is difficult. The null findings for Use of Distraction however, contrast to a previous investigation by Hogendoorn et

al. (2014), who found that higher distraction use mediated a reduction in anxiety symptoms in CBT for CADs. The difference in findings could be explained by methodological differences in the studies. Notably, Hogendoorn et al. measured distraction using a parent-reported questionnaire measure, which may be open to bias, whereas the present study used ratings from independent coders. Furthermore, the previous study examined *changes* in use of distraction, which the present study did not. This may not necessarily be important given that previous research found that use of coping strategies did not change during CBT for CADs (Hedtke et al., 2009).

Based on previous mechanism of change research for CADs, distraction was categorised as a coping strategy in the present study (Hogendoorn et al., 2014). However, the literature acknowledges the difficulty in distinguishing a detrimental SSB from an adaptive coping strategy (e.g. Hedtke et al., 2009). It has been suggested that the two can be adequately differentiated by considering the intention of the individual and their perception of the function of the behaviour (i.e. managing or preventing anxiety; Thwaites & Freeston, 2005). It is possible that Promotion of Distraction may have been promotion of a SSB rather than a coping skill. This would explain the finding that Promotion of Distraction predicted less improvement in treatment outcome, at least for GPD-CBT. However, as the intention of the individual was not assessed, this explanation cannot be confirmed. Distraction is not specified by SFBT theory as a mechanism of change (Trepepr et al., 2010). However, it is possible that the therapist promoting distraction works in opposition to them focusing on exceptions to the client's problems, which is a proposed change mechanism.

The different findings in the current study for Promotion of Distraction and Use of

Distraction for both treatments could be explained by them being analysed differently. This was due to Promotion of Distraction being treated as a dichotomous categorical variable and Use of Distraction being treated as a continuous variable on a 5-point Likert Scale. This also means there is no indication of how the degree or nature of Promotion of Distraction effects treatment outcome.

4.2.4 The Association Between Coping and Treatment Outcome

4.2.4.1 Evidence of coping efficacy.

Hypothesis 4 anticipated that higher levels of coping efficacy would predict improvements in scores on outcome measures. Results showed that Evidence of Coping Efficacy was unrelated to treatment outcome and hence this aspect of Hypothesis 4 was not supported. This contrasts to other recent studies, such as Lau et al. (2010) who found that changes in coping, measured using parent and child-report questionnaires, mediated treatment outcome. Kendall et al (2016) also found that improvements in coping efficacy were a mediator of treatment gains in both CBT and pharmacotherapy.

It has previously been suggested that coping efficacy plays a more central role in the maintenance of CADs than thoughts focused on threat or danger (e.g Creswell & O'Connor, 2011). It is also possible that the treatment components of SFBT lead to higher levels of coping efficacy, though this has not been investigated until the present study. However, the null findings may suggest that coping efficacy is not a mechanism of change in GPD-CBT or SFBT for CADs. Alternatively, the findings could be due to the age of the sample, as previous research suggests that coping efficacy may be more important for older children (Creswell, Murray & Cooper, 2014). Methodological limitations of the current study may also provide an explanation for this null finding.

Previous studies that have found evidence for coping efficacy as a mechanism of change measured *changes* in coping efficacy, which the current study did not. Moreover, coping efficacy is defined as the *perception* of one's ability to manage stressful events (Kendall et al., 2016). As such, the variable in the MoCCS is arguably a proxy measure of this, as participants were not directly asked about their perception of their ability to manage stressful events. This contrasts to previous studies, which measured coping efficacy using child and parent-report questionnaires.

4.2.4.2 Reinforcement of Coping.

Hypothesis 4 also anticipated that greater amounts of reinforcement of coping would predict improvements in treatment outcome(s). This was partly supported as slight/moderate ratings of Reinforcement of Coping in the final face-to-face session (as opposed to no Reinforcement of Coping in the final face-to-face session) predicted more improvement in child reported anxiety symptomology (SCAS-C) for GPD-CBT. For SFBT, there appeared to be no differences in child reported anxiety symptomology based on Reinforcement of Coping ratings. However, it is worth noting that the model only explained 8.9% of the variance for GPD-CBT, which is arguably a small effect.

It is widely recommended in CBT protocols that young people are reinforced for completing an exposure (e.g. Bouchard et al., 2004; Kendall et al., 2006). However, it appears to be less common to recommend that young people are reinforced for coping in anxiety provoking situations. This is despite, as discussed above, the proposition by CBT theorists that coping efficacy playing a central role in the maintenance of CADs. As such, there is a lack of research directly investigating reinforcement of coping as a potential mechanism of change and hence comparisons with previous research is

difficult. Nevertheless, it is theoretically possible that being reinforced for coping provided the child with an increased coping efficacy. However, the design of the current study cannot provide evidence for this notion.

The differences in findings between the treatment conditions may indicate that Reinforcement of Coping is a mechanism of change for GPD-CBT but not for therapist delivered SFBT. Alternatively, the differences between the two treatments could be due to the difference in the adult the behaviour was coded for; GPD-CBT ratings were for reinforcement from the parents whereas SFBT ratings were for reinforcement from the therapist. It is possible that reinforcement from parents is more important for treatment outcome in CADs than therapist reinforcement. However, this would need to be supported with further evidence.

Possible explanations for the different findings for the two coded sessions are also important to consider; Reinforcement of Coping in the penultimate face-to-face session did not significantly predict any treatment outcome. It is possible that Reinforcement of Coping is not as important in the earlier stages of parent-guided GPD-CBT because at this stage children are not coping in anxiety provoking situations.

4.2.5 Anxiety Management Strategies

4.2.5.1 Cognitive Restructuring.

Hypothesis 5 anticipated that promotion of and use of cognitive restructuring would *not* predict improvements in treatment outcome. This was partly supported by findings for one outcome measure, but only for the GPD-CBT condition. Results showed that greater Promotion and Use of Cognitive Restructuring predicted less recovery from

primary anxiety disorder diagnosis for GPD-CBT, yet predicted more recovery from primary anxiety diagnosis for SFBT.

This study adds to the growing literature suggesting that AMS, specifically cognitive restructuring, are not required in successful CBT treatment of CADs (Tiwari et al., 2013; Whiteside et al., 2015). Moreover, the findings are in line with previous adult anxiety studies, which suggest that adding AMS reduces the effectiveness of some exposure based treatments (e.g. Craske et al., 2006).

The GPD-CBT findings could be explained by extinction and inhibitory learning theory, which suggests that cognitive restructuring may reduce the impact of exposure tasks because they decrease an individual's overestimation of probability and reduce perceived negative consequences of the exposure task before it is completed (Craske et al., 2014). Nevertheless, future research directly manipulating and comparing treatments with different levels of promotion of and use of cognitive restructuring are needed to allow further confidence in this finding. It is difficult to explain the SFBT findings in the context of current theory. One possibility is that questions asked by therapists in this study were classified as cognitive restructuring when they were in fact focusing on exceptions to the client's problems, which has been proposed as a mechanism of change for SFBT (Trepper et al., 2010). This is merely speculative.

4.2.6 Hypotheses Not Addressed

Numerous MoCCS variables were omitted from the final version of the coding scheme, either due to low frequency or poor reliability during initial stages of coding. Specifically, these variables were Promotion of and Use of Retrieval Cues during

exposure, Promotion and Use of Massed Exposure, Promotion of and Engagement with Deepened Extinction during exposure, Occasional Reinforced Extinction, Actual Expectancy Violation, Pre-Exposure Set-Up and Post-Exposure Processing, Promotion of and Use of Problem Solving, Use of Positive Self-Talk and Promotion and Use of Relaxation. Hence these aspects of the Hypotheses were not tested.

The low frequency of these variables may be due to them not being included in either of the treatment manuals. Alternatively, it is possible that these variables were present in different treatment session to those that were coded. This is likely to be the case for the problem-solving variables, particularly for the GPD-CBT condition as problem solving was not introduced until the final face-to-face session. In the case of massed exposure, the lack of variance may be because exposure sessions are traditionally conducted on a weekly basis (Craske et al., 2014). Regarding the lack of occurrence of Occasional Reinforced Extinction, this may be due to the ethical issues of intentionally utilising this strategy. As positive self-talk is arguably an internal coping strategy, the low frequency observed is likely to be due to MoCCS ratings being based on what was reported in sessions. The lack of occurrence for Promotion of and Use of Relaxation is in-line with previous statements from clinicians that parents and children rarely practice relaxation at home and find it a difficult task to engage with (Creswell et al., 2016). Low interrater reliability for Actual Expectancy Violation was likely due to the child's expectation of the exposure task rarely occurring. For Pre-Exposure Set-up and Post-Exposure Processing, poor interrater reliability may be due to the second coder being an under-graduate placement student who lacked clinical experience. Therapists were not directly instructed to ask about Pre-Exposure Set-up and Post-Exposure Processing, hence coding of this variable relied on subtle inferences from the audio-recordings. The

current study is therefore unable to contribute to the literature on the role of all variables removed from the MoCCS as mechanisms of change for successful CAD treatment.

4.3 Study Limitations

This study has several limitations that should be acknowledged. Firstly, the MoCCS was developed by the author of the study for this doctorate thesis. Hence the validity of the measure is unknown, although it was developed based on the literature and with feedback from industry experts. It is possible that the treatment components measured by the MoCCS influenced or interacted with other factors and therefore the observed findings may be better explained by a third variable. For example, reinforcing the child for exposure in the final face-to-face session may have had an impact on the therapeutic relationship, which then in turn may have predicted better treatment outcomes.

The MoCCS is heavily weighted to the model of change in CBT. Whist this was due to a lack of theoretical clarification in the literature about the mechanisms of change in SFBT and the time limitations of conducting a clinical psychology doctorate thesis, it is certainly a limitation in terms of application of findings to SFBT theory. Furthermore, it is possible that the codes did not measure the same constructs across the two treatments. Cognitive restructuring, for example, may have measured a focus on exceptions in the SFBT condition, rather than the technique proposed by CBT theory.

The study used a parent-delivered CBT treatment and compared this with a SFBT treatment delivered directly to children by a therapist, which arguably added another factor to the study. The MoCCS ratings for the GPD-CBT condition were based on what was *reported* as having occurred between the sessions, rather than what was

happening in the session. This differed from the MoCCS ratings for the SFBT condition, which were based on a combination of what happened in the session and what was reported as happening between the sessions. This is an issue as therapists were not aware of the present study at the time of treatment and therefore may not have directly asked about each of the potential mechanisms of change being coded. Accurate ratings were also reliant on accurate reporting form the parent and/or child. Furthermore, none of the mechanisms of change measured were directly manipulated.

The results should be interpreted in the context of the fact that both treatment arms were low-intensity. It may be that different mechanisms of change would be related to treatment outcome in those with more complex presentations and for those where other systemic factors may play a role in maintaining the child's anxiety. Similarly, the results for CBT should be interpreted in the context of GPD-CBT.

