Volume One – Research Component

EXPLORING HOMEWORK IN SECOND AND THIRD WAVE COGNITIVE BEHAVIOURAL THERAPY

By

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Thesis overview

This thesis consists of two volumes and is submitted for the Doctorate of Clinical Psychology.

Volume one comprises of three research chapters examining the use of therapeutic homework in second and third wave cognitive behavioural therapy. The first chapter is a correlational meta-analysis examining the relationship between mindfulness homework and improvement over a mindfulness course. This meta-analysis demonstrated that there is a small, positive, reliable association between the amount of homework completed and the extent of clinical improvement over a mindfulness course. The second chapter is an empirical study exploring the phenomenological experience of cognitive behavioural psychotherapists in using therapeutic homework. This study yielded three themes surrounding the essence, strategy and process of therapeutic homework. The final chapter is a public dissemination document providing an accessible summary of the meta-analysis and empirical paper.

Volume two consists of five clinical practice reports. The first report presents a cognitive behavioural and psychodynamic formulation of low self-esteem in an 18 year-old man. The second report evaluates the care package received by cluster eight clients in an adult mental health service. The third report describes a cognitive behavioural and systemic narrative intervention with a 72 year-old woman experiencing health anxiety. The fourth report presents a single-case experimental design to investigate the effectiveness of a behavioural intervention for challenging behaviour in a 32 year-old man with Rubinstein-Taybi Syndrome. The final report is an abstract of an oral presentation of clinical work completed in an early intervention service.

For Anna

Who has been fighting the most challenging battle over the past year and has still managed to come out smiling

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Chapter One – Literature Review

INVESTIGATING THE RELATIONSHIP BETWEEN MINDFULNESS HOMEWORK AND OUTCOME IMPROVEMENT: A META-ANALYSIS

Abstract

Background

Mindfulness-based programmes are growing in popularity. Theoretically, and clinically, the importance of daily mindfulness homework is emphasised, yet no systematic attempt to statistically review the relationship between mindfulness homework and outcome has been made. This is the first meta-analysis to investigate whether there is a relationship between homework and outcome improvement over a mindfulness course.

Method

A systematic literature search was conducted to build upon the existing literature review on mindfulness homework (Vettese, Toneatto, Stea, Nguyen, & Wang; 2009). Twenty-five studies reporting a correlation between homework and outcome were included in the meta-analysis. Risk of bias was assessed using a specially designed quality framework.

Results

A small reliable positive relationship was observed between mindfulness homework and clinical improvement in five outcomes, namely: depression (r = 0.22, 95% CI [.14 - .13]), anxiety (r = 0.14, 95% CI [.04 - .23]), physical health (r = 0.21, 95% CI [.12 - .30]), well-being (r = 0.17, 95% CI [.08 - .26]) and mindfulness (r = 0.22, 95% CI [.12 - .31]). In most instances, the impact of methodological quality and publication bias was not estimated to significantly attenuate the observed relationships.

Discussion

Overall, the results support that mindfulness homework is associated with outcome improvement over a mindfulness course. The magnitude of the

relationship between homework and outcome is small, which could be due to methodological issues in the literature, such as subjective measurement of homework completion. Further research is needed to better understand the magnitude and mechanism of the observed association.

Introduction

The history and development of mindfulness

Mindfulness originated in Buddhist meditation practices. Mindfulness was first applied in a secular programme for mental and physical health care by Kabat-Zinn in 1979 to help chronic pain. The essence of mindfulness has been described as: "paying attention in a particular way: on purpose, in the present moment and non-judgmentally" (Kabat-Zinn, 1994). Since 1979 mindfulness has grown in popularity and is now a key component of several treatment packages.

The first mindfulness programme designed to improve mental health was Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990). Over the following 30 years, tens of thousands of individuals have taken part in mindfulness programs (Lau, & Yu, 2009). In 2002, a new programme was developed from MBSR to help depression, named Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002). More recently, these programmes have been adapted to help several different difficulties, such as cancer recovery (e.g. Tamagawa et al., 2015), smoking cessation (e.g. Brewer et al., 2011) and binge eating (e.g. Kristeller, Wolever, & Sheets, 2013). Mindfulness programmes are typically delivered across eight group sessions, with substantive daily homework practice.

The efficacy of mindfulness

There is much research demonstrating the efficacy of mindfulness-based programmes (e.g. Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Chiesa, & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004; Khoury et al., 2013; Ledsma, & Kumano, 2009; Piet, & Hougaard, 2011). For instance, Fjorback, Arendt, Ornbol, Fink and Walach (2011) conducted a systematic review finding evidence

that MBCT prevents relapse in depression and MBSR improves mental health. In fact, a recent meta-analysis including 209 articles demonstrated that mindfulness-based therapy is effective for several different psychological difficulties, yielding moderate treatment effects when compared to waitlist control (Hedge's g = .53) and other active treatments (Hedge's g = .33), and in pre to post treatment comparisons (Hedge's g = .55; Khoury et al., 2013). However, it is important to note that although the current support for mindfulness-based programmes is encouraging, the evidence-base is still evolving and this is a relatively new psychological therapy. Because of this, some authors are more cautious about the efficacy of mindfulness due to methodological issues in the data (e.g. Bishop, 2002; Gaynor, 2014).

Despite this, positive associations of taking part in mindfulness courses have been found in various presenting difficulties. Most notably, mindfulness has been shown to help with depression (e.g. Bondolfi et al., 2010; Cavanagh, Oliver, & Pettman, 2014; Kuyken et al., 2008; Ma, & Teasdale, 2004; Teasdale et al., 2000; Williams, Teasdale, Segal, & Soulsby, 2000). In fact, MBCT is recommended in the NICE guidelines to prevent depression relapse in individuals who have had three or more previous episodes of depression. Many studies have also shown that mindfulness can help with the psychological aspects of physical health difficulties (e.g. Carlson, Goodey, & Angen, 2000; Goldenberg et al., 1994; Grossman et al., 2010; Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn Lipworth, Burney, & Sellers, 1987; Kabat-Zinn et al., 1998; Kaplan, Goldenberg, & Galvin-Nadeau, 1993; Randolph, Caldera, Tacone, & Greak, 1999; Sephton et al., 2007; Wong et al., 2011).

Mindfulness has also been found to be effective in reducing anxiety (e.g. Kabat-Zinn et al., 1992; Koszycki, Benger, Shlik, & Bradwejn., 2007) and eating difficulties (e.g. Kristeller, & Hallet; 1999). Additionally, mindfulness has been found to be helpful in non-clinical populations (Astin, 1997; Massion et al., 1995; Shapiro, Schwartz, & Bonner, 1998; Williams et al., 2001) and has been associated with improvement in various measures of well-being, such as life satisfaction and vitality (e.g. Keng, Smoski, & Robins, 2011).

The importance of mindfulness homework

The importance of regular mindfulness practice at home is inherent in the mindfulness literature (e.g. Kabat-Zinn, 1990; 2005; Segal, Williams, & Teasdale, 2012). Consequently, on average participants in a mindfulness course are expected to engage in 30-60 minutes of daily mindfulness homework. For instance, Vettese et al. (2009) state that "regular daily practice has been regarded as among the most essential aspects of mindfulness programs". This message has been consistent across the development of the field. Kabat-Zinn (1990) proposed that home practice was akin to weight training to build a muscle and that mindfulness homework practice was the "scaffolding" required to develop a mindful state (Kabat-Zinn, 2005). More recently, mindfulness homework has been conceptualised as "a key vehicle for change" in MBCT (Crane et al., 2014; Segal et al., 2012). In fact, a recent meta-analysis suggested that inconsistencies in the effect sizes found across mindfulness studies could be due to moderating factors such as the amount of mindfulness homework participants completed (Khoury et al., 2013).

Evidence on mindfulness homework

Despite the clinical and theoretical emphasis on the importance of mindfulness homework, there is surprisingly little empirical support for mindfulness homework specifically (e.g. Vettese et al., 2009). This gap in the literature has been highlighted for several years (e.g. Crane et al., 2014; Keng et al., 2011; Perich et al., 2012). In fact, mindfulness homework was identified as a key area for future research in the introduction of a special issue on mindfulness-based treatments in the Journal of Cognitive Psychotherapy (Lau &, Yu, 2009). Inherent in the literature is the idea that frequent mindfulness practice improves the efficacy of a mindfulness course (e.g. Kabat-Zinn, 1990; 2005; Segal et al., 2012). However, to date, few studies have systematically examined the important relationship between mindfulness homework and changes in outcome over a mindfulness programme.

The paucity and inconsistency of evidence looking at the impact of mindfulness homework on treatment outcomes is clear. For instance, only three out of 22 studies in Baer's (2003) meta-analysis reported the amount of home practice participants had completed and findings were mixed. Similarly, in Fjorback et al. (2011) homework was found to be related to outcome in two studies (Sephton et al., 2007; Speca Carlson, Goodey, & Angen, 2000), but was not related to change in outcome in four other studies (Bondolfi et al., 2010; Davidson et al., 2003; Nyklicek, & Kuipers, 2008; Pradhan et al., 2007). Khoury et al. (2013) performed an additional moderation analysis, and found that the influence of a mindfulness course on clinical outcomes was not significantly moderated by the duration of mindfulness homework (p = .09). However, as acknowledged by authors, the duration of mindfulness homework was estimated by looking at

mindfulness protocols, rather than directly measuring the actual time participants spent doing home practice.

Vettese et al. (2009) provide the only review to date to look exclusively at the relationship between mindfulness homework and outcome. Vettese et al. (2009) found that only 24 out of the 98 studies reviewed reported the amount of homework participants had completed and examined the relationship between homework and outcome. Fifty-four percent of studies provided partial support that more homework was associated with better outcome. However, the remaining studies did not find this association. In fact, two studies reported a negative association between homework and outcome. Overall, Vettese et al. (2009) concluded that there was equivocal evidence for an association between homework and outcome. Authors highlighted the disparity between what is recommended and what is empirically known about the benefits of mindfulness homework. Thus, future research addressing this relationship as a primary research question was recommended.

Over the past seven years some researchers have followed this recommendation. For instance, Crane et al. (2014) found that recurrence of depression following participation in a mindfulness course was associated with home practice. Specifically, it was found that participants who practiced at least three days a week were half as likely to relapse than participants who practiced less frequently. Unfortunately, Crane et al. (2014) is an exception to the rule, and few other studies have explored the influence of mindfulness homework as a primary objective. However, since Vettese et al. (2009), many more studies have started measuring the amount of homework participants have completed (e.g. Day, Halpin, & Thorn, 2016; Jung, Lee, & Park, 2015; Tovote et al., 2014; Williams

et al., 2014). Additionally, several studies since 2009 have continued to investigate the relationship between homework and treatment outcome as an additional analysis (e.g. Hou et al., 2013; Labelle, Campbell, Faris, & Carlson, 2015).

Rationale

In summary, as is known, no systematic review of the influence of mindfulness homework on treatment outcome has been conducted since 2009. Furthermore, as is known, there have not been any meta-analytic studies conducted to specifically explore the relationship between homework and outcome in mindfulness. A more systematic analysis of this association is now warranted for several reasons. Firstly, there is currently an imbalance between the theoretical claims for the importance of mindfulness homework and the evidence to support this. Secondly, participants of mindfulness programmes are currently asked to devote a large amount of time and effort into mindfulness homework when it is not clear whether this has a beneficial impact on treatment outcome. Thirdly, the current evidence investigating the relationship between homework and outcome is mixed, with varying methodological quality. As is known, no systematic attempt to statistically review the relationship between homework and outcome has been made. Therefore, a synthesis of the associations across studies, and an investigation of the influence of methodological bias in this association using a meta-analysis, is needed.

Aims

This meta-analysis aims to investigate if there is a relationship between mindfulness homework and outcome improvement over a mindfulness course. This meta-analysis aims to investigate the direction and magnitude of the

relationship, and to systematically investigate the influence of methodological bias.

Method

Search strategy

A systematic literature search was conducted on 1st February 2016 using PsycINFO and PubMed databases. The literature search was designed to build upon the existing literature review on mindfulness homework conducted by Vettese et al. (2009). Therefore, search terms replicated the literature search conducted by Vettese et al. (2009), searching for articles that had been published between January 2009 and February 2016 (see Table 1).

Search Terms	Method of Search	Limits
• "Mindfulness based stress reduction" • "MBSR" • "Meditation based stress reduction" • "Mindfulness based cognitive therapy" • "MBCT" • "Mindfulness group" • "Mindfulness homework" • "Mindfulness practice"	• Free text searching • All search terms combined with *OR*	• English-language • January 2009 – February 2016

Table 1: Search strategy using search terms from Vettese et al. (2009)

Full inclusion/exclusion criteria are described in Table 2. In brief, studies needed to meet two key criteria. Firstly, studies needed to measure the amount of mindfulness homework participants had completed. Secondly, studies needed to report a correlation between the amount of homework completed and any pre to post-therapy change in outcome. Many studies fulfilled the first key criterion, but did not meet the second (see Appendix One).