Including children with a range of anxiety presentations, rather than limiting the sample to a specific anxiety diagnosis, assumes that mechanisms of change are equivalent across anxiety disorders. The present study was not powered enough to consider mechanisms of change separately for each anxiety presentation and so different effects could not be explored. However, given the limited theoretical differences between anxiety disorders in childhood, the high comorbidity between the disorders and that most RCT's of treatment for child anxiety disorders include a range of presentations, this is not considered a major issue. The sample was also restricted to a predominantly white, middle class, well-educated group and so the results may not generalise to families from other sociodemographic and ethnic backgrounds.

As the data had already been collected as part of the larger study (Creswell et al., 2017), the measures included in this study were pre-determined. On reflection, additional self-report measures asking parents and/or therapists to rate how much they and/or the child engaged in possible mechanisms of change may have provided additional data and would have allowed evaluation of the validity of the coding scheme.

Missing data in the original RCT also caused limitations to the present study. Archival data was reviewed to identify participants and their audio-recorded sessions and audio-recordings of the chosen sessions were missing for some. In addition, there was some missing data for outcome measures and thus findings presented were for a completed data only sample. Missing data may have contributed to bias in analyses, which may then have contributed to misleading inferences (Chakraborty & Gu, 2009). However, analyses indicated that those included in the sample of the current study did not differ statistically from those not included on several key demographics and clinical variables, missing ADIS-C/P and CGI-I data was minimal and the questionnaire data was found to be MCAR. In addition, most findings were replicated in the sensitivity analysis. Nevertheless, being a completer only sample means that findings cannot be generalised to those who dropped out of treatment.

Only two sessions were coded, which may have resulted in loss of information. However, the constraints of conducting a clinical psychology doctorate thesis meant that not all sessions could be coded and hence a decision had to be made about which sessions to code. The decision to code the final two face-to-face sessions for each treatment was based on the assumption that by this stage in treatment, the participants had the opportunity to engage in all components of the treatment. In addition, the final

two face-to-face sessions for each treatment resulted in the sessions for each treatment not necessarily being equivalent; for GPD-CBT this meant the mid-session and penultimate session were coded, whereas for SFBT the final two sessions were coded. In hindsight, it may have been more equivocal to code the mid-session and penultimate session for each treatment. In addition, the choice of sessions coded meant that change in potential mechanisms of change from the start to the end of treatment could not be analysed, which in some instances makes comparison with previous literature difficult. Unfortunately, due to lack of frequency and interrater reliability during initial coding for some of the original MoCCS variables, the present study was unable to test all aspects of the stated hypotheses.

Although the use of change scores for continuous measures have been used in previous, similar research (e.g. Tiwari et al., 2013) and arguments support the use of change scores (e.g. Zimmerman & Williams, 1998), it is possible that they may not adequately capture pre to post-treatment change. Hence future research could implement more sophisticated analyses for continuous outcome measures.

Whilst regression analysis is one of the most prominent statistical methods in the mechanism of change literature (Kazdin, 2007), it is not without its limitations. Crucially, the timeline between the mechanism and the outcome is not established. In other words, the regressions conducted here cannot establish that the predictor(s) proceeded and therefore mediated treatment outcome. As such RCTs directly manipulating a proposed mechanism of change are arguably the only method that can truly determine if they are mechanisms of change or not (Kazdin, 2007).

Conducting data analyses separately for the penultimate and final face-to-face sessions, rather than combining them together, resulted in increased levels of multiple testing, a large amount of data and risk of Type I error. However, the content of the coded sessions was very different, the MoCCS ratings for each session were not highly correlated and analysing the treatment sessions separately produced different results. Analysing the sessions together would have potentially been reductionist and increased the chance of Type II error. Utilising the Bonferoni correction was considered, which would have resulted in a more stringent criterion being used for statistical significance. However, this has been discussed at length in the literature and is proposed as unnecessary and damaging to statistical analysis (e.g. Perneger, 1998). Alternatively, a multiple regression could have been conducted, with all predictor variables entered in the same model. However, this would have required an extensively larger sample to retain power to detect a significant effect. This was not possible as data was only available for 91 participants from the original RCT. Furthermore, reducing Type I error increases the chance of Type II error and given that this study was exploratory in nature, minimising the chance of Type II error was deemed to be more important. Therefore, moderate levels of interrater reliability are considered a bigger issue, as this increases the risk of null findings being Type II errors. Findings therefore require replication.

Statistical tests for linearity of the logit for some findings (promotion of exposure and post-treatment diagnosis, reinforcement of exposure and CGI-I, use of SSB in the penultimate face-to-face session and CGI-I, promotion of cognitive restructuring and post-treatment diagnosis) indicated that these models violated this assumption. Hence findings may not be generalisable to wider population.

Findings varied across measures and across reporters. Disagreement amongst various reporters has previously been highlighted in the literature as a major challenge (De Los Reyes & Kazdin, 2005). Respondent disagreement has been found for diagnosis of anxiety disorders in young people (e.g. Choudhury, Pimentel & Kendall, 2003; Comer& Kendall 2004) and for measures of anxiety in young people (Kenny & Faust, 1997). It is therefore possible that the results of the present study reflect this common informant disagreement. Nevertheless, it demonstrated the importance of selection of outcome measures when examining mechanisms of change.

4.4 Implications

With the limitations of the study in mind, conclusions must remain tentative. However, the results may have several practical implications for GPD-CBT and SFBT for CADs and implications for future research.

4.4.1 Practical Implications

Notably, the practical implications apply only to the specific sessions that were coded. For GPD-CBT, parents promoting exposure with feared stimuli generally and more specifically in multiple contexts prior to therapist input on this technique (i.e. prior to session 4) may be counterproductive to good treatment outcomes. As such, therapists may want to include an explanation for exposure and provide parents with guidance on this technique earlier on in treatment. It is also possible that promotion of exposure in the final stages of treatment, specifically the final face-to-face session, is an indication of poor treatment outcome. Based on the finding that engagement with exposure reported in both the penultimate and final face-to-face sessions did not predict treatment outcome, it is possible that therapy should have less of an emphasis on the amount of

exposure the child engages in within these later sessions. Instead, based on the findings that reinforcing the child in the final face-to-face session predicted better treatment outcomes, it may be that GPD-CBT therapists should focus more on teaching parents about the importance of reinforcement. This applies to both reinforcing their child for attempting exposure tasks and coping with anxiety provoking situations. In addition, therapists may want to explicitly discourage parents from promoting distraction as a coping strategy for their child, based on the finding that promotion of distraction reported in the final face-to-face session predicted poorer treatment outcomes. The finding that the promotion of and use of cognitive restructuring at certain points in treatment predicted poorer treatment outcomes after GPD-CBT, suggests that this aspect of GPD-CBT may not be necessary for children aged 12 and under. However, this would need clarification with further research across all treatment sessions.

The findings also have practical implications for the delivery of SFBT for CADs. Firstly, encouraging the child to face their fears in the penultimate face-to-face session may be helpful but encouraging this in the final face-to-face may be counterproductive to treatment outcome. Similarly, SFBT therapists do not need to focus on encouraging the child to face their fears in multiple contexts in the penultimate or final face-to-face sessions or to engage in distraction in the final face-to-face session as doing so may be counterproductive to treatment outcome. Instead, reinforcing the child for facing their fears in both sessions and encouraging the child to challenge their negative thoughts may improve treatment outcome.

4.4.2 Implications for Future Research

The current study paves the way for future research into the mechanisms of change in successful CAD treatment. Imperatively, a measure which has established validity and reliability is needed to operationalise each potential mechanism of change. The measure should endeavor to include potential mechanisms of change from different theoretical perspectives. This would allow further comparative examinations of important research questions and allow researchers to be more confident in their findings.

Inconsistent findings across outcome measures highlight the importance of the selection of outcome measures when investigating potential mechanisms of change. Differences in findings for different sessions highlights the importance of investigating potential mechanisms of change in successful treatment of CADs at different points in treatment. Similarly, differences in findings between 'promotion of' and 'engagement with' different therapeutic strategies highlight the value of investigating the differences between the behaviours of the adult and the child in CAD treatment.

Future studies should also directly manipulate individual potential mechanisms of change to determine their true predictive impact on treatment outcome. This should include those that were unable to be examined in this study due to poor interrater reliability and investigations of the predictive impact on follow-up outcomes. This would indicate whether some strategies to optimise inhibitory learning have effects on fear renewal, as opposed to treatment outcome. Such future studies examining the characteristics of exposure should focus on coding actual exposure tasks, rather than what is reported by parents and/or the child. Including investigations of the behaviour of parents during exposure tasks may be particularly fruitful.

Findings from the current study could be used as direction for which potential mechanisms of change warrant investigation in the first instance. Specifically, the current findings suggest reinforcement of exposure may be a mechanism of change for both GPD-CBT and SFBT. Future research could examine the specific contributions to this of verbal praise and tangible rewards. Reinforcement of coping may be a mechanism of change in GPD-CBT and a lack of other investigations in the literature suggest further research of this is particularly important.

The role of exposure should be examined in a treatment where cognitive restructuring is not included in the protocol. Since the collection of this data, the authors of the GPD-CBT have changed the manual to have less of a focus on cognitive-restructuring (Creswell et al., 2016). The same method and coding scheme of the present study could compare any differences in findings between the original and modified treatment.

In addition, the literature would benefit from studies powered enough to examine differences in mechanisms of change between different CAD diagnoses and age ranges. Finally, future research may benefit from the inclusion of children with a wider range of socio-economic backgrounds and ethnicity.

4.5 Summary and Conclusions

In summary, this study examined potential mechanisms of change in treatment of CADs, for two successful treatments (GPD-CBT and SFBT) and their relationship to treatment outcome on several different measures. Unfortunately, due to low frequency and/or poor interrater reliability during early stages of coding, not all the potential mechanisms of change identified were able to be examined. Nevertheless, there was

some evidence for mechanisms of change proposed by CBT theory, with reinforcement of fear facing emerging as potentially important. This area of research is clearly at an early stage and there are methodological shortcomings of the current study, which hinder the strength of the conclusions that can be drawn. The role of potential mechanisms of change need to be examined through comparative studies where the proposed mechanism is directly manipulated.

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Appendices

Appendix 1. Ethical Approval Documentation

Ethical Approval Documentation from Department of Psychology, Royal Holloway University of London

ROYAL HOLLOWAY UNIVERSITY OF LONDON

Ethics Review Details

You have chosen to self certify your project.	
Name:	Maiden, Zoe (2014)
Email:	PBVA073@live.rhul.ac.uk
Title of research project or grant:	Mechanisms of change in treatment of child anxiety disorders
Project type:	Royal Holloway postgraduate research project/grant
Department:	Psychology
Academic supervisor:	Helen Pote
Email address of Academic Supervisor:	h.pote@rhul.ac.uk
Funding Body Category:	No external funder
Funding Body:	
Start date:	03/05/2016
End date:	29/09/2017

Ethical Approval Documentation from Research Ethic Committee at Reading University

Research Ethics Committee

University of Reading

Dr Cathy Creswell
School of Psychology and Clinical Language Sciences

27 January 2012

Research Ethics Committee Project No. 12/02: The treatment of child anxiety in primary care via CBT Self-Help: A

Dear Dr Creswell

Thank you for your email providing amended documents in relation to the above project. I can confirm that the Chair has reviewed your response and the amended submission documents and is happy for the project to proceed.