Inclusion criteria	Justification
• *Measuring/ reporting criteria:* Measured the amount of homework participants completed	This is needed to measure the association between amount of homework and change in outcome during a mindfulness course
Reported the exact correlation (i.e. *r* value) between the amount of homework completed by participants and change in outcome measure when comparing pre to post therapy scores Reported the number of participants (i.e. n value) for this correlation	The r and n values are both needed in order to meta-analyse the correlations
• *Nature of the mindfulness course* Mindfulness needed to be an intervention within itself e.g. Mindfulness Based Cognitive Therapy rather than part of a broader intervention e.g. Acceptance and Commitment Therapy	To allow assessment of the impact of mindfulness homework on outcomes independent to other treatment components and to ensure consistency with Vettese et al. (2009) literature search
The mindfulness course needed to be delivered face-to-face and not via telephone/ internet	To reduce heterogeneity of treatment received across studies
The mindfulness course needed to consist of a minimum of 6 sessions	To ensure participants received sufficient mindfulness input to impact on outcomes
The mindfulness sessions needed to be separated from each other and not delivered exclusively via mindfulness retreats	To allow for participants to complete homework between sessions
Exclusion criteria	**Justification**
• *Article type* The following types of articles were excluded: Review articles/ meta-analyses/ theoretical papers/ self-help papers / clinical guidance papers / commentaries / psychometric papers / case studies / study protocols / qualitative studies / studies which were not treatment outcome studies i.e. studies comparing types of mindful activities, studies exploring mechanisms of mindfulness, studies about dispositional mindfulness etc.	Such articles would not provide the data required for this meta-analysis
Pilot studies	Pilot studies were excluded to avoid the risk of data that had been collected from the same participants being entered multiple times into the meta-analysis, as this would have artificially inflated n in the meta-analysis. This could have occurred if authors had published a randomised controlled trial after the pilot study that included pilot data
• *Outcome type* Articles only reporting biological outcomes such as brain activity or blood analysis were excluded	Firstly, to reduce heterogeneity across studies. Secondly, because it is not theoretically clear exactly what biological changes (e.g. brain activity) would indicate improvement across the duration of a mindfulness course
• *Participant characteristics* Articles reporting data from children/adolescents were excluded	To reduce heterogeneity across studies

Table 2: Exclusion and inclusion criteria

The systematic search yielded a total of 1913 articles. These articles were then screened according to the exclusion criteria using study titles and abstracts. The remaining 300 articles were then reviewed in more detail to investigate whether the correlational data needed for the meta-analysis had been reported. Within 37 papers there was evidence to suggest that authors may have conducted, but not reported, the correlation between homework and outcome improvement. These authors were contacted and asked to provide this additional information. Nineteen per cent of the authors who were contacted provided additional data and were subsequently included in the meta-analysis.

The articles included in Vettese et al. (2009) were then screened according to the same exclusion criteria. Seven out of the 24 studies reviewed in Vettese et al. (2009) met inclusion criteria for this meta-analysis. References of included papers were then reviewed and relevant papers screened to ensure that no eligible studies had been missed. Following this, one additional paper (Rosenzweig et al., 2010) was included in the meta-analysis.

Close examination of the studies suggested that two pairs of studies seemed to be reporting data from the same participants (Labelle, Campbell, Faris, & Carlson, 2015 and Labelle, Lawlor-Savage, Campbell, Faris, & Carlson, 2015; Carlson, Speca, Kamala, Patel., & Goodey, 2003 and Carlson, Speca, Patel & Goodey, 2004). Study authors confirmed that these two pairs of studies were indeed reporting results from the same participants. Therefore, to avoid violating the assumption that all studies included in a meta-analysis are independent, the results from each pair of studies were entered as a single study in the meta-

analysis. The final meta-analysis included data from 25 studies, which was entered as 23 independent studies (see Figure 1).

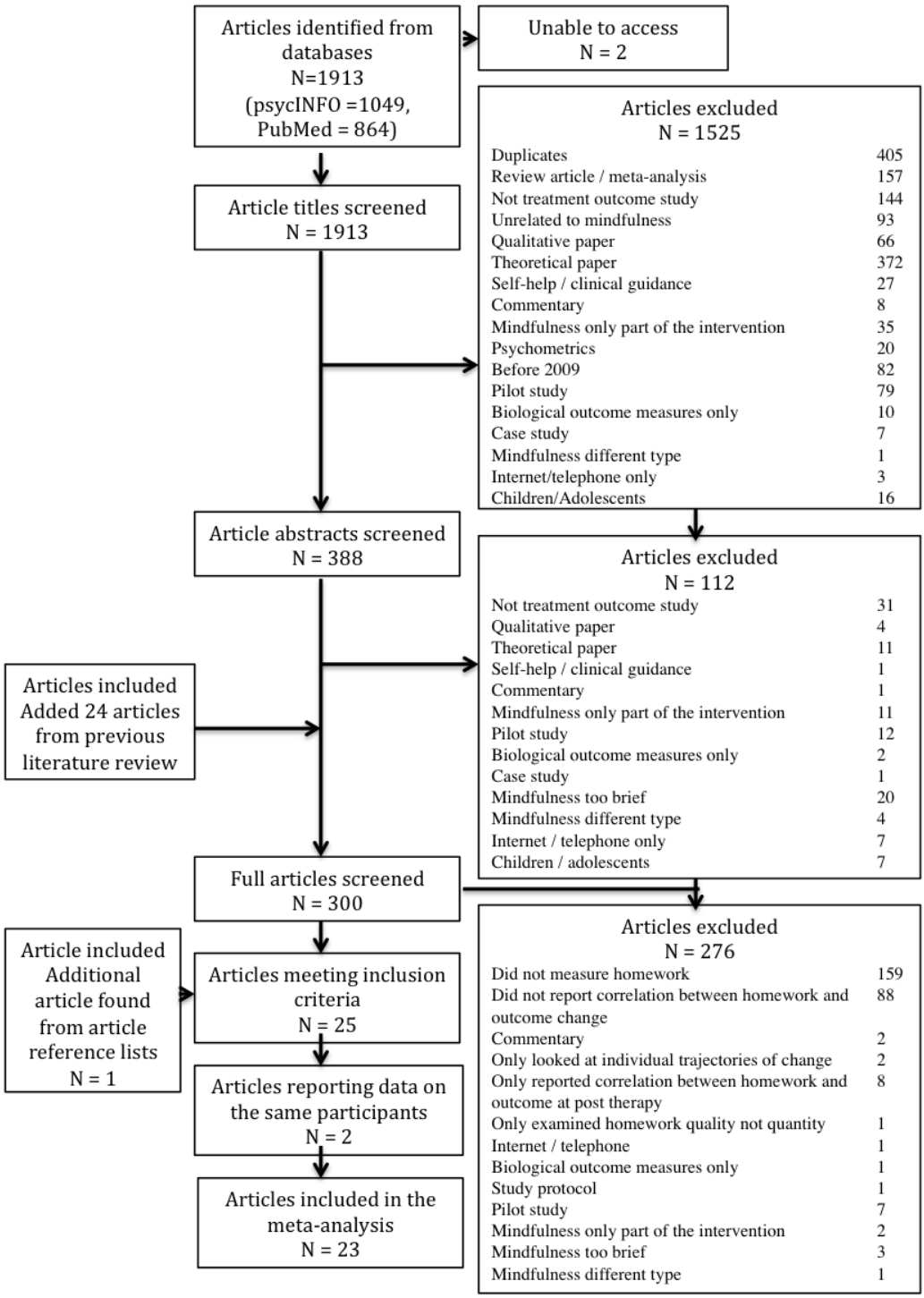


Figure 1: Flow chart to show search strategy

Key characteristics of the included studies, such as, study sample, type of intervention and measure of homework and outcome are displayed in Table 3.

Study	Sample	N	Intervention	Measure of homework	Outcome measures	*r*
Barnhofer et al. 2015	Adults with a history of suicidal depression	50	MBCT 8 sessions	Mean time of formal practice per day self-reported	Suicide Cognition Scale	0.26
Brewer et al. 2011	Adult nicotine dependent smokers	27	MT (Mindfulness Training for Smoking Cessation) 8 sessions	Some form of self-report of home practice – method unclear	Cigarette use Point prevalence abstinence	0.442 0.342
Campbell, Labelle, Bacon, Faris, & Carlson, 2012	Women with cancer (any type of cancer included)	31	MBSR 8 sessions, plus 6 hour workshop	Self-report meditation log of number of minutes practicing each day collected post therapy	MAAS (Mindful Attention Awareness Scale)	0.21
Canby, Cameron, Calhoun, & Buchanan, 2015	Healthy students	19	MBSR 6 sessions	Self-report average number of days per week practiced	Brief Symptom Inventory - Global Severity Index (distress) Tangney Self Control Scale Subjective Vitality Scale MAAS	0.266 0.295 0.275 0.453
Carlson, Ursuliak, Goodey, Angen, & Speca, 2001	Outpatients with cancer (any type of cancer included)	77-78	MBSR 7 weeks	Self-reported duration of daily practice	Profile of Mood States (POMS) - Total Score POMS - Tension Anxiety POMS - Depression POMS - Anger POMS - Vigour POMS - Fatigue POMS - Concentration Symptoms of Stress Inventory (SOSI) –Total Score SOSI - Peripheral Manifestations SOSI - Cardiopulmonary SOSI - Centra Neurological SOSI - Gastrointestinal SOSI - Muscle Tension SOSI - Habitual Patterns SOSI - Depression SOSI - Anxiety/Fear SOSI - Emotional Irritability SOSI - Cognitive Disorganisation	0.192 0.203 0.17 0.104 0.141 0.13 0.107 0.108 0.236 0.072 0.079 -0.143 -0.024 0.118 0.03 0.071 0.162 0.05
Carlson, Speca, Kamala, Patel., &	Outpatients with breast and prostate	41	MBSR 8 weeks	Self-report daily record of minutes spent practicing	EORTC (Cancer Quality of Life Questionnaire) POMS – Total Mood Disturbance	0.39 0.15

Study	Sample	N	Intervention	Measure of homework	Outcome measures	*r*
Goodey, 2003 / Carlson, Speca, Patel & Goodey, 2004	cancer			meditation and yoga collected weekly	SOSI	0.28
Carmody & Baer 2008	Adults with a broad range of physical and mental health problems	121	MBSR 8 sessions	Self-report daily record of number of minutes spent each day doing formal and informal homework	Brief Symptom Inventory Subscores: Somatization Obsessive-compulsive Interpersonal sensitivity Depression Anxiety Hostility Phobic Anxiety Paranoia Psychoticism Global Severity Index	 0.17 0.12 0.31 0.15 0.29 0.04 0.26 0.14 0.33 0.3
Cash et al. 2015	Women with fibromyalgia	32	MBSR 8 weeks	Self-report number of times spent per week meditating post therapy	Pain (Visual Analogue Scale) Symptom severity - Fibromyalgia Impact Questionnaire	0.45 0.4
Eyles et al. 2014	Women with breast cancer	19	MBSR 8 weeks	Combined classroom and self-reported home practice	Brief Fatigue Inventory Hospital Anxiety and Depression Scale (HADS) - Depression HADS - Anxiety Toronto Mindfulness Scale - Curiosity Toronto Mindfulness Scale - Decentering	-0.008 0.256 0.335 0.437 0.294
Goldin, Ziv, Jazaieri, Hahn, & Gross, 2013	Adults with social anxiety disorder	22	MBSR 8 weeks	Self-report of daily log of group and individual meditation and yoga collected weekly	Negative emotion in emotional regulation	0.48
Hawley et al. 2013	Adults with depression	32	MBSR & MBCT Both 8 weeks	Self-report of weekly frequency and duration of formal and informal practice	Hamilton Rating Scale for Depression	0.55
Hou et al. 2013	Adult family caregivers	59-64	MBSR 8 weeks	Self-report weekly practice log	Chinese Centre for Epidemiologic Studies Depression Scale Stait Anxiety Inventory Trait Anxiety Inventory Self Compassion Scale FFMQ (Five Facets Mindfulness Questionnaire) SF-36 Physical Health	-0.021 -0.101 0.099 0.171 0.18 0.003