Yours sincerely,

Nathan Helsby
Planning Support Officer
(n.e.helsby@reading.ac.uk, x6972)

cc: Dr John Wright (Chair)
Professor Judi Ellis, Head of the School of Psychology and Clinical Language Sciences

Ethical Approval Documentation from NHS National Research Ethics Committee

NHS
National Research Ethics Service
NRES Committee South Central - Berkshire B
South West REC Centre
Whitefriars
Level 3, Block B
Lewins Mead
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BS1 2NT

Telephone: 0117 342 1389
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21 November 2011

Dr Cathy Creswell
MRC Clinician Scientist Fellow
School of Psychology and Clinical Language Sciences,
University of Reading
RG6 6AL

Dear Dr Creswell

Study title: **Guided Self-Help for Childhood Anxiety Problems: A Comparison with Usual Care**

REC reference: **11/SC/0472**

The Research Ethics Committee reviewed the above application at the meeting held on 15 November 2011. Thank you for attending to discuss the study.

Ethical opinion

1. The Committee expressed concerns the new proposed treatment may not be as good as the standard care option. The Committee felt the potential risks for this treatment option over standard care needs to be clarified better to the participant. You confirmed that the standard care currently in place does not have an evidence base where as the new proposed care has a strong evidence base. You assured the Committee you are confident on a positive outcome for the new proposed treatment with low potential risks over standard care.

2. The Committee noted on the participant information sheet (PIS) under the section 'What is the purpose of the study?' refers to the treatment '*...has now been adopted.*' and felt this was confusing as the treatment is not considered as the standard treatment. The Committee noted that under the section 'What will happen if my child and I take part?' there is reference to the new proposed treatment and the 'usual treatment'. The Committee felt these two sections on the PIS were confusing and contradictory. You recognised this as confusing and will amend the PIS to make it clear the new proposed treatment has not yet been adopted into practice.

3. The Committee queried what will happen at the end of the study if the child still presents with anxiety. The Committee wondered if standard treatment will then be offered and what procedures and care will be in place. You confirmed there are follow ups in place after the study. The procedures and care offered to the participant after the study will depend on the individual. The decision of care after the study will be discussed with the mental health team and depending on level of

Appendix 2. Clinical Global Impression – Improvement Scale (CGI-I)

Instructions: Rate total improvement whether or not, in your judgement, it is due entirely to treatment. Compared to the child's condition at admission to the trial, how much has s/he changed?

1 = Very much improved

2 = Much improved

3 = Minimally improved

4 = No change

5 = Minimally worse

6 = Much worse

7 = Very much worse

Appendix 3. Spence Children's Anxiety Scale (SCAS-P/C)

Parent Report (SCAS-P)

Not included due to copywright resrictions

Child Report (SCAS-C)

Not included due to copywright resrictions

MECHANISMS OF CHANGE CODING SCHEME

Contents

i) Introduction to Therapist/Parent Coding Variables

The coding variables in the following section specifically relate to the behaviour of the therapist and/or parent (i.e. the person who is intervening with the child). If the therapist is delivering treatment to the parents, ratings should be made based on the parents behaviour with the child. If the therapist is delivering treatment to the child, ratings should be based on the therapists behaviour, even if the parent is in the room.

Extensiveness ratings of therapeutic interventions are designed to measure the *degree* to which therapists and parents use specific therapeutic interventions during and/or between therapy sessions. Coders make extensiveness ratings to indicate the extent to which the adults engage in each therapeutic intervention.

Extensiveness ratings comprise two key components: thoroughness and frequency. Thoroughness refers to the depth, or persistence with which the therapist or parent promotes a specific intervention. Frequency refers to how often a therapist delivers a specific intervention during a session OR how often the parent reports delivering a specific intervention between sessions. As both thoroughness and frequency are considered in making a rating, extensiveness ratings provide quantity or dosage information about each proposed mechanism of change.

The ratings use a 5-point Likert Scale. Please see each coding variable for further description and specific examples:
1 = Not at all
2 = Slightly
3 = Moderately
4 = Considerably
5 = Extensively

Thoroughness is deemed to be more important than frequency in this coding scheme. Hence, if a coding variable is high on frequency but low on thoroughness, the maximum coding score awarded should be ‘3’. If a coding variable is high on thoroughness, but only occurs once, this can still achieve a rating of ‘5’.

1. Promotion of Exposure to Feared Stimuli

WHAT?

This measures the extent to which the child is positively encouraged or motivated to face their fears.

HOW?

It should take into account any encouraging or motivational statements, such as "You can do it". Tone of voice is also important for encouragement, with a highly encouraging person injecting enthusiasm into their tone of voice.

Promotion of fear facing may also be implicit in behaviour, rather than what is actually said. For example, a parent may set up a sleep over at a friends for their child who is scared of being away from home. By setting this up, they are implicitly encouraging their child to face one of their fears but do not necessarily combine this with verbal encouragement/planning to face the fear with their child. See example from participant 001 below.

Similarly, a child may be encouraged to face their fear by a parent refusing to do it for them. For example, a child who is scared of germs/contamination from putting on his shoes has to put their own shoes on because the parent(s) refuse to do this for them.

EXAMPLES

When treatment is conducted with the parents:

Participant 001 S4: – Coded as a 4 due to having numerous examples of where the parents behaviour implicitly encouraged the child to face their fear in the past.

13:46 – 14:44 "We don't go up at night, well we don't stay there do we, we don't bow to her requests of her coming down etc so we do let her stay up there on her own, bit of tough love"

"You allowed her to listen to the hand dryer, you didn't say off you go because you're scared"

"On holiday she was a bit scared of some of the slides and I watched her having a go at some of them. She still had a go and we encouraged her to do so."

Participant 001 S7: Coded as a 4 as there is a general sense of more encouragement to face fears and try things from the parents.

35:09 "Yeah we've been less protective, a bit more go on you can do it"

38:25 "We've lengthened to lead a bit more and exposed her to more, pushed her a bit more I suppose"

Participant 113 S4 coded as a 2

12:40 – the therapist asks if Mum has ever tried to help X face his fears before and she says "I don't think so, no". But then gives one example of trying to encourage him "Pasta bolognaise, both of them I just said to him give it a try, you might like it"

When treatment is conducted with the child:
Participant 081 S6 coded as a 3 due to lack of enthusiasm in tone by therapist
1:06 "And you know I think it's going to be difficult for Mum to force you to wee at school or not at school because ultimately Mum isn't there and it's your choice. But I think what will happen is that as you feel a bit more confident weeing in different places after school, you might then get to the point where you feel more comfortable having a wee at school. And it might be something, obviously you're only in year 4 now, but by the time you get to year 7 you're going to be going to a slightly bigger school, a secondary school, so it might be worth having a practice, having a wee at school whilst you're in a nice small primary school because it will probably be harder to practice once you're in a big secondary school."

FACTORS TO CONSIDER WHEN CODING

- This should refer to encouragement for the child to face their fears specifically; not general encouragement. For example, if the therapist encourages the child draw something in the session, this would not be coded as it is not specific encouragement for fear facing.
- This should be *before* the exposure task and is therefore different from reinforcing exposure.
- Specific therapeutic strategies that are designed to promote exposure include the following; developing a step by step plan, setting rewards for a step by step plan.
- If the therapist is working with the parents, coders should pay particular attention to the parent reports of how they are (or are not) encouraging their child to face their fear. Should the therapist be very encouraging of exposure and the parents not so, the coder should go with the rating of the parents if the therapist has no contact with the child.
- The proportion of encouragement/facilitation for fear facing with the proportion of encouragement /facilitation of avoidance of fears should be considered.
- It may be helpful for coders to keep an ongoing record of any times the adult encourages/facilitates a fear to be faced or a fear to be avoided in order to make an accurate rating at the end of the session.

PROMOTION OF EXPOSURE TO FEARED STIMULI SCALE (1-5)

1 = Not at all – There is no encouragement for the child to face a fear. Instead, they are likely to be overprotected/facilitated to avoid anxiety provoking stimuli.

2 = Slightly – The child is slightly encouraged to face a fear. There may be a brief discussion about facing a fear or one encouraging statement made. The proportion of encouragement/facilitation of avoidance is likely to be higher than the proportion of encouragement/facilitation of fear facing.

3 = Moderately – The child is moderately encouraged to face one or more fears. They may receive 1 or 2 encouraging statements in a tone of voice that is sometimes

encouraging. OR they may complete an exercise designed to promote exposure in a brief and hurried way. OR the child may be implicitly encouraged to face one fear without direct verbal encouragement but because of the parents behaviour (see participant 001, S4 example above). The proportion of encouragement/facilitation for fear facing and the proportion of encouragement/facilitation for fear avoidance are likely to be equal.

4 = Considerably – The child is encouraged to face one or more fears on several occasions, generally in an encouraging and enthusiastic manner. This can be achieved through direct verbal encouragement or through indirect actions by the adult OR they are encouraged to complete an exercise designed to promote exposure in a fairly in-depth manner. OR they may receive 1 or 2 encouraging statements designed to promote exposure and complete an exercise deigned to promote exposure in a thorough manor. The proportion of encouragement/facilitation for fear avoidance should be minimal, but may still be present i.e. there should clearly be a greater proportion of encouragement to face fears vs avoidance.

5 = Extensively – The child receives extensive encouragement to face one or more fears by being frequently and consistently motivated to do so. As a guide, they may receive 5 or more encouraging statements, always in an encouraging and enthusiastic manner AND/OR they are encouraged to implement an exercise specifically designed to promote exposure in a thorough and competent manor. There should be no encouragement/facilitation for fear avoidance. Should the adult encourage/facilitate any fear avoidance, a code no higher than 4 should be given.

2. Reinforcement of Exposure to Feared Stimuli

WHAT?

Reinforcement of exposure measures the degree to which the child is acknowledged or rewarded *after* facing a fear. It refers to any behaviour by the therapist or parent that strengthens' the likelihood of the client facing a fear again. This can include acknowledgement of effort to face a fear, praise for facing a fear and tangible rewards.

HOW?

Coders should pay attention to statements that acknowledged the child faced a fear, statements that praise the child for facing a fear or for indications that a tangible reward was given to the child for facing a fear. Examples of these are below. Tone of voice is important for coding reinforcement, with a highly reinforcing adult injecting enthusiasm into their voice.

E.g. acknowledging statements: "You faced a fear" "You did something brave".
E.g. praising statements: "You did a great job", "Well done!".
Tangible rewards can vary from being allowed to stay up for an extra 10 minutes before bed, having an ice-cream for desert or going on a day trip.

EXAMPLES

When treatment is conducted with the parents:

Participant 001 S7: Coded as a 5

0:56 – "We're at the place where we've just rewarded her with a new scooter after about 2/3 weeks' worth and this is around going to bed without causing too much of a fuss"

"We rewarded her with a star each time she goes to bed"

6:07 - "And rewarding her for paying for things in the shop"

32:32 – "Reward and praise around swimming, not only from us but from Grampy and Granny who have taken her most of the time, has been great."