Study	Sample	N	Intervention	Measure of homework	Outcome measures	*r*
					Summary (PCS)	
					SF-36 Mental Health Summary (MCS)	0.135
					Perceived social support	0.085
Kristeller & Hallett 1999	Obese women with binge eating disorder	18	Meditation-based intervention for binge eating disorder 6 weeks	Self-report of weekly time spent using 3 types of meditation practice	Binge Eating Scale	0.66
					Beck Depression Inventory (BDI)	0.59
Kristeller, Wolever, & Sheets, 2013	Adults with binge eating disorder	33	MB-EAT (Mindfulness Based Eating Awareness Training) 12 sessions	Self-report number of times meditated, type of meditation and time spent meditating daily	Binge Days per Month	0.22
					Binge Eating Scale	0.37
					Power of Food Scale (PFS): Food Available	0.24
					PFS: Food Present	0.35
					PFS: Food Tasted	0.1
					Eating Self-Efficacy Scale	0.1
					Three Factor Eating Questionnaire (TFEQ): Hunger	0.28
					TEFQ: Disinhibition	0.39
					TEFQ: Cognitive Restraint	0.06
					BDI	0.16
					Rosenberg Self-esteem	-0.3
					BMI	0.33
					Weight	0.33
Labelle, Campbell, Faris, & Carlson, 2015 / Labelle, Lawlor-Savage, Campbell, Faris, & Carlson, 2015	Adults with cancer (any type of cancer included)	53	MBSR 8 weeks plus 6 hour workshop	Self-report number of minutes of home practice (yoga and meditation) collected weekly	Calgary Symptoms of Stress Inventory	0.15
					Profile of Mood States	0.05
					Functional Assessment of Chronic Illness Therapy Spiritual Well-being (FACIT-Sp)	0.1
					Post Traumatic Growth (PTGI)	0.15
					MAAS	0.2
					FFMQ - Observe	-0.04
					FFMQ - Describe	0.19
					FFMQ - Act	0.3
					FFMQ - Nonjudge	0.09
					FFMQ - Nonreact	-0.07
					Rumination Reflection Questionnaire	0.08
					Penn State Worry Questionnaire	0.03
					Acceptance and Action Auestionnaire	-0.08
Larouche, Lorrain, Cote, & Belisle, 2015	Adults with chronic insomnia	12	MBCT 8 sessions	Self-report weekly estimate of average minutes per day and days per week practiced	Insomnia Severity Index	0.62
					Dysfunctional Beliefs and Attitudes about Sleep	0.59
					Wake after Sleep Onset in Sleep Diary	0.88
					Quality of Sleep in Sleep Diary	0.71
					Sleep Efficiency in Sleep Diary	0.72

Study	Sample	N	Intervention	Measure of homework	Outcome measures	*r*
					Total Wake Time in Sleep Diary	0.76
					Total Sleep Time in Sleep Diary	0.52
Lengacher et al. 2009	Women with breast cancer	40	MBSR(BC) 6 weeks	Self-reported minutes of practice in daily diary	Concerns about Recurrence Scale	0.08
					Problems from recurrence concerns	0.13
					State Anxiety Inventory	0.09
					Trait Anxiety Inventory	0.28
					Center for Epidemiological Studies Depression Scale	0.23
					Life Orientation Test	
					Perceived Stress Scale	-0.32
					Medical Outcomes Studies Short form General Health Survey:	0.33
					Physical functioning	0.45
					Role limitations physical health	0.31
					Pain	0.38
					General health	0.22
					Energy	0.27
					Social functioning	0.18
					Role limitations emotional problems	0.34
					Emotional wellbeing	0.33
					Aggregate physical health	0.22
					Aggregate mental health	0.28
Malcoun 2008	Adults with a broad range of physical and mental health problems	44-69	MBSR 8 weeks	Self-report in-class questionnaires on average frequency and duration of formal home practice added to formal session practice	Kentucky Inventory of Mindfulness Skills (Global Mindfulness)	0.14
					Kentucky Inventory of Mindfulness Skills (Non-Reactivity)	0.13
					Brief Symptom Inventory for Psychological Symptoms	0.11
					Physical Component Summary (PCS)	0.11
					PCS: Physical Functioning	-0.01
					PCS: Role Physical	-0.07
					PCS: Bodily Pain	-0.03
					PCS: General Health	-0.05
Rosenzweig et al. 2010	Adults with chronic pain	29-36	MBSR 8 weeks	Self-report daily practice formal practice logs initiated midway through therapy to calculate average weekly practice time	Symptom Checklist-90-Revised:	
					Overall Psychological Distress (GSI)	0.4
					Somatization	0.5
					General Health	0.42
					Reduction in role limitations due to emotional problems	0.3
					Social Functioning	0.31
					Anxiety	0.14
					Depression	0.29
					Bodily Pain	0.18
Salmoirago-	Adults with a broad	121	MBSR 8 weeks	Self-report daily number	Sleep Quality (Likert scale)	0.23

Study	Sample	N	Intervention	Measure of homework	Outcome measures	*r*
Blotcher, Hunsinger ,, Morgan, Fischer, & Carmody, 2013	range of health-related problems			of minutes doing formal and informal practice, retrospectively estimate missing data		
Speca, Carlson, Goodey, & Angen, 2000	Outpatients with cancer (any type of cancer included)	82	MBSR 7 weeks	Self-report duration of daily meditation practice	POMS: Total Mood Disturbance Stress symptoms (SOSI)	0.393 0.253
Tamagawa et al. 2015	Women with breast cancer	38	MBCR (Mindfulness Based Cancer Recovery) 8 sessions	Self-report weekly log of minutes spent in home practice	POMS - Tension/anxiety POMS - Depression/dejection POMS - Anger/hostility POMS - Vigor/activity POMS - Fatique POMS - Confusion POMS total PTGI (post traumatic growth inventory) FACIT-sp MAAS	0.088 0.22 0.001 0.349 0.082 0.003 0.18 0.587 0.289 0.267
van Aalderen et al. 2011	Adults with recurrent depression	94	MBCT 8 weeks		Either HAMD or BDI or aggregate does not say	0.26

Table 3: Key characteristics of studies included in meta-analysis

Assessment of methodological quality of articles: risk of bias

Constructing the quality framework

A quality framework was designed to assess for risks of bias that were specifically relevant for this meta-analysis. The framework was adapted from existing frameworks, namely: Downs & Black (1998), Thompson, Diamond, McWilliam, Snyder, & Snyder (2005) and The Cochrane Collaboration Risk of Bias Tool & RoBANS (Kim et al., 2013). The framework assessed for risk of bias in five main domains (see Table 4).

Calculating risk of bias

Studies were rated for risk of bias in each domain, and then the mean risk of bias was calculated to provide an overall index of risk of bias (see Table 5). The

two most important criteria (measurement and selective reporting) were given double weighting in the framework, due to the high risk of bias not meeting these criteria entailed.

Domain	Details	Risk of Bias
Measurement of outcomes	• Is outcome measure valid and reliable? • Has data been converted e.g. into nominal scale/residuals thus loosing sensitivity? • Is outcome measure using whole measure/subscale?	0 = Low risk of bias 0.5 = Medium risk of bias 1.0 = High risk of bias
Measurement of homework	• Is measure of homework valid and reliable?	0 = Low risk of bias 0.5 = Medium risk of bias 1.0 = High risk of bias
Selective Reporting	• Has there been selective outcome reporting i.e. only significant results? *(Which has continued despite requesting additional data from authors)* • Has there been "data dredging"?	0 = Low risk of bias 0.5 = Medium risk of bias 1.0 = High risk of bias
Attrition	• Is there incomplete outcome/homework data due to attrition? • Has this been handled appropriately?	0 = Low risk of bias 0.5 = Medium risk of bias 1.0 = High risk of bias
Power	• Is there sufficient number of participants included in correlation to have power to find an association?	0 = Low risk of bias (<40) 0.5 = Medium risk of bias (40-70) 1.0 = High risk of bias (>70)
External Validity	• Is the study population representative? • Is the treatment representative for the individual? • Is compliance with the intervention reliable?	0 = Low risk of bias 0.5 = Medium risk of bias 1.0 = High risk of bias

Table 4: Quality framework used for calculating risk of bias

As each individual correlation reported in each study could carry a different level of risk of bias (due to the characteristics of the specific outcome measure), risk of bias was calculated for every individual correlation included in the study, and these individual ratings were used in the meta-analysis. For

brevity, a conservative summary of the risk of bias for each study is presented in Table 5 which shows the highest calculated risk of bias for each study. For the complete breakdown of individual risk of bias scores for each correlation see Appendix Two.

Study – overall quality	Measurement of outcomes	Measurement of homework	Selective Reporting	Attrition	Power	External Validity
Barnhofer et al. 2015						
Brewer et al. 2011						
Campbell et al. 2012						
Canby et al. 2015						
Carlson et al. 2001						
Carlson et al. 2003/4						
Carmody & Baer 2008						
Cash et al. 2015						
Eyles et al. 2014						
Goldin et al. 2013						
Hawley et al. 2013						
Hou et al. 2013						
Kristeller & Hallett 1999						
Kristeller et al. 2013						
Labelle et al. 2015						
Larouche et al. 2015						
Lengacher et al. 2009						
Malcoun 2008						
Rosenzweig et al. 2010						
Salmoirago-Blotcher et al. 2013						
Speca et al. 2000						
Tamagawa et al. 2015						
van Aalderen et al. 2011						

Key
High risk of bias
Medium risk of bias
Low risk of bias

Table 5: Risk of bias of studies calculated using quality framework

Measurement of outcome variable

Overall the risk of bias due to the measurement of the outcome variable was medium to low across studies. Eleven studies were rated at low risk of bias for this domain as all their correlations were conducted with outcome measures that had published validity and reliability (e.g. Barnhofer et al., 2013). Twelve studies had a higher risk as they had reported correlations with one or more outcome variables that were either unvalidated (e.g. Salmoirago-Blotcher et al., 2013) or were subscales of a validated measure that had not been shown to be sufficiently valid or reliable to use on their own (e.g. Carmody & Baer, 2008).

Measurement of homework

Overall, the unreliable measurement of homework was the largest risk of bias for this meta-analysis, with no single study having a low risk of bias in this domain. Seventy percent of studies had a medium risk of bias because the measure of homework relied exclusively upon self-report, with no measures taken to ensure that the self-report was accurate (e.g. Goldin et al., 2013). Furthermore, often the self-report was recorded retrospectively (e.g. Campbell et al., 2011). The remaining studies had an even higher risk of bias if homework was only measured towards the end of therapy (e.g. Larouche et al., 2015), or if the measure of homework was relatively unspecific (for instance, average number of days rather than minutes e.g. Van Aalderen et al., 2011).

Selective reporting

Once additional unreported data had been provided from some authors, the risk of bias from selective reporting of only significant results was reduced. However, nine studies were still at medium risk of bias in this domain due to reasons such as: only reporting significant results (e.g. Kristeller, & Hallet, 1999),

converting data into residuals for the correlation (e.g. Carlson et al., 2001) or reporting sample sizes in ranges (e.g. Kristella et al., 2013).

Power

Overall, small sample size was an area of weakness for the studies. Twelve studies had a sample size of less than 40, and six studies had between 40 to 70 participants. The small sample sizes reflect the correlation between homework and outcome almost always being an additional analysis, rather than the main research question (e.g. van Alderen et al., 2011). This meant that the full sample was not always included in this analysis. Additionally, low rates of participants completing homework diaries in some studies reduced the sample size further (e.g. Tamagawa et al., 2015).

Attrition

Forty-four percent of studies either had good attrition (e.g. Lengacher et al., 2009), or dealt with the loss of participants appropriately (e.g. Campbell et al., 2011). Three studies had a high risk of bias in this domain due to only a small subset of participants being included in the correlation (e.g. Carmody & Baer, 2008). The remaining studies either had small losses of participants which were not addressed (e.g. Brewer et al., 2011), or high levels of drop outs that were only partially dealt with (e.g. Rosenweig et al., 2010).

External validity

External validity was a relative strength of the papers. The majority (78%) of papers had a low risk of bias due to using a sample, and a mindfulness course, that was representative of everyday clinical practice (e.g. Brewer et al., 2011). Treatment integrity was mostly well regulated (e.g. Carlson et al., 2003/4). Five studies were at higher risk of bias due to having an overly selected sample that

was less representative of the wider population (e.g. Cash et al., 2014), or if parts of the mindfulness course had been significantly adapted (e.g. Canby et al., 2015; Malcoun, 2009).

Summary of risk of bias

The overall risk of bias across studies was mixed. Thirteen studies with a medium risk of bias and two studies with a high risk of bias were included in the meta-analysis. Studies with a medium to high risk of bias were included due to the low number of studies reporting the data needed. It is hoped that future research will include higher quality studies, thus enabling stronger conclusions to be drawn from a meta-analysis. However, the current meta-analysis is believed to be a representative summary of existing literature in this field.