When treatment is conducted with the child:

Participant 081 S5: Coded as a 3

3:05 – The therapist responds with "Well Done" to the child facing one fear in a fairly enthusiastic manor, "Very good" and "Brilliant" to the child facing another fear in an enthusiastic manor but does not provide reinforcement to another fear, says "Well done" to another fear in a flat, unenthusiastic manor, "Very good, well done" in a fairly enthusiastic manor, "Well done, brilliant" in an enthusiastic manner, "Ok, excellent, really well done" in a flat, unenthusiastic manner, "Very good" unenthusiastically, "Oh well done, that's really good" in an enthusiastic manner, does not provide reinforcement for 3 more fears that the child faced.

FACTORS TO CONSIDER WHEN CODING

- If it is reported that the child has not faced any fears, this should be coded as uncodeable i.e. 0.

- This measure takes into account reinforcement of exposure only. Coders should be careful when coding statements of acknowledgement and praise to ensure that they are not statements reinforcing coping efficacy. Statements reinforcing coping efficacy should be coded separately (coding variable 3)
- If the treatment involves working with the parents, coders should be paying particular attention to what the parent reports having done in response to their child facing a fear.
- If the treatment involves working with the child, coders should pay particular attention to how the therapist responds to the child reporting any changes or differences in their behaviour.
- coders should keep an ongoing record of any times the adult encourages/facilitates a fear to be faced or a fear to be avoided in order to make an accurate rating at the end of the session.

REINFORCEMENT OF EXPOSURE TO FEARED STIMULI SCALE (1-5)

1 = Not at all: The child does not receive any acknowledgement, praise or reward for facing a fear. Please note if the child has not faced any fears, this should be coded as 'uncodeable' and be given the code of '0'.

2 = Slightly: The child receives a small amount of reinforcement for facing a fear. It is acknowledged that they have faced a fear, but this is done with little enthusiasm or praise. This may include 1 or 2 praising statements, in a flat/unenthusiastic way. If the child faces more than one fear, they are reacted to in this way the majority of the time.

3 = Moderately: The child receives a moderate amount of reinforcement for facing a fear. It is acknowledged that they have faced a fear, followed by 1 or 2 praising statements, delivered in an enthusiastic way. OR the acknowledgement is followed by 2 or more praising statements in a flat/unenthusiastic way. A tangible reward system may be in place but is not followed through at all. If the child faces more than one fear, they are provided with some positive reinforcement, but this is fairly inconsistent.

4 = Considerably: The child receives a considerable amount of reinforcement for facing a fear. Reinforcement may be thorough but lack consistency or be consistent but lack thoroughness. Hence it may be acknowledged once that the child has faced a fear, followed by 1 or more praising statements, delivered in an enthusiastic way AND there is evidence that there is a tangible reward system in place which is being implemented. OR there is acknowledgement that the child has faced a fear, followed by 3 or more praising statements, delivered in an enthusiastic way. If the child faces more than one fear, they are reacted to in this way for the majority of the time.

5 = Extensively: There is frequent, consistent and thorough reinforcement of the child facing a fear. There is evidence that every time a child faced a fear, this met with acknowledgement, enthusiastic praise and is often rewarded tangibly.

3. Promotion of Exposure to Feared Stimuli in Multiple Contexts

WHAT?

This measures the extent to which the adult actively encourages/facilitates the child to face a fear in a range of different contexts.

Multiple contexts refers to facing the *same fear* in *different situations or environments*. For example, a spider phobic facing a spider in the garden and then the bathroom. Notably, this does NOT include different types of fears being faced, even if the context is different. For example, a child talking in class and sleeping in their own bed.

HOW?

Coders should take into account any explicit encouraging or motivational statements specifically directed at facing a fear in a different context. For example, "what about trying that again but in school instead of at home".

Tone of voice is also important for encouragement, with a highly encouraging person injecting enthusiasm into their tone of voice.

Promotion of fear facing in multiple contexts may also be implicit by the *behaviour* of the adults, rather than what is actually said. For example, a parent who has a child that is scared of dogs may take their child to the park with the hope of encountering a dog and then on another occasion take them to see a friend who has a dog.

EXAMPLES

When treatment is conducted with the parents:

Participant 084 S7: Coded as a 3

There is direct encouragement and facilitation by Mum for the child to face their fear of dogs in different environments (in the kitchen, in the bedroom, taking them out for a walk).

When treatment is conducted with the child:

Participant 092 S6: Coded as a 2

There is some facilitation by Mum for the child to face their fear that everything is safe at bedtime (cooker is off, windows are locked etc) by arranging for the child to sleep at their Nan's house.

FACTORS TO CONSIDER WHEN CODING

- This should specifically refer to encouragement/facilitation of fear facing in multiple contexts and should not refer to general encouragement or for encouragement to face a fear (this should be coded separately in coding variable 1).

- It may be helpful for coders to make a note of the contexts the child is encouraged to face their fear in so that an accurate code can be assigned at the end of the session.

PROMOTION OF EXPOSURE TO FEARED STIMULI IN MULTIPLE CONTEXTS SCALE (1-3)

1 = Not at all: There is no encouragement for the child to face a fear in multiple contexts. Hence all encouragement of fear facing should be for the same context

2 = Moderately: The child is moderately encouraged to face their fear in multiple contexts. Specifically, they are encouraged to face their fear *in two* different environments. This is indicated by receiving 1 or more encouraging statements in a tone of voice that is encouraging AND/OR the child is implicitly encouraged by the adult(s) facilitating a fear to be faced in two different contexts.

3 = Extensively: The child is extensively encouraged to face a fear in multiple contexts. Specifically, they are encouraged to face their fear *in three or more* environments. This is indicated by receiving 1 or more encouraging statements in a tone of voice that is encouraging AND/OR the child is implicitly encouraged by the adult(s) facilitating a fear to be faced in three or more contexts.

4. Promotion of Fear Facing with Various Stimuli

WHAT?

This measures the extent to which the adult actively encourages/facilitates the child to face a range of different anxiety provoking stimuli that relate to the *same fear*. For example, a spider phobic facing a small and medium sized spider.

HOW?

Coders should take into account any explicit encouraging or motivational statements specifically directed at facing a different anxiety provoking stimuli. For example, a parent reporting "I said to them you've done really well facing a small spider, how about this time you face a bigger spider?".

Tone of voice is also important for encouragement, with a highly encouraging person injecting enthusiasm into their tone of voice.

Promotion of fear facing with various stimuli may also be implicit by the *behaviour* of the adults, rather than what is actually said. For example, a parent who has a child that is scared of dogs may invite over one friend who has a dog and then invite a different friend who has a different dog.

FACTORS TO CONSIDER WHEN CODING

- Stimuli must relate to the *same fear*. For example, a child with a fear of dogs and a fear of swimming who is encouraged to stroke a dog and encouraged to sit on the edge of a swimming pool, would not count as variety of stimuli. Instead, it would need to be encouraged with at least two different types of dog and two different swimming pools.
- This should specifically refer to encouragement/facilitation of fear facing with various stimuli and should not refer to general encouragement or for encouragement to face a fear (this should be coded separately in coding variable 1).
- It may be helpful for coders to make a note of the anxiety provoking stimuli the child is encouraged to face so that an accurate code can be assigned at the end of the session.

PROMOTION OF EXPOSURE WITH VARIOUS STIMULI (1-2)

1 = No: There is no encouragement for the child to face a variety of stimuli. Hence all encouragement of fear facing should be for one stimuli only.

2 = Yes: The child encouraged to face a variety of stimuli. Specifically, they are encouraged to face *two or more different anxiety provoking stimuli.* This is indicated by receiving 1 or more encouraging statements in a tone of voice that is encouraging AND/OR the child is implicitly encouraged by the adult(s) facilitating a fear to be faced with two or more different stimuli

5. Reduction of Safety-Seeking Behaviours

WHAT

Safety-Seeking Behaviours (SSBs) are subtle behavioural tricks or aids that individuals use during exposure tasks, based on their assumptions that these can prevent or minimise a feared outcome. For example, a child with panic insisting that they can only go to a busy place if they carry a bottle of water or a child with vomit phobia carrying a plastic bag with them at all times. This measures the extent to which the child is encouraged or facilitated to *reduce* their use of safety behaviours.

HOW

Adults may attempt to reduce the child's SSB's by having a direct conversation with the child about them. Hence coders should pay attention to any conversations or discussions of safety behaviours.

It is not uncommon for adults to be part of a child's SSBs. For example, a child with a vomit phobia making sure their parent always carries a plastic bag with them. Hence, adults may attempt to reduce the child's SSBs by adjusting their own behaviour/responses to the child. Therefore, coders should also pay attention to how the parent is responding when the child is anxious.

One safety-behaviour that coders may need to pay specific attention to is reassurance, as the use of reassurance by the adults is likely to be a key safety behaviour for a lot of children (see both examples below). Therefore, if adults are actively trying to reduce the amount of reassurance they give to the child, this should be included in the rating. In addition, if there are examples of the adult reassuring the child, this should be included in rating.

EXAMPLES

When treatment is conducted with the parents:

Participant 113 S7 Coded as a 4

The main SSB for this child appears to be seeking reassurance from Mum. Generally, the level of reassurance from mum appears to be minimal at this stage. This is noted by the therapist and the parent eg. 27:34 "Do you think not reassuring him is something that's been helpful?" "Yes definitely". But there was one specific example where the child was reassured and hence this is scored as a 4, not a 5 "Except for the dog".

When treatment is conducted with the child:

Participant 092 S5 Coded as a 3

The main SSB for this child appears to be asking the Mum for reassurance that household appliances are off and safe in the house. The therapist makes some attempt to address this by trying to think with the child about how they can reduce

their reassurance seeking from Mum. For example, they suggest asking each specific question only once instead of several times or increasing the amount of time that passes before they ask the questions.

FACTORS TO CONSIDER WHEN CODING

- Coders should pay particular attention if a 'step by step plan' is created in the session. It may be that the child is implicitly encouraged to reduce their safety behaviours by steps being included in the plan that directly address a safety behaviour; see example of participant n above.

REDUCTION OF SAFETY-SEEKING BEHAVIOUR SCALE (1-5)

1 = Not at all: The child's SSB use is completely ignored and not addressed OR there is no discussion of safety behaviours.

2 = Slightly: The child's SSB use is acknowledged but is not explored any further or attempted to be addressed.

3 = Moderately: The child's use of one SSB is explored in a brief manner and/or attempts to reduce the SSB are made but in an incompetent manor.

4 = Considerably: The child's use of one SSB is explored and addressed in an in-depth and competent manor. This includes an exploration of why the child is engaging in this, what might happen if they did not engage in that behaviour and wondering about how they might find out if the safety behaviour is helpful or not. This can include one step on the 'step-by-step plan' being designed to drop one safety behaviour. OR the child's use of multiple (2 or more) SSBs is explored in a brief way/addressed incompetently.

5 = Extensively: The child's use of multiple (2 or more) SSBs is explored and addressed competently. This includes an exploration of why the child is engaging in this, what might happen if they did not engage in the behaviour and wondering about how they might find out if this were true or not. This can include the 'step-by-step plan' including numerous steps to reduce safety behaviours.

6. Promotion of Cognitive Restructuring

WHAT

Cognitive restructuring (CR) is a therapeutic process of learning to identify and evaluate negative automatic thoughts (NATs). Cognitive restructuring aims to examine the validity of the thought, explore the possibility of other interpretations or views, decatastrophise the problematic situation, recognize the impact of believing the automatic thought and gain distance from the thought. This is achieved by using socratic questioning. Socratic questions can be defined into different types. Decatastrophising questions (e.g. what is the worst thing that could happen?) can be used to *identify* the negative automatic thoughts. Other types of questions including evidence questions (e.g. what is the evidence that supports this idea?), alternative explanation questions (e.g. what might x think about this?), impact questions (e.g. if you were able to think about that differently, what effect might that have?) and distancing questions (e.g. if you had a friend who thought x, what would you say to them?) can be used to *challenge* the negative automatic thoughts.

Hence this measures the extensiveness to which the use of CR is encouraged.

HOW

Coders should pay attention to any discussions around 'thoughts' and what these discussions involve. Any evidence that there is an attempt to identify the child's thoughts and/or challenge them should be coded.

EXAMPLES

When treatment is conducted with the parents:

Participant 001 S4 – 7.18 to 9:43 – rated as a 3

"Being able to say to her what part of it upsets you? And her saying the noise, it hurts my ears" "and that opened up well why do you think that baby might be crying? You know you used to cry when you were a baby" "That makes her listen and stops her continuing with her rants"

Participant 113 S4 –rated as a 5

0.55: "He ate everything on his plate expect for some of the chips because they were soft. So then we discussed that and we went into detail about that"…"So I asked him what about them that he didn't like, and what other soft foods he's had and what would happen if he ate them and he said he didn't like the way it felt in his mouth, he thought he was going to gag and be sick".

2:50: "One-day last week he had diarrhoea and he thought oh God people are going to catch it and get a bug and be sick and I'm going to have to see that".

3:48 "I said things to him like have you seen anyone be sick and what happened? And he said oh I remember seeing Lola gag and I've seen a few people be sick. I said do people die? And he just laughed and said no but he can't explain why at the moment".

When treatment is conducted with the child:
Participant 081 S6: Coded as a 2
7:19: "I think all of these worries and anybody's worries, there's always a little bit of possible truth in there and that's why they make sense and that's why they're worries. You just have to work out ok, how true is it? Or how true is it not? And seeing which is biggest".

FACTORS TO CONSIDER WHEN CODING

- The promotion of cognitive restructuring will look differently depending on who the therapist is working with during sessions; when working with the parents, we are coding for evidence of the parents identifying and challenging their child's NATs. When working with the child, we are coding for evidence of the therapist and/or the parents identifying and challenging the child's NATs.

PROMOTION OF COGNITIVE RESTRUCTURING SCALE (1-5)

1 = Not at all: There is no evidence of the child receiving cognitive restructuring. There is no attempt to identify the child's NATs and no attempt to challenge them.

2 = Slightly: There is some evidence of attempting to identify the child's NATs but this is done somewhat briefly and there is no attempt to challenge the thoughts. This may include the adult identifying the NAT and then reassuring the child that this is not true.

3 = Moderately: There is a good attempt at identifying NATs, which results in some specific NATs emerging. There is also some attempt to challenge these thoughts, with the use of one line of questioning (evidence OR alternative explanation OR decatastrophising OR impact OR distancing questions).

4 = Considerably: There is considerable evidence for the use of cognitive restructuring, as NATs are identified and challenged consistently OR competently. Consistently refers to exploring NATs every time a child faces a fearful situation. Competently refers to asking socratic questions from at least 3 of the categories (evidence AND/OR alternative explanation AND/OR decatastrophising AND/OR impact AND/OR distancing questions).

5 = Extensively: There is evidence of consistent AND competent use of cognitive restructuring. Consistently refers to exploring NATs every time a child faces a fearful situation. Competently refers to asking socratic questions from at least 3 of the categories (evidence AND/OR alternative explanation AND/OR decatastrophising AND/OR impact AND/OR distancing questions).

7. Promotion of Distraction

WHAT

Distraction is the process of intentionally diverting attention from one stimulus or task to another. Distraction can be used as a coping strategy to help manage a child's anxieties/worries. Hence this measures the extensiveness to which the use of distraction is encouraged.

HOW

Coders should listen for any encouraging or motivational statements related to distraction such as "Try to think about something else" or "Focus on X instead". Tone of voice is also important for encouragement, with a highly encouraging person injecting enthusiasm into their tone of voice.

EXAMPLES

When treatment is conducted with the parents:

Participant 106 S7: Coded as a 'Yes' i.e. 2

35:00 "if she was anxious about going to school we would do how many red cars can you see on the way there? Or Disney movies from A-Z"

When treatment is conducted with the child:

092 S6: Coded as a 'Yes' i.e. 2

18:12 onwards is a discussion about using an ipad as a distraction to go to sleep "when she can't get to sleep she's taken it upon herself to watch her ipad…" therapist later goes on to support the use of distraction and suggest audio books, with a fairly in-depth discussion "what about listening to things? Like an audio-book?" … "it doesn't have to be harry potter" … "I think distraction would be really helpful. Lottie how do you feel about listening to a story?" … "do you think you could give it a go and see what happens?"

FACTORS TO CONSIDER WHEN CODING

- The promotion of distraction will look different depending on who the therapist is working with during sessions; when working with the parents, we are coding for evidence of the parents actively encouraging distraction. When working with the child, we are coding for evidence of the therapist and/or the parents actively encouraging distraction.
- Distraction is classed as a safety behaviour if completed *during* exposure

PROMOTION OF DISTRACTION SCALE (Categorical 1-2)

1 = No: The child is not encouraged at all to use distraction as a coping strategy as it is not discussed.

2 = Yes: The child is encouraged to use distraction as a coping strategy.

8. Reinforcement of Coping

WHAT

Reinforcement of coping refers to the degree to which the child is acknowledged or rewarded for coping with a stimuli and/or situation that is anxiety provoking for them. It refers to any behaviour by the therapist or parent that is likely to make the child feel more able to cope in anxiety provoking situations in the future. This can include acknowledgement of effort to cope and praise for coping. Examples of such statements include "You coped really well!" and "You showed me how brave you are".

HOW

Coders should pay attention to statements that acknowledged the child coped with an anxiety provoking situation/stimulus, statements that praise the child for coping with an anxiety provoking situation/stimulus or for indications that a tangible reward was given to the child for coping with an anxiety provoking situation/stimulus. Hence coders are looking for comments *after* the child has faced their fear. Examples of these are below:

Examples of acknowledging statements: "You coped in that scary situation"
Examples of praising statements: "I'm proud of you for coping with X"
Examples of tangible rewards can vary from being allowed to stay up for an extra 10 minutes before bed, having an ice-cream for dessert or going on a day trip.

Tone of voice is important for coding reinforcement, with a highly reinforcing adult injecting enthusiasm into their voice.

EXAMPLES

When treatment is conducted with the parents:
No examples currently

When treatment is conducted with the child:
Participant 30 S5 Coded as 4
2:25: "There was something different about you last week when I came to meet you. Something was missing or someone was missing from school." "My Mum"…"you were great last week weren't you?"… 3:48 "Now mum wasn't in school last week and what difference did that make to you do you think?"…"No you seemed, if anything you were extra brave"…"that is very brave talk" delivered enthusiastically by the therapist.

FACTORS TO CONSIDER WHEN CODING

- Coders should pay attention to reinforcement of coping only. Coders should be careful when coding statements of acknowledgement and/or praise to ensure that they are not statements reinforcing the child facing a fear. Statements reinforcing facing the fear should be coded separately (coding variable 2).

- If the treatment involves working with the parents, coders should be paying particular attention to what the parent reports having done in response to their child's improved coping. If the treatment involves working with the child, coders should pay particular attention to how the therapist responds to the child reporting any improved coping.

REINFORCEMENT OF COPING SCALE (1-3)

1 = Not at all: The child is not reinforced at all for coping with an anxiety provoking stimuli or situation as there is no acknowledgement or discussion about coping.

2 = Slightly/Moderately: The child is slightly/moderately reinforced for coping with an anxiety provoking stimuli or situation. This is indicated by acknowledgement that the child has coped with an anxiety provoking stimuli or situation, delivered in a flat or enthusiastic manor. If the child copes in more than one situation, they are reacted to in this way the majority of the time.

3 = Considerably/Extensively: The child is considerably reinforced for coping with an anxiety provoking stimuli or situation. This is indicated by consistent acknowledgement that the child has coped with an anxiety provoking stimuli or situation, followed by 3 or more praising statements, delivered in an enthusiastic way and/or they are rewarded tangibly. If the child copes in more than one situation, they are reacted to in this way the majority of the time.

ii) Introduction to Child Codes

The coding variables in the following section specifically measure the behaviour of the child. For the CBT cases where the therapist is working with the parent(s), rather than the child, the coding should be based on the parent(s) reports of the child's behaviour.

Extensiveness ratings are also applied here. Here, extensiveness ratings are designed to measure the *degree* to which children uses specific therapeutic interventions that they/their parents have been taught. Coders make extensiveness ratings indicating the extent to which the child engages in each therapeutic intervention during a session/between sessions. Extensiveness ratings comprise of two key components: thoroughness and frequency. Thoroughness refers to the depth, complexity or persistence with which the child engages in a given intervention. Frequency refers to how often a child engages with the intervention during or between sessions. As both thoroughness and frequency are considered in making a rating, extensiveness ratings provide quantity or dosage information about each proposed mechanism of change. The ratings use a 5-point Likert Scale:

1 = Not at all
2 = Slightly
3 = Moderately
4 = Considerably
5 = Extensively

Thoroughness is deemed to be more important than frequency in this coding scheme, unless specified otherwise in a specific coding guide. Hence, if a coding variable is high on frequency but low on thoroughness, the maximum coding score awarded should be '3'. If a coding variable is high on thoroughness, but only occurs once, this can still achieve a rating of '5'.

9. Engagement in Exposure to Feared Stimuli

WHAT

This measures the extent to which it is reported that the child is facing their fear(s) in between sessions.

HOW

Coders should listen out for concrete examples and reports of the child facing any stimuli or situation that makes them feel anxious. Such statements will vary depending on who is in the session with the therapist. coders should keep a tally of reported exposures for each session as a reminder of how much fear facing the child is doing.

EXAMPLES

When treatment is conducted with the parents:

Participant 001 S7: Coded as 3

32:36 "One of our neighbours she used to hide from him, but now she talks to him openly"…"We went to a family party and she was sat talking to a complete stranger"

Participant 026 S4: Coded as a 4

31:26 "So the first step I put down, which is what we've just discussed is walk to school and meet Mr X, she's done that. And the next step was to go to school in the morning and see Mrs F., which she's done today and we're going to do that some more".