Meta-analytic approach

Separate meta-analyses were conducted for the five most commonly reported outcomes, namely: depression, anxiety, physical health, well-being and mindfulness. The meta-analyses were performed using the "Meta" and "Metafor" packages in R (Schwarzer, 2007; Schwarzer, Carpenter, & Rucker, 2015). All calculations were performed using *Fisher's z* transformed correlations. This is because the standard error of the untransformed *r,* unlike the standard error of *Fisher's z,* is affected by the absolute size of the correlation which would lead to larger correlations being weighted more highly in the meta-analysis (Borenstein, Hedges, & Rothstein, 2007). Applying the *Fisher's z* transformation removes this bias. Unless otherwise specified, the *Fisher's z* transformed correlations were then back-transformed into correlation units for ease of interpretation. As there were only two studies reporting outcomes related to eating disorders, these two studies were explored narratively but were not entered into the meta-analysis.

Data extraction

It was important to ensure that only one correlation was entered for each study, as entering multiple correlation coefficients from the same study, could artificially inflate the total sample size of the meta-analysis. Therefore, for each meta-analysis one correlation[1] was entered for each study reporting data relevant to that particular outcome variable. If one study reported multiple correlations for one particular outcome variable, the decision matrix displayed in Figure 2 was used to determine which correlational value was entered into the meta-analysis. This framework was used to ensure that the methodology was as similar, and as strong, as possible across studies. When a correlation using the most common methodology was not reported, correlations using slightly different methodologies were included to ensure that there were enough studies to conduct each meta-analysis. After the decision matrix had been applied, some studies still had multiple correlations for the same outcome variable. In these instances, an aggregate correlation was created using the method outlined by Borenstein et al. (2007). To investigate whether any methodological differences, such as aggregating correlations, had biased the meta-analyses sensitivity analyses were conducted.

[1] The number of participants included in each correlation was also entered into the meta-analysis. If the number of participants included in the correlation was reported as a range, authors were contacted for clarification on the n size. If no response was received, the lowest n size from the range was entered as a conservative estimate of sample size.

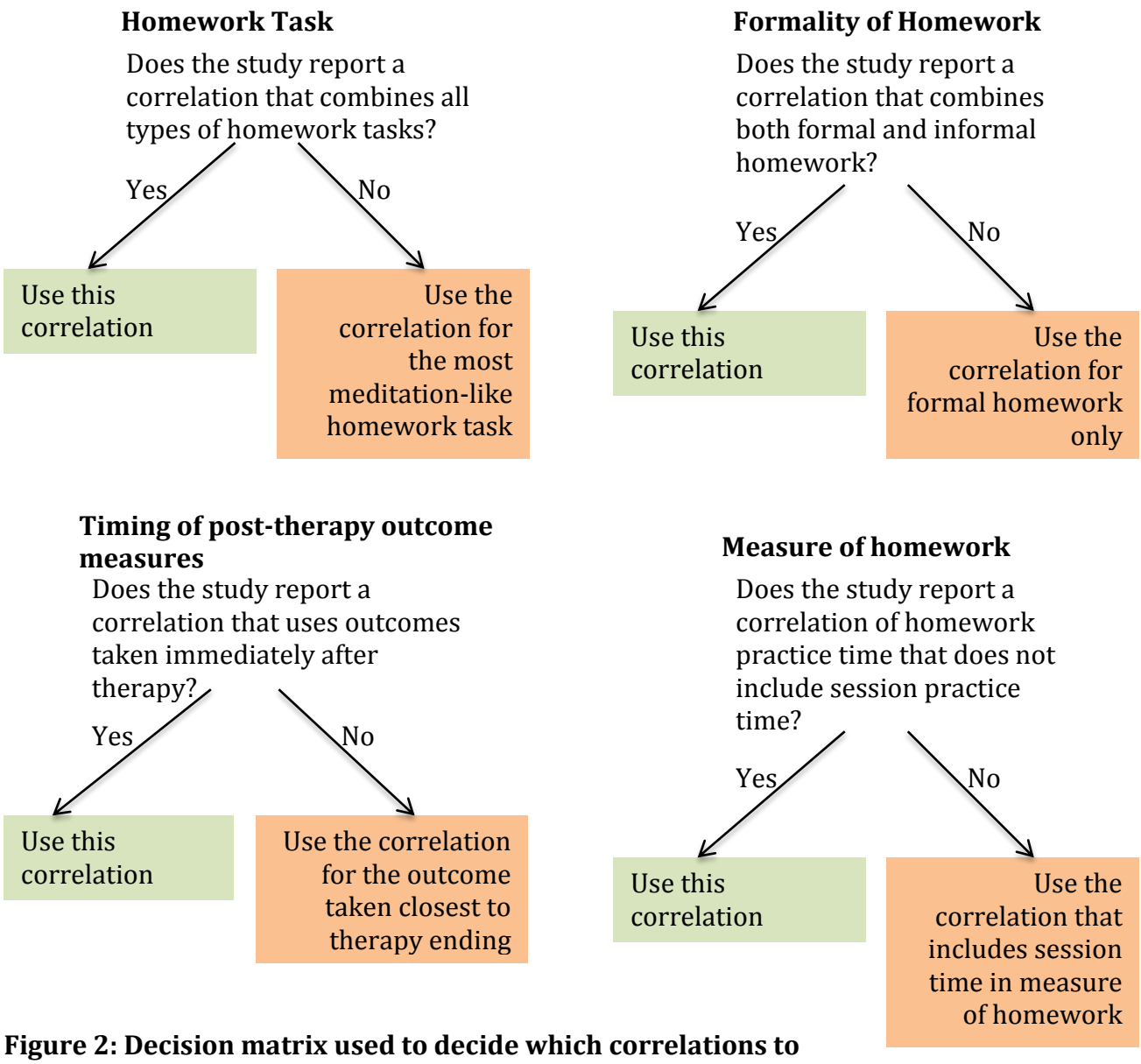


Figure 2: Decision matrix used to decide which correlations to include in meta-analysis

Meta-analytic model

Random-effects models were used to calculate the meta-analytic effect for each outcome. A random-effects model assumes that effect-sizes across studies may vary and attempts to identify what portion of the observed variance in associations may be attributable to factors, such as methodology, which could differ across studies. Therefore, a random-effects model aims to estimate the mean of the distribution of effect sizes across the studies. In contrast, a fixed-

effects model assumes that all included studies use optimal research methodologies, and that the effect that is measured will be the same across the individual studies. For psychological therapy research, a random-effects model is more appropriate than a fixed-effects model. This is because studies on psychological therapy, such as the studies included in this meta-analysis, are conducted using differing research methodologies. Because of the methodological differences, the studies in this meta-analysis are likely to produce varying estimates of the relationship between homework and outcome.

Heterogeneity

Heterogeneity was assessed using Cochrane's Q, Tau and Higgins' I^2 for all outcomes. High levels of heterogeneity suggest that uncontrolled factors could be moderating the relationship between homework and outcome. If high heterogeneity is found, possible sources of the heterogeneity must be investigated. As suggested by Borenstein, Hedges, Higgins, & Rothstein, 2009, the level of heterogeneity estimated by Higgins' I^2 was used as a criterion to decide if further investigation was appropriate. It was decided that if Higgins' I^2 was above 50%, suggesting moderate to high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003), sensitivity analyses of methodological variation would be conducted by dividing the studies into subgroups based on methodological characteristics.

Assessing bias attributable to methodological quality

Quality-effects models were also performed to check if any observed association was due to the methodological quality of the studies. The quality-effects model can be seen as an extension of the random-effects model. Whilst the random-effects model assumes that studies with larger sample sizes produce

more precise estimates of the association, the quality-effects model assumes that studies of higher methodological quality produce more precise estimates of the association. So, in such analyses, studies with a lower risk of bias (i.e. higher methodological quality) are given more weight, thus allowing an assessment of the influence of study quality on the size of the association (Doi, & Thalib, 2008).

Identifying influential studies

A "one left out" procedure was used to examine whether any studies were exerting an undue influence on the overall observed effect. This allowed the meta-analytic effect to be repeatedly calculated with each study systematically removed. A study was then deemed to have a disproportional influence on the meta-analysis if removing that study yielded a meta-analytic effect that lay outside of the 95% confidence intervals of the overall meta-analytic effect.

Publication bias

Publication bias was assessed using visual examination of funnel plots, calculation of fail-safe N using the Rosenthal approach (Rosenthal, 1979) and, when appropriate, Egger's test for small study effects (Egger, Smith, Schneider, & Minder, 1997) and Trim and Fill analysis (Duval, & Tweedie, 2000).

Sensitivity analyses

As outlined in the method, there was some methodological variation which could have impacted on the meta-analyses. Consequently, as shown in Table 6, subgroup analyses were conducted on each meta-analysis to see if any methodological differences across studies could have influenced observed effects. For each methodological difference, one type of methodology was deduced *a priori* to be of least risk of bias, to facilitate interpretation of any significant differences found across subgroups.

Methodological Variation	Coding of Studies	Strongest Methodology	Justification of Strongest Methodology
Aggregate correlation	0 = no aggregate correlation 1 = aggregate correlation was used	0 = no aggregate correlation	As aggregating correlation is a manipulation of the data this increases the possibility of bias into the analysis
Correlation statistic	0 = Pearson's *r* 1 = Spearman's *r*	0 = Pearson's *r*	Pearson's *r* is most widely used and uses original numeric data, as opposed to ranges, to calculate correlation coefficients
Formality of homework	0 = all types of homework included 1 = only formal homework included	0 = all types of homework included	The aim of the meta-analysis was to investigate the influence of all mindfulness homework, not specifically formal homework
Specificity of homework	0 = all types of homework tasks included 1 = only specific homework tasks included	0 = all types of homework tasks included	The aim of the meta-analysis was to investigate the influence of all mindfulness homework, not specific tasks
Inclusion of session time in measure of homework	0 = session time not included in measure of homework 1 = session time is included in measure of homework	0 = session time not included in measure of homework	Session time is not a measure of homework, and so including this in the measure of homework introduces bias
Timing of post therapy outcome measures	0 = post therapy 1 = after a follow-up period	0 = post therapy	The amount of homework participants completed was only measured during the mindfulness course. Thus the relationship between homework and outcome would be most sensitive to measure the nearer in time to the homework practice

Table 6: Outline of subgroup analyses to investigate influence of methodological variation on meta-analytic effect

Results

Overall, significant small positive associations were observed across each outcome category (see Table 7).

Outcome	Number of studies	Number of particip-ants	Random-effects model summary effect	95% Confidence Interval	Heterogeneity			
					Cochrane's Q	p	Tau²	Higgins' I²
Depression	13	637	0.22*	0.14-0.31	15.25	0.23	0.0038	21.3%
Anxiety	8	443	0.14*	0.04-0.23	3.62	0.82	0	0%
Physical Health	14	744	0.21*	0.12-0.30	19.75	0.10	0.0107	34.2%
Well-being	12	668	0.17*	0.08-0.26	15.01	0.18	0.0071	26.7%
Mindfulness	8	397	0.22*	0.12-0.31	2.74	0.91	0	0%

*=significant ($p < .05$)

Table 7: Summary of the results of meta-analysis for each type of outcome

Depression

A total of 13 studies, including 637 participants reported associations between depression and homework. As shown in Figure 3, the random-effects model yielded a significant effect: $r = 0.22$, 95% CI [.14 - .31]. This suggests that there is a small, but reliable, positive association and that approximately 5%, CI [1.9 – 9.6%] of the variance in depression reduction can be explained by the variation in the amount of homework completed. Higgins' I^2 indicated that 21.3% of the total variation across the studies was the result of study heterogeneity (Higgins et al., 2003). Due to the low observed heterogeneity (Cochrane's Q = 15.25, $p = .22$, $Tau^2 = .0038$, $p = .22$, Higgins' $I^2 = 21.3\%$) no sensitivity analyses of methodological variation were performed.

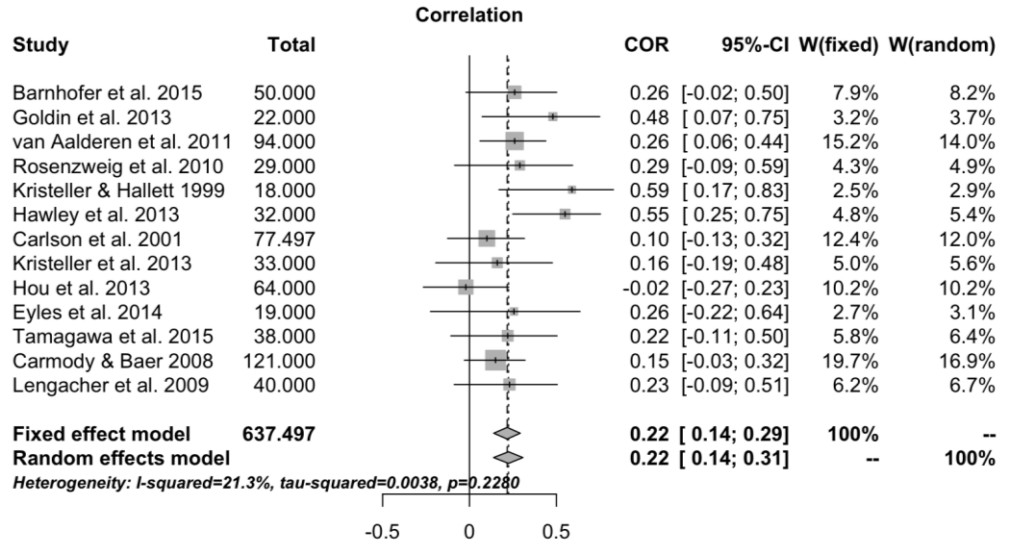


Figure 3: Forest plot for depression

The quality-effects model demonstrated that the effect was robust to variations in methodological quality (*r* = 0.28, 95% CI [.18 - .38]). In fact, the quality-effects model estimated that if all studies had been of high methodological quality, there would have been a small increase (.06) in the observed association.

Identifying influential studies

As shown in Figure 4, excluding any single study did not make the meta-analytic effect fall outside of the 95% confidence intervals (shown in red), indicating that no one study was having a disproportionate effect upon the observed association.

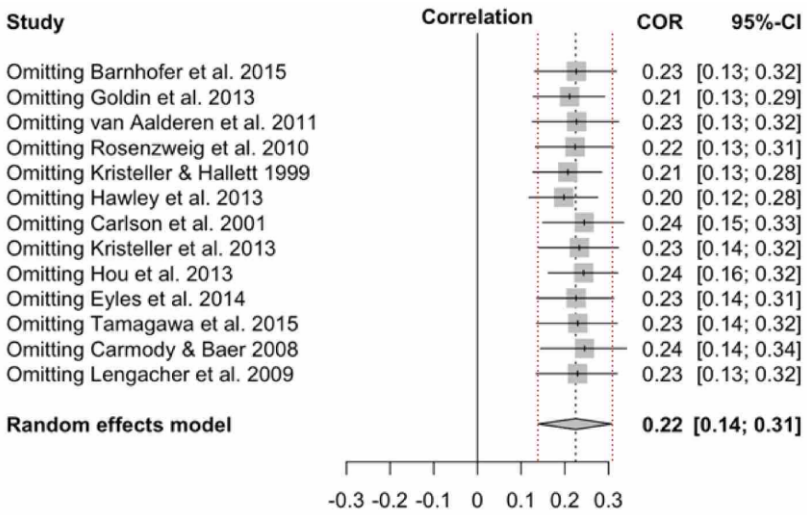
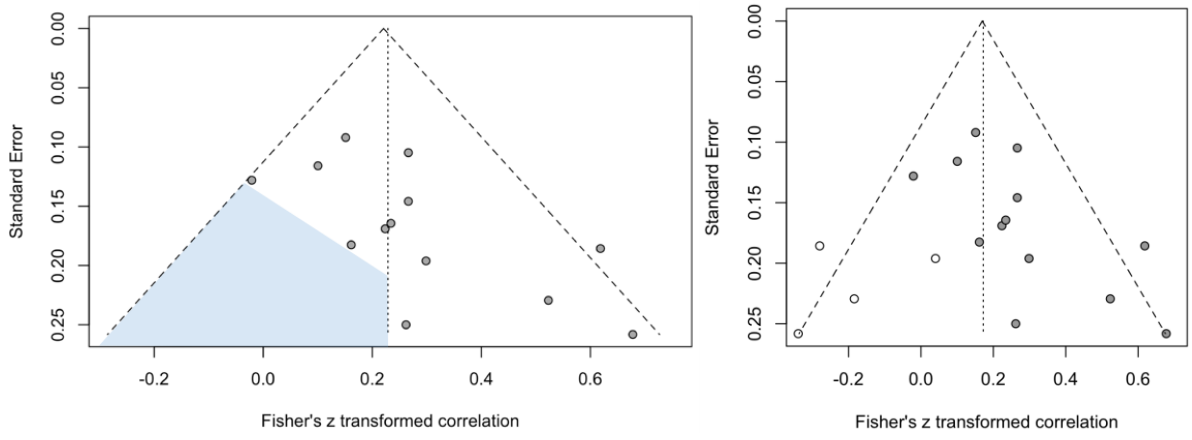


Figure 4: Forest plot to show the influence of individual studies on the meta-analytic effect for depression

Publication bias

The funnel plot provides a graphic representation of the relationship between effect size and study precision (i.e. standard error). It is assumed that less precise studies are likely to show greater variability in reported effect sizes. Therefore, in an unbiased literature the distribution of study correlations should lie within the triangular zone in the funnel plot (see Figure 5(a)).



(a) **(b)**

Figure 5: **Funnel plot (a) and trim and fill analysis (b) for depression**

If the available literature were unbiased and free from restrictions in publication then one would expect an even, symmetrical distribution of studies across both sides of this triangular zone. As can be seen in the blue shaded area in Figure 5(a), there is evidence to suggest that small studies yielding small associations could be missing from the meta-analysis. This asymmetry is most likely the result of publication bias and could have led to an overestimation of the size and/or significance of the observed association. Therefore, Egger's test for small study effects was conducted (Egger, 1997). The Egger's test revealed a significant bias (Egger = 2.52, p = .029), suggesting that there was evidence of publication bias within this group of studies.

In order to see whether this publication bias had led to an overestimation of the size or significance of the association between depression and homework, a Trim and Fill analysis was conducted to estimate the effect of publication bias (Duval & Tweedie, 2000). Any studies that were showing an effect that was not concomitant with the main body of studies were 'trimmed' (i.e. removed) and then studies estimated to have been omitted due to publication bias were 'filled' (i.e. entered) into the meta-analysis. No studies met criteria for being 'trimmed', but four studies were 'filled' into the analysis (see Figure 5(b)). The meta-analysis was then recalculated with the 'filled' studies included. This analysis yielded a significant, although slightly smaller, estimate of the association between depression reduction and homework: r = 0.17, 95% CI [.07 - .28], p = 0.0016. Suggesting that after controlling for possible publication bias, a slightly reduced but statistically significant association was estimated to remain between depression and homework.

Finally, Rosenthal's fail-safe number was calculated to estimate how many unpublished null studies would be required to reduce the observed meta-analytic effect to non-significance (Rosenthal, 1979). It was estimated that 153 non-significant, unpublished studies would need to exist to make the meta-analytic effect non-significant. Therefore, the impact of publication bias is probably trivial and if all relevant unpublished studies were included the observed relationship would probably remain largely unchanged.

Summary of depression results

Overall these results estimate that if the methodology of studies were better, and if any unpublished null studies were included, the true meta-analytic effect would lie between 0.17 to 0.28. The best estimate of the association between depression improvement and homework with existing available data is 0.22.

Anxiety

The association between anxiety and homework was reported for 443 participants in eight studies. The random-effects model demonstrated that there was a small positive relationship between the amount of homework completed and reduction in anxiety over a mindfulness course (r = 0.14, 95% CI [.04 - .23]). The heterogeneity between anxiety studies was very low (Higgins' I^2 = 0%). As a result, subgroup analyses were not conducted. It is important to note that heterogeneity is difficult to detect with such a small number of studies.

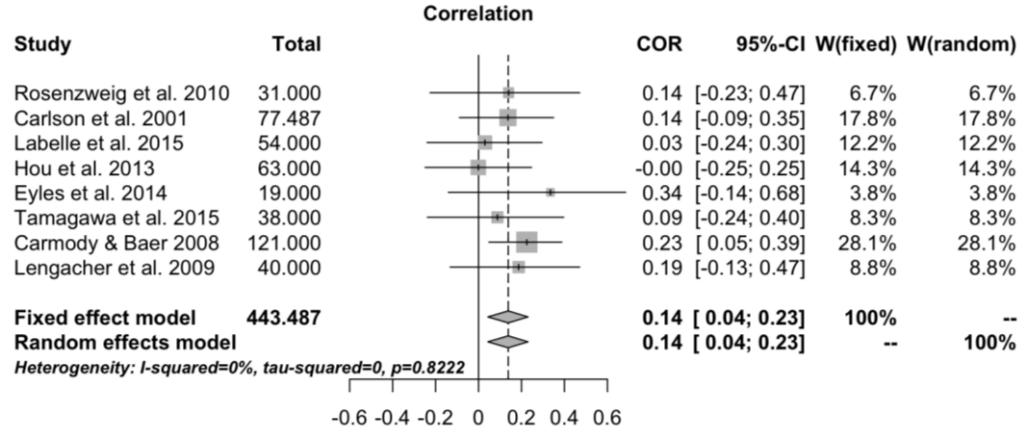


Figure 6: **Forest plot for anxiety**

The quality-effects model showed a similar effect (r = 0.15, 95% CI [.03 - .26], suggesting that the effect was robust to variations in methodological quality.

Identifying influential studies

As shown in Figure 7, no single study was found to have a disproportionate influence on the overall meta-analytic effect. Omitting Carmody & Baer (2008) from the meta-analysis would have made the meta-analytic effect smaller and non-significant. However, even with this omission, the meta-analytic effect still fell within the 95% confidence intervals of the overall random-effects model.

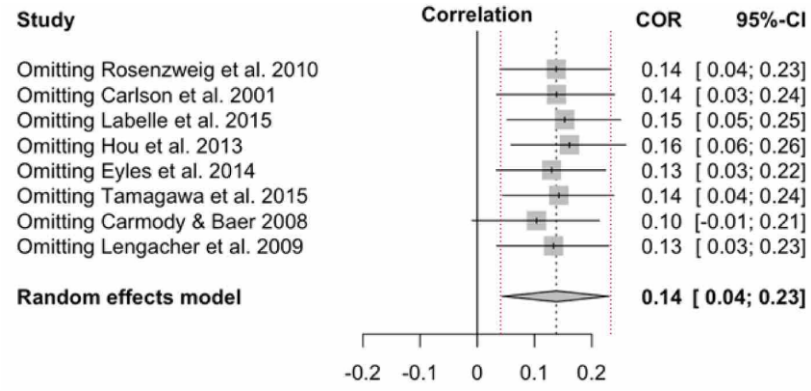


Figure 7: Forest plot to show the influence of individual studies on the meta-analytic effect for anxiety

Publication Bias

As shown in blue in Figure 8, there is evidence that smaller studies reporting smaller effects may be missing from the meta-analysis.

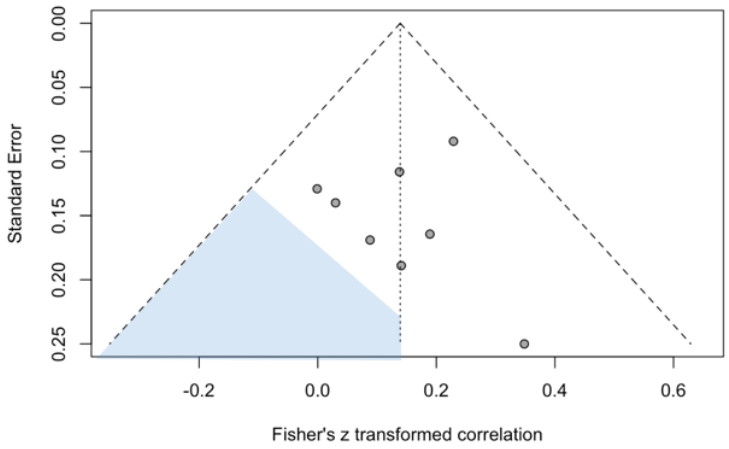


Figure 8: Funnel plot for anxiety

Due to the small number of studies included in this meta-analysis the scope for investigating the influence of publication bias was limited. A trim and fill analysis was conducted, but no studies met the criteria for trimming or filling. The Rosenthal approach calculated that only 14 un-published non-significant studies would need to exist to make the meta-analytic effect non-significant. Therefore, the impact of publication bias could be substantial, so that if all relevant unpublished studies were included, the small positive association found between anxiety reduction and homework could change.

Summary of anxiety results

In summary, due to the small number of studies included in the anxiety meta-analysis, and the high risk of publication bias, the conclusions that can be drawn from the analysis are limited. From available data it is estimated that there is a small association between anxiety reduction and mindfulness

homework (0.14). However, more data is needed to confirm whether or not this small association is robust.