Participant 113 S4: Coded as a 1

12:49 "I said give it a try you might like it and he didn't"

When treatment is conducted with the child and parents:

Participant 081 S5: Coded as a 5

2:56 "So these are the things you've been able to do?" "Yes"… a discussion follows where the child lists lots of different fears that they have managed to face since the last session.

FACTORS TO CONSIDER WHEN CODING

- This should be coded regardless of whether the child is encouraged to face a fear or not.
- If the therapist is working with the parents, it is based on the parents report. If the therapist is working with the child, it is based on the report of the parent and the child.
- If there is disagreement between the parent and child report, coders should rate based on the child report.
- coders should make a note of the different fears the child has reportedly faced in order to make an accurate rating at the end of the session.

ENGAGEMENT IN EXPOSURE TO FEARED STIMULI SCALE (1-5)

1 = Not at all: There is no mention of the child facing any of their fears/putting themselves in an anxiety provoking situation. Instead, there is clear evidence of the child avoiding all anxiety provoking stimuli or situations.

2 = Slightly: The child slightly engages in fear facing as an attempt is reported. However, the fear was not faced fully.

3 = Moderately: It is reported that the child has faced one anxiety provoking stimulus since the last session.

4 = Considerably: It is reported that the child has face 2-3 anxiety provoking stimuli/situations since the last session. This could be one fear on 2 or 3 occasions or a number of different fears on 2 or 3 separate occasions.

5 = Extensively: It is reported that the child has faced an anxiety provoking stimuli/situation frequently since the last session. This could be one fear on multiple occasions or a number of different fears, resulting in almost daily exposure (4-5 times).

10. Completion of Fear Facing in Multiple Contexts

WHAT

This measures the extent to which the child faced their fear(s) in a range of different situations or environments. For example, a spider phobic facing a spider in the garden and then the bathroom.

HOW

Coders should pay attention to the reports of the child facing fears and listen out for any evidence of multiple contexts. Coders should also listen out for evidence that the child *has not* completed fear facing in multiple contexts (see example from participant 81 below).

EXAMPLES

When treatment is conducted with the parents:

Participant 084 S7 – coded as 3

Evidence for multiple contexts as it is reported that the child sits with a dog in the kitchen, in the bedroom and also takes the dog for a walk.

When treatment is conducted with the child and parents:

Participant 81 S5: Coded as 1

5:08: Evidence of not utilising multiple contexts "Any other wee's in any other places over Christmas?" "No, because we haven't had time." And no other relevant reports.

FACTORS TO CONSIDER WHEN CODING

- This should be coded regardless of whether the child was encouraged to engage in these strategies or not.
- It may be helpful for coders to make a note of the things that the child is scared of and look for some of these in the reported exposure tasks.
- If no fears were faced, this should be coded as 0 (uncodeable).

COMPLETION OF FEAR FACING IN MULTIPLE CONTEXTS SCALE (1-3)

1 = Not at all: There was no variability in contexts reported; fear facing took place in one context only.

2 = Moderately: It is reported that a fear was faced in *two* different contexts.

3 = Extensively: It is reported that a fear was faced in *three of* more different contexts.

11. Completion of Fear Facing with Various Stimuli

WHAT

This measures the extent to which the child faced their fear(s) using a variety of different anxiety provoking stimuli. For example, a spider phobic facing a small spider and a medium spider.

HOW

Coders should pay attention to the reports of the child facing fears and listen out for any evidence of variability in stimuli. Coders should also listen out for evidence that the child *has not* completed fear facing with a variety of stimuli.

EXAMPLES

When treatment is conducted with the parents:

Participant 113 S7 – Coded as 3

2:05 – "But at home he's trying anything and everything" (in relation to different foods) – evidence of considerable use of variability of stimulus.

When treatment is conducted with the child and parents:

Participant 027 S5: Coded as 3

5:40: Evidence of variability of stimulus in the same context (sitting on the carpet at school) "So you sat at the front, at the back and in the middle?"

FACTORS TO CONSIDER WHEN CODING

- Stimuli must relate to the *same fear*. For example, a child with a fear of dogs and a fear of swimming who managed to stroke a dog and sit on the edge of a swimming pool, would not count as variety of stimuli. Instead, it would need to be at least two different types of dog and two different swimming pools. This should be coded regardless of whether the child was encouraged to engage in these strategies or not.
- It may be helpful for coders to make a note of the things that the child is scared of and look for some of these in the reported exposure tasks.
- If no fears were faced, this should be coded as 0 (uncodeable).

COMPLETION OF FEAR FACING IN MULTIPLE CONTEXTS SCALE (1-3)

1 = Not at all: There was no variability in stimuli reported; fear facing took place with one anxiety-provoking stimuli only.

2 = Moderately: It is reported that a fear was faced with *two* different anxiety provoking stimuli.

3 = Extensively: It is reported that a fear was faced with *three or* more different anxiety provoking stimuli.

12. Use of Safety-Seeking Behaviour

WHAT

Safety-Seeking Behaviours (SSBs) are subtle behavioural tricks or aids that individuals use during exposure tasks, based on their assumptions that these can prevent or minimise a feared outcome. For example, a child with panic insisting that they can only go to a busy place if they carry a bottle of water or a child with vomit phobia carrying a plastic bag with them at all times. This measures the extensiveness of SSB use when the child faced their fears.

HOW

Coders should pay attention to reports of the child facing a fear and listen for any safety behaviours that the child used. Reassurance seeking is likely to be a common SSB that coders will need to listen for.

EXAMPLES

When treatment is conducted with the parents:

Participant 002 S7: Coded as a 5

There are many examples of the child engaging in safety behaviours around their fear of germs. For example, they use their elbows to turn on taps, they use their t-shirt to protect their hands when opening doors and they wash their hands several times at a restaurant.

When treatment is conducted with the child:

Participant 092 S5: Coded as a 3

2:40: (when discussing worries around bed time) "Um I asked once when mum checked on me…um I sometimes wait until she checks but sometimes I forget and ask and sometimes I fall asleep first"

FACTORS TO CONSIDER WHEN CODING

- Coders should be careful when coding SSB use and ensure that it is not a coping strategy that is being utilised.

USE OF SAFETY-SEEKING BEHAVIOUR SCALE (1-5)

1 = Not at all – No report of the child engaging in SSBs at any point when facing a fear.

2 = Slightly – It was reported that the child engaged in SSBs some of the time when they were facing their fear, specifically up to 25% of the time.

3 = Moderately - It was reported that the child engaged in SSBs approximately 50% of the time when they were facing their fear.

4 = Considerably – Considerable use of SSBs during exposure was reported. Specifically, the child engaged in SSBs 75% of the time.

5 = Extensively - The child engaged in extensive use of SSBs when facing their fears; almost 100% of the time.

13. Use of Cognitive Restructuring

WHAT

Cognitive restructuring (CR) is a therapeutic process of learning to identify and evaluate negative automatic thoughts (NATs). Cognitive restructuring aims to examine the validity of the thought, explore the possibility of other interpretations or views, decatastrophise the problematic situation, recognize the impact of believing the automatic though and gain distance from the thought. This is achieved by using socratic questioning. Socratic questions can be defined into different types. Decatastrophising questions (e.g. what is the worst thing that could happen?) can be used to *identify* the negative automatic thoughts. Other types of questions including evidence questions (e.g. what is the evidence that supports this idea?), alternative explanation questions (e.g. what might x think about this?), impact questions (e.g. if you were able to think about that differently, what effect might that have?) and distancing questions (e.g. if you had a friend who thought x, what would you say to them?) can be used to *challenge* the negative automatic thoughts.

Hence, this measures the extent to which CR is reported as being utilised *by the child* in order to manage their anxiety/worries.

HOW

The extensiveness of CR use by the child is coded by considering 2 factors: the frequency/consistency and thoroughness of CR use.

Frequency and consistency of CR can be inferred from verbal statements from the parent or the child. For example, the parent might say "They looked at the evidence for their thought" or "They thought about what they might say to a friend in this situation". The child might say "I asked myself if this had happened to me before" or "I asked myself what would I say to X in this situation".

EXAMPLES

When treatment is conducted with the parents:

Participant 084 S4: coded as a 1

36:05: The therapist asks "is he able to generate a more helpful thought?" Mum replies "no, he's not sharing that, he's not able to verbalise that".

When treatment is conducted with the child:

Participant 081 S6: coded as a 2

2:42 "If you understand that, what's your solution to that being a problem?" "Um my solution to that being a problem is try it, it's easier than you thought".

FACTORS TO CONSIDER WHEN CODING

- This should be coded regardless of whether the child was encouraged to use cognitive restructuring.

USE OF COGNITIVE RESTRUCURING SCALE (1-5)

1 = Not at all: There is no report or evidence of the child using CR as a coping strategy.

2 = Slightly: There is evidence of the child using CR on one occasion in a brief and ineffective manor.

3 = Moderately: There is evidence of the child using CR on more than one occasion in a brief and ineffective manor.

4 = Considerably: There is evidence of the child using CR as a coping strategy on one occasion in a thorough and competent manor. CR is reported as being the main coping strategy used.

5 = Extensively: There is consistent and frequent evidence (2 or more occasions) of the child using CR as a coping strategy to help manage their worries and that this is completed in a thorough and competent manor.

14. Use of Distraction

WHAT

Distraction is the process of intentionally diverting attention from one stimulus or task to another. In this context, distraction may be utilised by the child to help manage their anxiety/worries.

HOW

The extensiveness of distraction use by the child is coded by considering 2 factors: the frequency/consistency and thoroughness of distraction use.

Frequency and consistency of distraction can be inferred from verbal statements. These will differ depending on who is in the session with the therapist. For example, a child might say "I tried to think about something else" or "I tried to carry on with what I was doing", whereas a parent might say "They thought about something else" or "They carried on with what they were doing".

Thoroughness of distraction can be indicated by a number of factors. It can be indicated by the amount of time the child spends trying to distract themselves. For example, a child who tries to distract themselves for a few seconds before giving up would be given a lower code than a child who spends a few minutes trying to distract themselves from their worries. The task the child uses to try to distract themselves is also an indication of thoroughness of distraction. For example, a child who tries to distract themselves by completing a cognitively challenging puzzle would be given a higher code than a child who tried to distract themselves by trying to think about something else.

EXAMPLES

When treatment is conducted with the parents:

Participant 076 S7: Coded as a 4

40:40: "The other day she was getting really worked up and I said to her here's a book, read it. And she did and it really helped, she was fine."

When treatment is conducted with the child:

Participant 030 S6: Coded as 5

2:40: "What difference does it make to you being able to lay in bed and do something like reading? Does it help you to stay in your bed do you think?" "Yes" "Ok so it helps you stay in your bed and Mum said you don't keep coming up and down and calling her all the time so has that made a difference? Has that made a difference to mummy? Shall we ask her? What difference has it made to you that he is able to distract himself?"