Physical health

Using the data from 14 studies, a small positive meta-analytic effect was observed between homework and improvement in outcomes related to physical health: random-effects model r = 0.21, 95% CI [.12 - .30]. Higgins' I^2 estimated that only 34% of the total variation was due to study heterogeneity, and therefore subgroup analyses were not recommended (Borenstein et al., 2009).

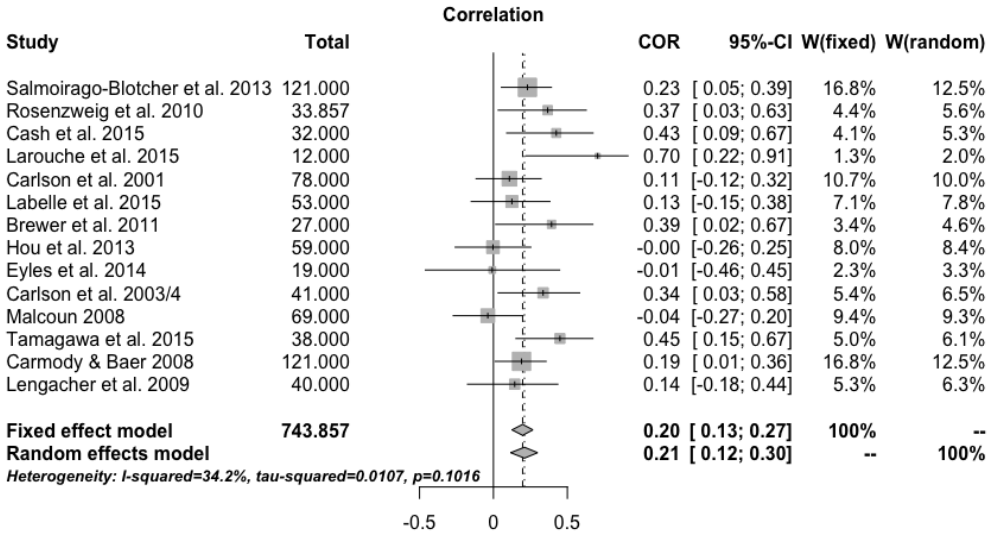


Figure 9: **Forest plot for physical health**

Weighting the studies by methodological quality in the quality-effects model led to a small increase (.03) in the observed meta-analytic effect. This suggests that if the studies had been of better methodological quality, the effect would be estimated to be around: r = 0.24, 95% CI [.14 - .35].

Identifying influential studies

As shown in Figure 10, omitting each study in turn demonstrated that no one study was having a disproportionate influence on the overall meta-analytic effect.

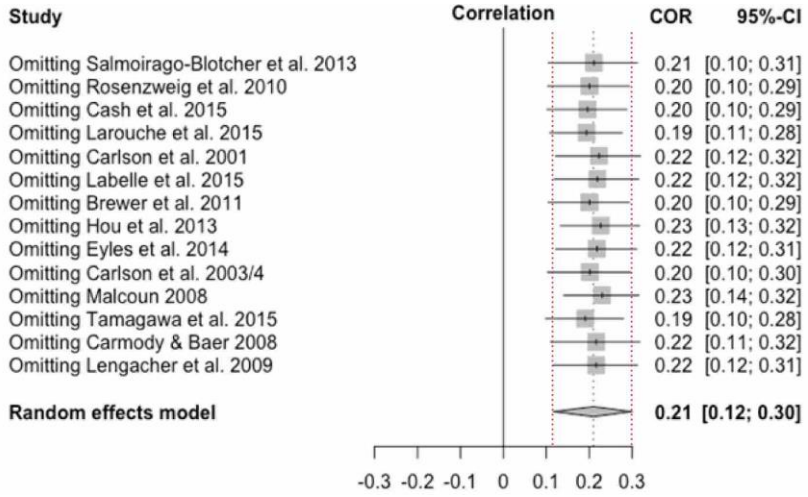


Figure 10: **Forest plot to show the influence of individual studies on the meta-analytic effect for physical health**

Publication bias

As shown in Figure 11(a), there was evidence to suggest that, in general, smaller studies and, in particular, smaller studies with smaller effects were missing from the meta-analysis. Additionally, the smallest study appeared to show the largest effect.

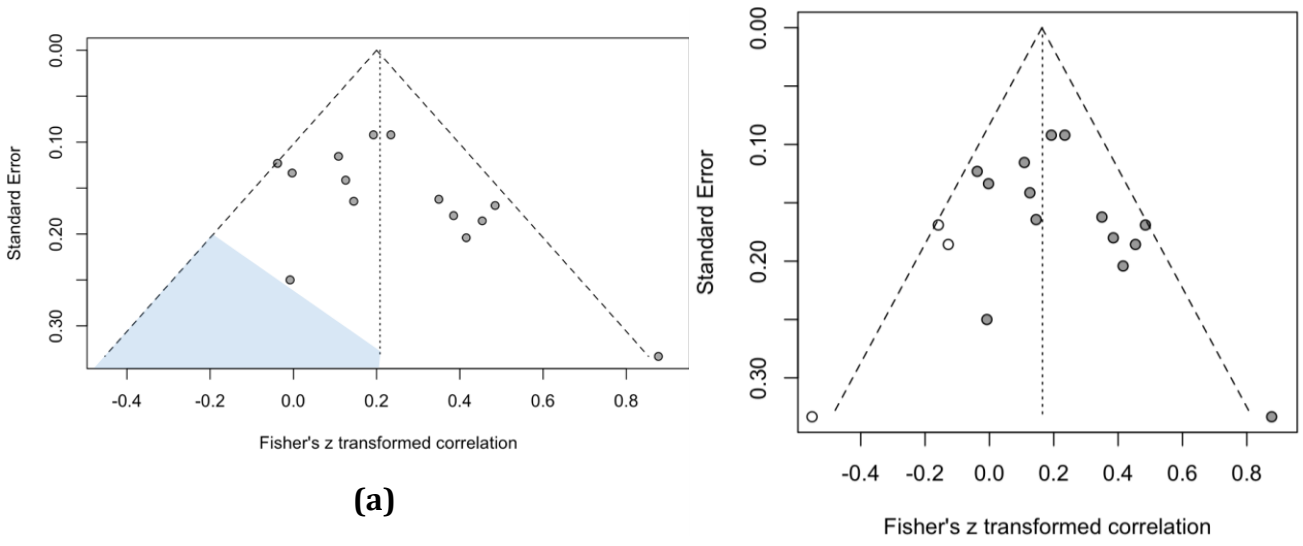


Figure 11: **Funnel plot (a) and trim and fill analysis (b) for physical health**

The Egger's test for small study effects suggested that this funnel plot asymmetry was not statistically significant: Egger = 1.781 p = .096. Nevertheless, a trim and fill analyses led to 3 studies being filled into the analyses in the lower left quadrant of the funnel plot (see Figure 11(b)). The trim and fill analysis showed that after correcting for possible publication bias, a slightly smaller association was estimated to remain between homework and physical health: random-effects model ES = 0.16, 95% CI [.06 - .26], p = 0.002. Additionally, it was estimated that 153 non-significant unpublished studies would need to exist to make the observed effect non-significant (Rosenthal, 1979). In sum, the impact of publication bias is probably trivial and the observed relationship would be unlikely to substantially change if all unpublished studies were included.

Summary of physical health results

Overall, it is estimated that if the methodological quality of studies were improved and unpublished null data made available, the true association between improved physical health and mindfulness homework would lie between 0.16 to 0.24. This is consistent with the best current estimate of this association, which is 0.21.

Well-being

The data from 668 participants demonstrated a small positive association between improvement in well-being and amount of homework completed: random-effect model r = 0.17, 95% CI [.08 - .26]. Low heterogeneity was observed across studies (Cochrane's Q = 15.01, p = .181; Tau^2 = 0.0071, Higgins' I^2 = 26.7%). Consequently, no subgroup analyses were considered necessary.

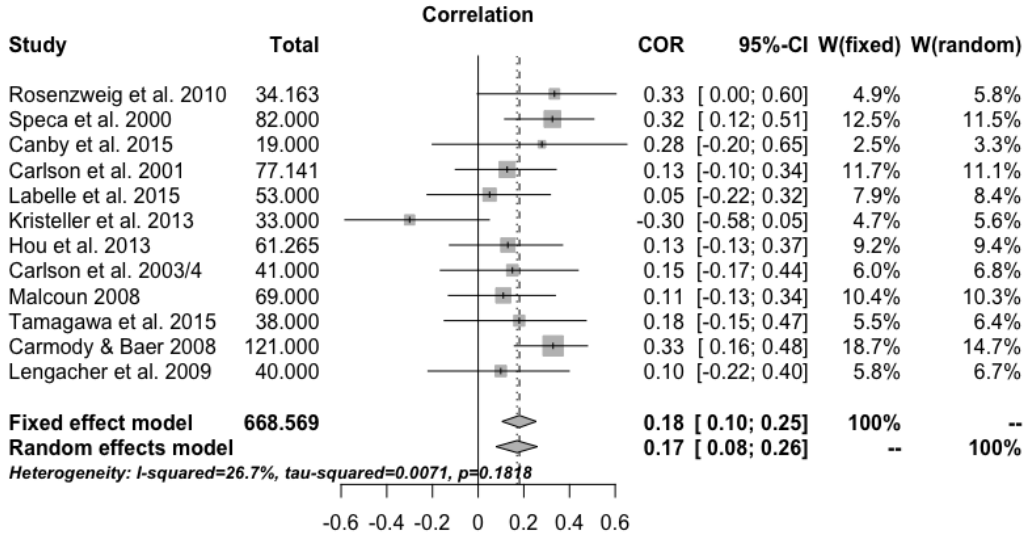


Figure 12: **Forest plot for well-being**

When weighting studies by methodological quality, the effect remained: quality-effect model r = 0.16, 95% CI [.06 - .26].

Identifying Influential Studies

No studies were found to have a disproportionate influence on the overall meta-analytic effect (see Figure 13).

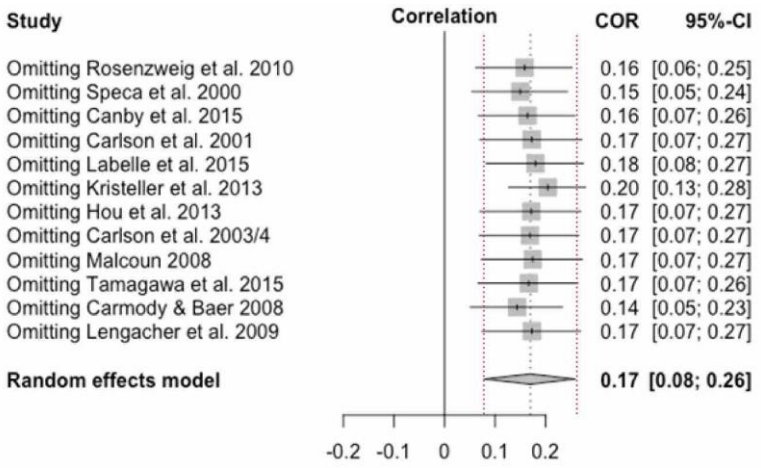


Figure 13: Forest plot to show the influence of individual studies on the meta-analytic effect for well-being

Publication Bias

Figure 14 suggests small studies with small effects may be missing from the published literature. However, the Egger's test did not reveal significant asymmetry in the funnel plot = -1.44, p = .179, and no studies met criteria to be trimmed or filled in a trim and fill analysis. Additionally, it was calculated that 61 unpublished non-significant studies would be needed to make the observed effect non-significant, suggesting that the impact of publication bias is likely to be trivial.

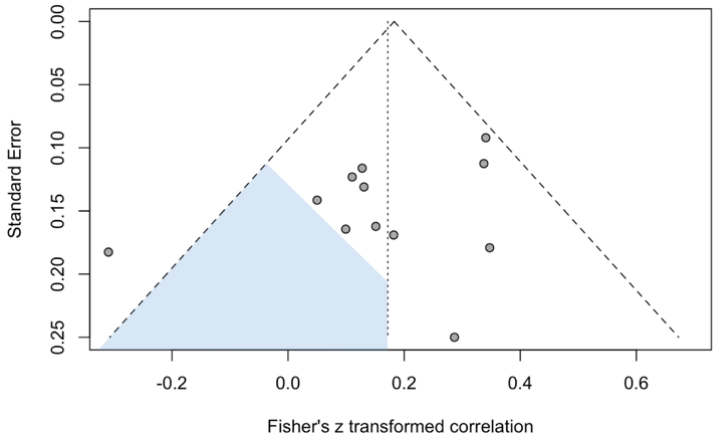


Figure 14: Funnel plot for well-being

Summary of well-being results

With the current available data, the best estimate of the association between improved well-being and time spent completing homework during a mindfulness course is 0.17.

Mindfulness

Eight studies reported correlations between improvements in dispositional mindfulness and homework. A small positive relationship was observed across these eight studies: random-effects model r = 0.22, 95% CI [.12 - .31]. The estimated heterogeneity between studies was very low (Higgins' I^2 =

0%). Therefore, subgroup analyses were not conducted. However, the influence of small study number on both heterogeneity statistics and the potential for subgroup analysis does limit the generalisation of the conclusion of this meta-analysis.

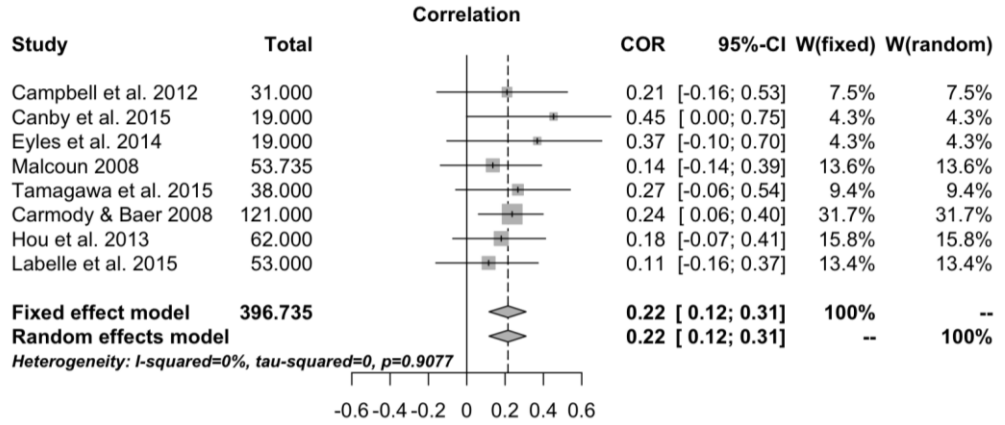


Figure 15: Forest plot for mindfulness

When studies were weighted by methodological quality, this observed effect was marginally increased by 0.03 (quality-effects model r = 0.25, 95% CI [.13 - .37]), suggesting that the observed effect was robust to variations in methodological quality.

Identifying influential studies

No studies were found to have a disproportionate influence on the overall meta-analytic effect:

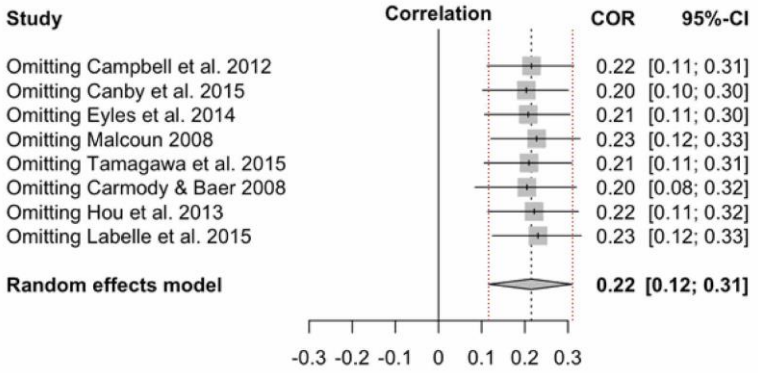
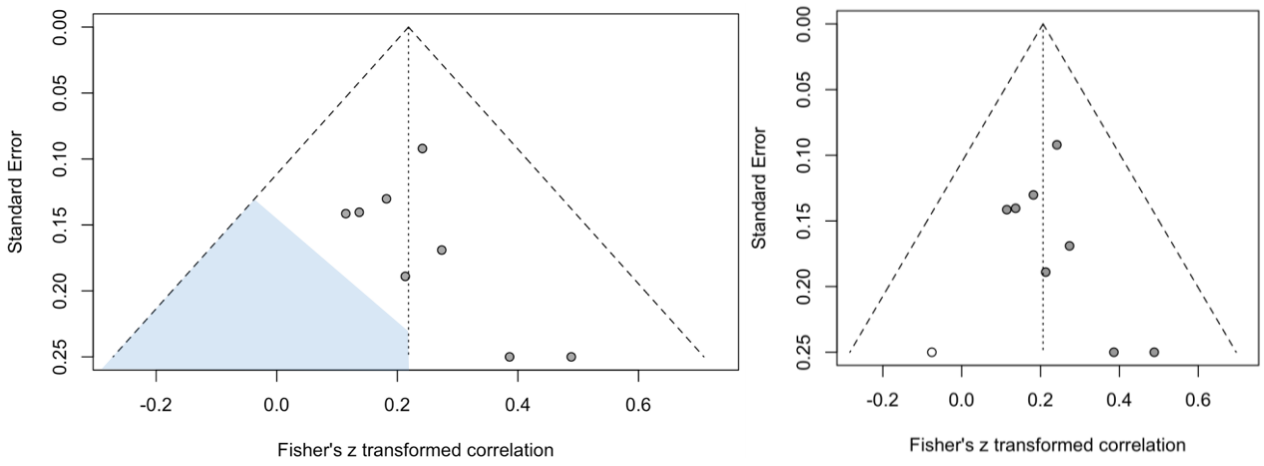


Figure 16: Forest plot to show the influence of individual studies on the meta-analytic effect for mindfulness

Publication bias

Figure 17(a) shows evidence that this meta-analysis could be subject to publication bias.



(a) **(b)**

Figure 17: Funnel plot (a) and trim and fill analysis (b) for mindfulness

Due to the small number of studies, an Egger's test could not be conducted to investigate if this funnel plot asymmetry was statistically significant. To control for possible publication bias, a trim and fill analysis was conducted with one additional study (see Figure 17(b)). This estimated that a similar association remained once controlling for publication bias (r = 0.20, 95% CI [.11 - .30]). The Rosenthal approach estimated that 46 unpublished null studies would need to exist to reduce the observed meta-analytic effect to non-significance, suggesting that the impact of publication bias is probably trivial.

Summary of mindfulness results

It is estimated that if study quality were to improve, and unpublished null effects were to be revealed, the true relationship between improved mindfulness

and homework would lie between 0.20 to 0.25. The best estimate of the association currently is 0.22.

Eating problems

Only two articles (Kristeller & Hallet, 1999; & Kristeller et al., 2013) reported a large number of correlations on outcome measures related to eating difficulties. Due to the small number of studies and the potential for bias in aggregating multiple correlations, these data were not considered suitable for meta-analysis. However, the reported correlations ranged from r = 0.06 – 0.66, showing a large variance in the associations found. Fifty percent of the correlations reported were above 0.3, suggesting that there may be a positive association between homework and improvements in eating difficulties during a mindfulness course. However, both of the studies had medium risk of bias and were conducted using small sample sizes.

Sensitivity analyses

Sensitivity analyses were conducted using meta-regression to investigate the impact of methodological difference on the meta-analytic effects. As shown in Table 8, planned sensitivity analyses revealed no significant effect of aggregating correlations for all outcome measures. Additionally, studies which conducted correlations with specific types of homework did not show a significantly different effect to those which included all homework tasks.

	Aggregate correlation		Correlation statistic		Formality of homework		Specificity of homework		Inclusion of session time		Post therapy timing	
	Estimate	p	Estimate	p	Estimate	p	Estimate	p	Estimate	p	Estimate	p
Depression	-.15	.32			-.03	.79	.47	.08	.18	.32	.12	.48
Anxiety	.04	.68			.11	.28			.22	.39		
Physical Health	.15	.15	.68	.05	.05	.73			-.27	.04	.26	.24
Well-being	.17	.09			.21	.03			-.02	.92	-.52	<.01
Mindfulness	-.05	.67			.03	.76			-.09	.53		

Table 8: Estimated differences in meta-analytic effect across different methodologies in subgroup analyses

However, sensitivity analyses revealed that studies using Spearman's *r* yielded a 0.68 higher meta-analytic effect than studies using Pearson's *r* (*p* = .00483) in physical health. As Pearson's *r* is more methodologically robust, including studies which used Spearman's *r* could have artificially inflated the meta-analytic effect, and a better estimate of the effect may be (*r* = 0.19, 95% CI [.11 - .28], see Appendix Three).

Sensitivity analyses also revealed that studies only measuring formal homework showed 0.21 higher association between homework and improved wellbeing. Therefore, after removing these studies a more accurate estimate of the meta-analytic effect could be (*r* = 0.13, 95% CI [.04 - .22], see Appendix Three). However, this effect was not observed across other outcome categories.

With physical health outcomes only, there was evidence that studies that included session time in the measure of homework could have reduced the observed association, and once these studies were removed a better estimate of the effect might be (*r* = 0.24, 95% CI [.15 - .33], see Appendix Three). Additionally, removing one study which collected outcome measures after a long follow up, rather than immediately post therapy, led to an increased estimate of the association in well-being outcomes (RE = 0.20, 95 % CI [.13 - .28], see

Appendix Three). It is important to note that the accuracy of these subgroup analyses are difficult to determine with only one or two studies being included in one subgroup.

Discussion

Summary of results

This meta-analysis used data from 25 studies to determine if there was an association between the amount of mindfulness homework participants completed and clinical improvement over the duration of a mindfulness course. The aim of this meta-analysis was to investigate the direction and magnitude of this relationship and to allow systematic exploration of the influence of methodological bias. Overall, small reliable positive associations between the amount of homework completed and clinical improvement across therapy were found in all five outcomes. On the whole, quality effects models did not indicate significant attenuation of the observed relationship as a result of varying methodological quality. In fact, with the exception of well-being, if the papers had been of better methodological quality a slightly higher association would have been found between homework and outcome improvement.

There was evidence of publication bias across all five outcome categories. Generally, it was estimated that publication bias had not led to an overestimation of the significance of the meta-analytic effects. However, for anxiety it was calculated that only 14 un-published non-significant studies would need to exist to make the meta-analytic effect non-significant. As 14 unpublished studies of this nature could indeed exist, it is likely that the conclusion of this review of the relationship between anxiety reduction and homework might change as future publications become available.

Small differences in the magnitude of the relationship were found across outcome categories. Specifically, depression, physical health and mindfulness were found to have a slightly larger association with homework than anxiety and well-being. In terms of the strength of the evidence, there were also differences across categories, with depression demonstrating the strongest evidence and anxiety the weakest. These findings are consistent with the literature on the efficacy of mindfulness. For instance, the results of a recent meta-analysis suggested that mindfulness-based interventions are recommended in depression, but not anxiety, as a significant effect size was found for reducing depression but not anxiety symptom severity (Cavanagh et al., 2014). This is also reflected in the NICE guidelines which recommend mindfulness for preventing relapse in depression, but recommend not using mindfulness for social anxiety disorder (NICE 2009–updated 2016; NICE, 2013). However, it is important to note that the differences in magnitude of effect across outcome categories were small. Therefore, the significance of minimal differences should not be overemphasised.

Overall small, but reliable, positive relationships were demonstrated between mindfulness homework and improved outcome. The positive nature of this association is consistent with the literature (e.g. Crane et al., 2014). However, the size of this association is perhaps smaller than one would expect, given the theoretical emphasis on the importance of mindfulness homework in relation to outcome (e.g. Kabat-Zinn, 1990; 2005; Segal et al., 2012). This could be an indication that mindfulness homework is not as important as previously suggested, or this could be due to several methodological issues in the included studies.

Methodological issues

Measuring homework

The measurement of the amount of homework completed was a methodological weakness across included studies. This reflects the difficulty in objectively measuring homework, particularly informal homework (such as performing everyday tasks mindfully), which is hard to quantify (Crane et al., 2014). Because of this, studies measured homework in a variety of ways, such as self-report daily diaries, or retrospective self-report. Such measures had been designed by authors and all relied on participant self-report, with no studies checking the reliability or validity of a measure, or comparing the self-report with a less subjective measure of homework. More objective measurement of homework is possible and recommended for future research. For instance, Gross et al. (2011) measured the amount of homework participants completed using an electronic data logger by asking participants to turn on and off the logger at the beginning and end of mindfulness practice. Furthermore, wrist bands that measure movement and heart rate have been used effectively to measure sleep (Goodlin-Jones, Tang, Liu, & Anders, 2008) and could also be piloted for their accuracy in identifying and measuring periods of mindfulness practice.

What counts as an outcome measure?