FACTORS TO CONSIDER WHEN CODING

- Distraction should NOT be coded as a coping strategy if it is used during exposure tasks; instead it should be coded as a safety behaviour. Distraction should therefore be coded as a coping strategy if it is used by the child to manage their anxiety before or after facing a fear.
- This should be coded regardless of whether the child was encouraged to use distraction as a coping strategy.

USE OF DISTRACTION SCALE (1-5)

1 = Not at all: There is no report or evidence of the child using distraction as a coping strategy.

2 = Slightly: There is evidence of the child using distraction on one occasion but lacks thoroughness. i.e. it is for a short amount of time and using a distraction task that does not fully engage their attention.

3 = Moderately: There is evidence of the child using distraction on more than one occasion but lacks thoroughness. i.e. this is for a short amount of time and using a distraction task that does not fully engage their attention.

4 = Considerably: There is evidence of the child using distraction as a coping strategy on one occasion AND this is executed in a thorough manor i.e. this is for an extended period of time and uses a distraction task that is effective in engaging the child's attention.

5 = Extensively: There is consistent and frequent evidence (2 or more occasions) of the child using distraction as a coping strategy to help manage their worries AND evidence that this is conducted in a thorough manor. i.e. this is for an extended period of time and a distraction task that is effective in engaging the child's attention.

15. Evidence of Coping Efficacy

WHAT

Coping is defined as moving from inactive, passive strategies (e.g. escape or avoidance) to more active strategies (e.g. problem solving) to address stressful situations. Coping efficacy can therefore be defined as the perception of one's ability to manage stressful events. We are specifically interested if there is any evidence of *change* in the child's coping efficacy. Hence this measures the degree to which the child believes they can manage anxiety provoking situations.

HOW

Indications of a child's coping efficacy come from statements they or their make. Examples of statements from the child indicating high self-efficacy include "I knew I could do it" and "I coped really well". Examples of statements from the child indicating low self-efficacy include "I can't do that" and "I didn't cope very well". Examples of statements from the parent indicating the child has high self-efficacy include

Tone of voice is also an important factor to consider when coding the child's coping efficacy. A child with high coping efficacy will have a confident and upbeat tone of voice when talking about difficulties they have faced, whereas a child with low coping efficacy will have a low voice.

In addition, in order to account for the element of *change*, coders should listen out for statements indicating a difference in the child. For example, a child/parent might report "I/they never thought I could do it before" and this would be indicative of change in coping efficacy. Coders should pay attention to the question that is asked before a statement regarding coping efficacy is made, as this may also be indicative of change (see example from participant 001 below).

EXAMPLES

When treatment is conducted with the parents:

Participant 001 S7: Coded as a 4

32:28 "And you know feeling like she's good at something" … "She's really proud of herself and was desperate to show us on Sunday how good she was" are evidence of coping efficacy.

When treatment is conducted with the child:

Participant 081 S6: Coded as a 4 because there are indicators that the child now feels confident doing most things they were scared of, but there are still some things that they do not feel able to do (weeing at school).

23:06 "That we can do it even though we don't think we can".

24:50 "I used to say no I can't do it but Mum forced me to ".

FACTORS TO CONSIDER WHEN CODING

- No other factors to consider

EVIDENCE OF COPING EFFICACY SCALE (1-5)

1 = Not at all: There is no evidence that the child feels able to manage stressful or anxiety provoking situations at all AND/OR there is clear evidence that the child *does not* feel confident in their abilities to manage stressful or anxiety provoking situations.

2 = Slightly: There is evidence that the child feels able to manage stressful or anxiety provoking situations some of the time, but generally feels unable to cope OR that the child feels able to manage some stressful or anxiety provoking situations but generally feels unable to cope with the majority of stressful or anxiety provoking situations

3 = Moderately: There is evidence that the child feels able to manage stressful or anxiety provoking situations about 50% of the time.

4 = Considerably: There is evidence that the child feels able to manage stressful or anxiety provoking situations the majority of the time (75%).

5 = Extensively: The child frequently and consistently indicates that they feel confident in their abilities to manage all stressful or anxiety provoking situations.

Appendix 5. Information Sheets and Consent Forms

Child Information Sheet

The University of Reading

School of Psychology
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Whiteknights
Reading
RG6 6AL

pcamhs
Oxfordshire birth-18s
primary Child + Adolescent Mental Health Services

INFORMATION SHEET FOR CHILDREN
Guided Self-Help for Childhood Anxiety Problems (Version 2)

Hi,

We are inviting you to take part in a study we are doing.

Why is this project being done?

This study is to help us find better ways of helping children to get rid of their fears and worries.

Why have I been asked to take part?

You are one of one hundred and thirty six children who are being seen for help with fears and worries. If you take part, you will help us to help children who worry a lot.

Did anyone else check the study is OK to do?

Before any research is allowed to happen, it has to be checked by a group of people called an Ethics Committee. They make sure that the research is OK to do. This study has been checked by the Reading University Research Ethics Committee and the Berkshire B Research Ethics Committee, and they were happy for it to go ahead.

Do I have to take part?

Whether or not you take part in this study is **completely up to you**. You do not have to do this. If you decide not to take part, you will still get the usual help that we give children. Also, if you do decide to take part and then change your mind, this won't matter at all; you won't have to give us a reason, and we will still help you with your problems.

What will happen to me if I take part in the research?

Everyone who takes part will get help with their fears and worries from someone called a Mental Health Worker. Half of the children will see the Mental Health Worker themselves. The other half won't see the Mental Health Workers but the grownups that look after you will work with them instead, to learn about how they can help you. Which group you are in will be decided by a computer.

After you or the grownup that looks after you have finished seeing the Mental Health Worker, we will ask you lots questions about how you are feeling and we will keep a record of these. These will be the same questions that you were already asked recently. We then ask these questions again once more a few months later to see how you are getting on.

Might anything about the research upset me?

Some children might get upset when they think about their worries, but the people you will be talking to will be able to help you with this.

Will joining in help me?

Yes. You or the grownup(s) that look after you will learn new ways of helping you with your fears and worries.

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

Everything you tell us as part of our study is treated as a secret; nobody other than us will ever know what you have told us and the answers will be kept in locked cabinets. If we use anything you have said when we are telling people about our study, we will make sure nobody can tell who has said it. The only time we would not be able to keep a secret is if you told us that you or someone else was at risk of real danger. In this situation we would talk to you before speaking to an adult - like one of the grownup(s) that looks after you or your family doctor. The information you give will not be seen by anyone, but if you and the grownup that looks after you agree, we will send your family doctor a letter to let him/her know that you are taking part in the study. We will destroy all the information at the end of the study.

What if I don't want to do the research anymore?

If, at any time, you don't want to do the research anymore, just tell us or the grownup that looks after you.

What if I have other questions?

If you have any questions about our study, either now or later, please feel free to get in touch with us by email or phone or speak to us. You have a right to know everything and we will be happy to tell you everything.

Yours sincerely,

Cathy Creswell

Berkshire B Research Ethics Committee REC Ref: 11/SC/0472

Parent/Guardian Information Sheet

The University of Reading

School of Psychology
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pcamhs
Oxfordshire birth-18s
Primary Child + Adolescent Mental Health Services

PARTICIPANT INFORMATION SHEET
FOR PARENT/GUARDIAN

Title of Project: Guided Self-Help for Childhood Anxiety Problems (Version 3)
Principal Investigator: Dr Cathy Creswell

PART 1

We would like to invite you to take part in a study we are doing to compare two different treatments for anxious children, which is being carried out in the Oxfordshire Primary Child and Adolescent Mental Health Service (PCAMHS). Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Someone from our team will go through the information sheet with you and answer any questions you may have. We suggest this should take about 15 minutes. Part 1 of this Information Sheet tells you the purpose of this study and what will happen to you and your child if you take part. Part 2 gives you more detailed information about the conduct of the study. Please ask us any questions if anything is unclear. Please do discuss taking part in this study with others if you wish, such as your GP.

What is the purpose of the study?
There is a standard talking treatment for anxious children (called 'cognitive behaviour therapy'; CBT). Studies have shown that this treatment is very helpful to lots of children. However this treatment is often not readily available within the health service as it is costly and involves highly trained staff. A brief form of this treatment has been developed that parents/guardians can use with their children, with the support of Mental Health Workers and we are assessing how successful it is compared to a treatment that children often receive in PCAMHS, which is called Solution Focused Brief Therapy.

Why have I and my child been invited?
Over a period of one year we are seeking the help of all the parents/guardians and their children who have been referred to the Oxfordshire Primary Child and Adolescent Mental Health Services (PCAMHS) teams for help with anxiety. You and your child have been invited because your child is between 5 and 12 years of age and you have been offered treatment for your child's worries. 136 parents and children referred to the Oxfordshire PCAMHS teams are being invited to take part in the study.

What if my child has been prescribed medication for his/her mood or behaviour?
One of the requirements of this trial is that children must either not be prescribed medication aimed at changing their mood or behaviour (e.g. anti-depressant medication or Ritalin) or, if they have been prescribed these types of mediation, this must have been prescribed at a stable dose for at least 8 weeks prior to joining the trial, with agreement to maintain that dose throughout the study. If medication does need to be changed whilst you are taking part, you would have to withdraw from the study. This would in no way compromise the treatment that your child would receive. They

would continue with the usual treatment that PCAMHS offers. If you have any concerns regarding this requirement please do not hesitate to discuss this with us and/or your general practitioner.

Do my child and I have to take part?
It is entirely up to you and your child to decide whether to take part in our study or not. If you do decide to participate you will be asked to sign a consent form (a copy of which you will be given to keep). You will be free to withdraw from the study at any time without having to give any reason. If you or your child decide not to participate, or you or your child decide to participate and then change your mind, you are free to withdraw at any time, without giving any reason. This would not affect the standard of care or the treatment you and your child receive in any way.

What will happen if my child and I take part?
If you and your child are happy to take part in the study, each of you will be asked to sign a consent form. You will then be randomly assigned to one of two treatment groups: the Guided Self-Help group (GSH) or the treatment children often receive through PCAMHS, Solution Focussed Brief Therapy (SFBT). Whichever treatment you receive we would like to meet you again soon after treatment is completed, and again six months later, to assess your child's progress.

Treatment.
Whichever treatment you are receive, treatment will take place over 8 weeks. Treatment will take place in your home, as is usual in PCAMHS, unless this is not convenient for you in which case an alternative venue will be arranged.
The two possible treatments are as follows:

A. Guided CBT Self Help

This treatment involves the parent/guardian(s) meeting with a Mental Health Worker from the Oxfordshire PCAMHS team face-to-face on four occasions, and having four telephone appointments. Parents/guardians will also be provided with a book entitled 'Overcoming your child's fears and worries', and your Mental Health Worker will help you to use this book to help your child to learn to manage his/her anxiety problems.

B. Treatment children often receive (Solution Focussed Brief Therapy)

This treatment involves six face to face appointments. The first and last appointments will include the child, their parent/guardian(s) and your mental health worker. The middle four sessions will involve your child and your mental health worker only. Your mental health worker will help your child to manage his/her anxiety problems.

In order to make sure that treatment is being delivered by the Mental Health Workers in the same way, we ask parents/guardians if we can audio-record these appointments. The audio recordings will be heard and seen only by members of the research team; and they will be destroyed at the end of the research study.

Assessment.
The study involves our team making a detailed assessment of your child's anxiety level at the end of the course of treatment, and six months after treatment ends. This will involve you and your child completing some questionnaires and you and your child being asked a standard set of questions. The responses you and your child give will be entirely confidential. In fact, they will be coded and entered into a computer anonymously (there will be no names in the file).

DNA

Within this treatment study we are collecting DNA samples from participating children and their parents to help us learn more about the genetic factors that play a part in the development of anxiety. **This DNA study is separate from your involvement in PCAMHS and the study outlined above**. Whether or not you decide to take part will have no affect on the treatment you receive from PCAMHS or your involvement in the study outlined above. There is a separate information sheet and consent form for anyone who is interested in participating in the DNA study.

What will my child and I have to do?

To summarise, if you and your child decide to take part in this study, you will be allocated to one of two treatments. On completion of treatment and six months later, a member of our team will meet with you and your child again to assess your child's progress.

Expenses and payments

Participants do not receive any payment for taking part in this study.

What are the possible disadvantages and risks of taking part?

Both of the treatments that are being offered have been widely used before, and no ill effects from the treatments are expected. Taking part in this study does, however, mean completing additional questionnaires and interviews in order to check your child's progress at the end of treatment and six months later. Each assessment will take about 1.5 hours, however we will provide you with a report of the outcomes of this assessment and hope that the information that is gathered will be helpful for you and your child.

What are the possible benefits?

Whilst treatment would ordinarily be provided within PCAMHS, the study provides additional expert supervision for the mental health workers delivering the treatment which we anticipate will be associated with a high level of treatment delivery. We will also conduct additional assessments and provide reports on your child's progress which we hope will be useful for you and your child.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any other possible distress you may suffer will be addressed. The detailed information on this is given in Part 2.

Will our taking part in the study be kept confidential?

Yes. All information collected in this study is treated as confidential and nothing will be passed on to any other party without your permission. The only exception to this is if we learn that you or your child is at risk of harm, in which case we will inform your GP.

Who has allowed this study to go ahead?

This study was given a favourable ethical opinion for conduct by both the University of Reading Research Ethics Committee and by the Berkshire B Research Ethics Committee. Everyone working on this study has been through the formal Criminal Records Bureau Disclosure process and has been approved by the School of Psychology of the University of Reading to work with children.

If the information in Part 1 has interested you and you are considering taking part, please read the additional information in Part 2 before making a decision. Please discuss the project with a member of our team and make sure all your questions have been answered before signing the consent form and returning it to us in the post.

The University of Reading

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pcamhs
Oxfordshire birth-18s
Primary Child + Adolescent Mental Health Services

Title of Project: Guided Self-Help for Childhood Anxiety Problems (Version 3)
Principal Investigator: Dr Cathy Creswell

PART 2

What will happen if we don't want to carry on with the study?
You can decide not to take part in the study for any reason and at any time. This will not affect the standard of care you receive. If you would prefer that we don't continue to use the information that you have given us at that point please notify us and we will ensure that information is destroyed.

What if there is a problem?
If you have any concern about any aspect of the study, you should ask to speak to Dr Cathy Creswell, the principal investigator of the project. Please see last page for contact details. If you remain unhappy and wish to complain formally, you can contact our Head of School, Prof Judi Ellis, who will arrange a meeting with you to discuss any concerns you may have.

All research conducted by the University of Reading is covered by Employer's Liability, Public Liability, and Professional Indemnity insurance policies actively in place.

Where will this study take place?
Regardless of the intervention group, all treatment sessions and assessments will be conducted within your homes as is PCAMHS standard practice, unless you would prefer appointments to be held elsewhere (in which case another venue will be organised).

Will our taking part in this study be kept confidential?
All the information provided will be kept confidential, unless we are concerned about the welfare or safety of you or your child, in which case we will raise this with you and/or your GP. The information we collect (questionnaire and interview answers, and audio recordings) will not have your child's name on and will be kept strictly confidential in locked cabinets in a password-protected area of the university and will be destroyed as soon as they are no longer needed.

Will we involve your General Practitioner (GP)?
With your permission, we will send a letter to your GP informing them about your child's participation in the project. A copy of the letter we would send to your GP, if you agree, is attached. If you agree, we will also send your GP a copy of the progress reports we provide following each assessment.

What will happen to the results of the research study?
Our intention is to publish the results of this study in a medical journal. When we do this, no personal information will be given. If we quote anything that has been said by people taking part in the study, this will be anonymous and will not be traceable to a particular person. If you would like a report of the findings of our study, we will be happy to provide it.

Berkshire B Research Ethics Committee REC Ref: 11/SC/0472

Who is organising and funding the research?
The research is organised and funded by the National Institute for Health Research, Research for Patient Benefit stream, in collaboration with the University of Reading.

Who has reviewed the study?
All research at the University of Reading is reviewed by an independent group of people, called a Research Ethics Committee, to protect your interests. This application has been reviewed and given a favourable opinion by the University Research Ethics Committee and by the Berkshire B Research Ethics Committee. Everyone working on this study has been through the formal Criminal Records Bureau Disclosure process and has been approved by the School of Psychology of the University of Reading to work with children.

Do my child and I have to take part?
Whether you and your child take part is completely up to you.

If you have any further questions or queries please do not hesitate to give us a call, email or raise these at your next appointment. If you are happy to take part, we ask that you post the attached consent form to us at the address below:

School of Psychology
University of Reading
PO BOX 238
Reading RG6 6AL
UK

Further Information and Contact Details

Principal Investigator: Dr Cathy Creswell
Email: c.creswell@reading.ac.uk
Phone: 0118 378 6798

Head of School: Prof Judi Ellis Email: j.a.ellis@reading.ac.uk
Phone: 0118 378 6415

Many thanks for your help
Yours sincerely,

On Behalf of the Research Team at the University of Reading

Consent Form

Guided Self-Help for Childhood Anxiety Problems (Version 1) October 2011

The University of Reading

School of Psychology
Winnicott Research Unit
3 Earley Gate
Whiteknights
Reading
RG6 6AL

pcamhs
Oxfordshire birth-18s
Primary Child + Adolescent Mental Health Services

CONSENT FORM FOR CHILDREN
(To be completed by the child and his/her guardian)

Title of Project: Guided Self-Help for Childhood Anxiety Problems (Version 1)
Principal Investigator: Dr Cathy Creswell

Please circle all you agree with:

Have you read (or had read to you) the information about this project?	YES/ NO
Has a member of our study team explained this project to you?	YES/ NO
Do you understand what this project is about?	YES/ NO
Have you asked all the questions you want?	YES/ NO
Have you had your questions answered in a way you understand?	YES/ NO/DIDN'T ASK ANY QUESTIONS
Do you understand it's OK to stop taking part at any time?	YES/ NO
Are you happy to take part?	YES/ NO

If any answers are 'no' or you **don't** want to take part, **don't** sign your name!

If you do want to take part, please write your name and today's date

Your name _____ Date_____

Your parent or guardian must write his/her name here too if s/he is happy for you to do the project

Print name _____

Sign _____ Date_____

The person who explained this project to you needs to sign too:

Print name _____

Sign _____ Date_____

Berkshire B Research Ethics Committee REC Ref: 11/SC/0472

Appendix 6. Session-by-Session Outline of GPD-CBT

Session	Contact	Content
1	Face-to-face	Psychoeducation: • What is anxiety and when does it become a problem? • CADs: Types, causes, maintaining factors, impact • Treatment approach and introduction to CBT
2	Face-to-face	• Psychoeducation: Cognitive aspects of CAD • Identifying and challenging child's anxious thoughts • Cutting out reassurance • Encouraging independence and 'having a go' • Attention and praise • Modelling approach behaviours
3	Telephone	Review homework: • Anxious thought challenging • Recording parental responses to anxious child
4	Face-to-face	• Psychoeducation: facing your fears • Devise graded exposure hierarchy • Linking challenging anxious thought techniques to the graded exposure hierarchy • Parental responses to child attempting step on exposure hierarchy
5	Telephone	Review homework: • Completing graded exposure hierarchy with child • Trying first step on graded exposure hierarchy • Problem solve any difficulties implementing graded exposure hierarchy • Review of anxious thoughts challenging
6	Telephone	Review homework: • Progress made implementing exposure hierarchy • Review of anxious thought challenging • Review of monitoring parental responses to anxious child
7	Face-to-face	• Psychoeducation: problem-solving • Step-by-step problem solving exercise • Reflection on what has been helpful • Maintaining progress and relapse prevention
8	Telephone	Review homework: • Progress made implementing exposure hierarchy • Use of problem solving strategies with child • Review of anxious thought challenging identification of future goals

Appendix 7. Session-by-Session Outline of SFBT

Session	Contact	Content
1	Parent and child	Introductions and setting up of best hopes Ask the miracle question Brief summary of session and reflection of child/parent strengths and resources
2	Parent and child for first 5/10 minutes, child only for 30-35 minutes, parent and child for last 5/10 minutes	Exploring signs of progress with parent and child– what has been better since the last meeting? Problem-free talk or an activity Brief summary of session to parent and child and reflection of child's strengths and resources
3	Parent and child for first 5/10 minutes, child only for 30-35 minutes, parent and child for last 5/10 minutes	Exploring signs of progress with parent and child– what has been better since the last meeting? Exploring signs of progress with the child alone Brief summary of session to parent and child and reflection of child's strengths and resources
4	Parent and child for first 5/10 minutes, child only for 30-35 minutes, parent and child for last 5/10 minutes	Exploring signs of progress with parent and child– what has been better since the last meeting? Exploring signs of progress with the child alone Brief summary of session to parent and child and reflection of child's strengths and resources
5	Parent and child for first 5/10 minutes, child only for 30-35 minutes, parent and child for last 5/10 minutes	Exploring signs of progress with parent and child– what has been better since the last meeting? Exploring signs of progress with the child alone Brief summary of session to parent and child and reflection of child's strengths and resources
6	Parent and child	Reviewing progress Planning for the future

Appendix 8. Non-Significant Statistics for Exploration of Possible Predictors of Treatment Outcome

Predictor variable	Outcome measure	Statistic
Gender	CGI	χ^2 (1) =0.95, p = .331
	Presence of post-treatment diagnosis	χ^2 (1) = 0.10, p = .922
	Change in SCAS-P	$F(1,78) = 2.70$, p = .105
	Change in SCAS-C	$F(1,66) = 2.92$, p = .092
Age	CGI	χ^2 (1) = 0.937, p = .333
	Presence of post-treatment diagnosis	χ^2 (1) = 1.29, p = .257
	Change in SCAS-P	$F(1,78) = 0.88$, p = .351
	Change in SCAS-C	$F(1,66) = 0.381$, p = .539