Many studies have started measuring whether participants become more mindful as a result of taking part in a mindfulness course. As a result, mindfulness was included as an outcome measure in the meta-analysis. Mindfulness has not been traditionally considered as an outcome variable in itself, but has been considered as a potential mechanism for change in other clinical outcomes over a mindfulness course. For instance, several studies have

found that mindfulness training is associated with increased mindfulness, which in turn has been associated with improved outcomes (e.g. Keng et al., 2011; Khoury et al., 2013). As such, increased mindfulness could be seen as a mediator of treatment outcomes, both statistically (e.g. Kuyken et al., 2010; Nyklicek, & Kuipers, 2008) and theoretically (e.g. Shaprio et al., 2006). Conversely, from a more transdiagnostic perspective, increased mindfulness may itself be considered as a beneficial outcome of mindfulness training, rather than symptom reduction. Accordingly, greater clarification of this issue is required in the theoretical literature. However, from either perspective, if mindfulness is viewed as an outcome measure itself or as a potential mechanism of change, a systematic analysis of whether there is an association between increased dispositional mindfulness and mindfulness homework was still warranted.

Other methodological issues

Several studies had to be excluded from the meta-analysis because correlation coefficients between mindfulness homework and outcome were conducted, but not reported and studies that did report correlation coefficients had relatively small sample sizes. This is partly a result of the correlation being an additional analysis, rather than the primary research question, for most included studies.

There was also large methodological variation across included studies. For instance, some studies only measured certain types of mindfulness homework and included session time in the measure of homework, whereas other studies did not. Sensitivity analyses found that methodological variation across studies did account for significant differences in the observed association in some outcome categories. For example, the timing of the post therapy measure

of well-being had a significant influence on the association between homework and improved well-being. However, the impact of methodological variation was inconsistent across different outcome categories, so more research is needed to draw confident conclusions about the impact of methodology on the observed relationship.

Limitations of the meta-analysis

To enable inclusion of all available data, and to avoid artificially inflating the number of participants entered into the analysis by entering the same participants' data multiple times, some correlations were aggregated as suggested by Borenstein et al. (2009). This methodology was considered as preferable to other available options and sensitivity analyses revealed that the aggregation process introduced no measurable bias into the analysis. Another way of dealing with this could have been to ask an informed independent researcher to pick the measure which they thought represented that particular outcome category construct best. Then other data reporting on the same outcome would have been excluded from the analysis. However, it was feared that the decision over which measure to include would have become arbitrary. For instance, how would one choose whether a measure of physical functioning or general health better represented the outcome category of physical health? Alternatively, each correlation could have been inputted separately by dividing the number of participants for that correlation by the number of correlations included for each study. However, this method is not referenced in the literature, and was advised against by a statistician.

Another limitation of this meta-analysis is the small number of studies that were included for each outcome category. This limited the power of the statistical

analyses, and limits the conclusions that can be drawn from the meta-analysis. Fewer studies were included in the meta-analysis due to the relatively strict inclusion criteria (e.g. studies only measuring outcome at post-therapy were excluded). However, to answer the research question, and see if homework was associated with change in outcome over therapy, it was necessary to have such strict inclusion criteria. Additionally, some authors only reported significant correlations and did not provide non-significant correlations when these were directly requested. Consequently, this substantially increased the risk of publication bias. However, attempts were made to control for this possible risk during the analysis, and there was evidence that the reliable associations remained once publication bias had been controlled for in four outcome categories.

Unanswered questions

The results of this meta-analysis leave several questions unanswered. As correlation coefficients have been used, little can be said about the causal direction of the observed relationship. The most likely explanation of the relationship found is that increased homework leads to improvement in outcome. However, it could be that reduction in distress over a mindfulness course makes individuals more likely to do more homework. Alternatively, a bi-directional relationship could exist in which both explanations are true. Furthermore, the relationship could be accounted for by a confounding variable, for instance how much a participant believes in the plausibility of a treatment, which could itself be related to both homework and outcome.

This meta-analysis supports the idea that there is a small association between homework and outcome, but the mechanism of this association remains

unknown. This reflects the literature on mindfulness itself and the absence of a clear proven mechanism by which mindfulness works (Chiesa, Anselmi, & Serretti, 2014). The importance of regular mindfulness homework is implicitly implicated in several different hypotheses of how mindfulness might work (e.g. Baer, 2003; Shapiro et al., 2006). For instance, it is hypothesised that mindfulness homework practice enables individuals to change their relationship with negative thoughts, so that thoughts are seen as internal events rather than a reflection of reality (i.e. meta-cognitive insight, Teasdale, Segal, & Williams, 1995; or cognitive diffusion, Hayes, Strosahl, & Wilson, 1999). This home practice is assumed to enable development of meta-cognitive insight, which is hypothesized to be the mechanism by which MBCT prevents relapse in depression (Crane et al., 2014). Consequently, Shapiro et al. (2006) argued that if homework could be linked to outcome, then the benefits of homework might be more formally examined using mediator and moderator analyses.

Recommendations for future research

It is important that future studies use a more objective measure of homework (such as electronic loggers, Gross et al., 2011) to enable a more reliable estimate of the amount of homework completed. For this to happen, a consensus needs to be made on the best way to quantify mindfulness homework, for instance: Should both formal and informal homework be measured? Is the duration of homework most important or the frequency of homework practice? Should different types of homework tasks be considered separately? More methodological consistency would facilitate future meta-analyses. More studies measuring and reporting the correlation coefficient between homework and pre- to post-therapy change in outcome, even if the correlation is non-significant, are

also needed. Such studies would enable more confident estimates on the magnitude and significance of the association between homework and improved outcome.

More studies conducting mediation and moderation analyses, such as Gu, Strauss, Bond, & Cavanagh (2015), to try to explore the mechanism by which homework is associated with improved outcome are also needed. A consensus on the mechanism of mindfulness homework would enable clinicians to provide much more specific recommendations to clients. For instance, clinicians would be able to be clearer with clients as to why homework is important, how much homework they should do, whether there is a minimum dose of homework (Crane et al., 2014) and what specific tasks are most likely to lead to improvement. Several studies have started to explore this (e.g. de Vibe et al., 2013; Hawley et al., 2014; Elwafi, Witkiewitz, Mallik, Thornhill, & Brewer, 2013; Day et al., 2016), but it is important for future studies to report correlations between homework and outcome in addition to mediation or moderation analysis.

Clinical implications

Clinically, the results of this meta-analysis suggest that the amount of homework is related to the degree of improvement over a mindfulness course. This is an important finding, which supports the integration of homework within mindfulness courses and could be used to explain to participants of such courses why homework is so important.

Conclusions

The importance of regular mindfulness homework has been emphasized for decades. However, to date there has been little evidence published to support

this assertion. The data that has investigated the influence of homework on clinical outcome has been mixed (e.g. Vettese et al., 2009). As is known, this is the first meta-analysis to investigate the relationship between homework and outcome improvement. This meta-analysis demonstrated a small reliable association between the amount of homework completed and improvement in: depression, anxiety, mindfulness, physical health and well-being. Examination of homework in mindfulness is an emerging field and more data is needed to build stronger conclusions about the magnitude of the observed association, and to further investigate the mechanism of this association.

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Chapter Two – Empirical Paper

THERAPISTS' EXPERIENCES OF COGNITIVE BEHAVIOURAL THERAPEUTIC HOMEWORK: AN INTERPRETIVE PHENOMENOLOGICAL ANALYSIS

Abstract

Background

Therapeutic homework has been consistently associated with improved treatment outcomes in Cognitive Behavioural Therapy (CBT). However, many therapists report difficulty with cognitive behavioural homework in practice. This study aims to develop an understanding of this discrepancy, by exploring what the experience of using cognitive behavioural homework is like for therapists.

Method

A qualitative approach, using Interpretive Phenomenological Analysis, was used to explore the homework experiences of 10 Cognitive Behavioural Psychotherapists.

Results

Analysis of the participants' experiences generated three superordinate themes. Firstly, participants perceived homework as very valuable in fulfilling several functions, such as facilitating client self-discovery (*the essence*). Secondly, the way in which homework was implemented was perceived to be important, for instance, participants described the need to "bother" with the review (*the strategy*). Thirdly, participants made sense of difficult cognitions and emotions, such as frustration, that they had experienced during the homework process (*the process*).

Discussion

Through applying the findings to existing literature and psychological theory, several recommendations for future research are made. For instance, it is suggested that changes to the curriculum of CBT training, such as increased

emphasis on therapist reflection, could have the potential to improve the homework process.

Introduction

The use of homework in Cognitive Behavioural Therapy

During cognitive behavioural therapy (CBT), therapists ask clients to complete homework tasks outside of therapy sessions. Homework is considered "an integral, vital component of treatment" (Beck, Rush, Shaw, & Emery, 1979). Evidence corroborates this, as a significant relationship between homework compliance and treatment outcomes has been consistently found (e.g. Bryant, Simons, & Thase, 1989; Burns, & Nolen-Hoeksema, 1991; Mausbach, Moore, Roesch, Cardenas, & Patterson, 2010). This relationship has been shown to be independent to baseline symptom severity (e.g. Burns, & Spangler, 2000). In fact, Kazantzis, Whittington, & Dattilio (2010) conducted a meta-analysis which yielded a larger effect size for CBT which included homework (d = 1.08), than CBT which did not (d = .63).

In depression, it has been shown that clients who complete CBT homework have been found to improve up to three times more than clients who do not complete homework (Burns, & Auerbach, 1992). Similarly, client's with schizophrenia have been found to improve and at least sixty percent more (Glaser, Kazantzis, Deane, & Oades, 2000) if they complete CBT homework. The quality (i.e. client skill acquisition), as well as quantity, of homework completed has also been linked to improved outcome (Kazantzis, et al., 2016). Furthermore, homework has been found to predict clinical improvement (Simons et al., 2012), mediate response to CBT (Carroll, Nich, & Samuel, 2005; Flynn, 2011) and have a large causal effect on reducing symptomatology (Burns, & Spangler, 2000).

Difficulties with CBT homework in clinical practice

Despite the clear evidence-base supporting the importance of CBT homework, many clients and therapists struggle with homework compliance in practice (e.g. Gaynor, Lawrence, & Nelson-Gray, 2006; Kazantzis & Shinkfield, 2007). Indeed, one of the most frequently cited reasons as to why therapy has been unsuccessful is noncompliance with therapeutic homework (Helbig, & Fehm, 2004). In fact, some have reported homework compliance rates to be as low as twelve percent (Carroll et al., 2005). Difficulties with therapeutic homework have been reported for both clients (e.g. Datilio, 2002; Hudson, & Kendall, 2002; Kazantzis, & Lampropoulos, 2002) and therapists (e.g Fehm, & Kazantzis, 2004). For instance, ninety-one percent of 140 psychologists reported difficulty in getting clients to complete homework (e.g Fehm, & Kazantzis, 2004), and clients have been found to associate therapeutic homework with negative evaluation (Datilio, 2002).

Clients' experiences of homework in CBT

There appears to be a clear discrepancy between the evidential support for homework (e.g. Kazantzis et al., 2010) and the experiences of homework for clients and therapists in clinical practice (e.g. Helbig, & Fehm, 2004). Several qualitative studies have been conducted to explore clients' experiences of homework to make sense of this inconsistency (e.g. Barnes et al., 2013; Bru, Solholm, & Idsoe, 2013; Dunn, Morrison, & Bentall, 2002). Barnes et al. (2013) interviewed 26 clients about their experiences of CBT and found that homework was considered the biggest challenge of CBT. Clients described homework as the most negative part of therapy, due to practical and emotional difficulties. Homework was found to be associated with fear of failure and linked to negative

experiences at school. Dunn et al. (2002) used grounded theory to explore what factors influenced CBT homework compliance in 10 clients with psychosis. Several factors including client motivation, insight and effort, in addition to task difficulty and relevance, and client understanding of the rationale and perceived benefits of the homework, were all found to influence homework compliance.

Therapists' experiences of homework in CBT

Whilst research exploring client-related factors in homework compliance has been useful (e.g. Dunn et al., 2002), therapist-related factors have increasingly been linked to homework success (e.g. Kelly, & Deane, 2011). There is a plethora of theoretical guidelines suggesting how therapists should behave when implementing homework (e.g. Garland, & Scott, 2002; Kazantzis, & Deane; 1999; Kazantzis, Deane, Ronan, & L'Abate, 2005; Scheel, Hanson, & Razzhavaikina, 2004). Indeed, Detweiler-Bedell, & Whisman (2005) found better treatment outcomes were associated with particular therapist behaviours during homework setting, such as discussing barriers, involving clients and writing reminders of homework. Similarly, Jungbluth and Shirk (2013) coded videotapes of therapists setting homework and found that therapists who delivered a stronger rationale, spent greater time explaining the task and elicited and troubleshot client reactions to homework had better homework success.

Therapist attitudes, thoughts and beliefs have also been linked to the homework process. For example, Kelly, Deane, Kazantzis, & Crowe (2007) found that the degree to which clinicians believed that homework enhanced treatment outcome predicted how much homework each clinician would set. Similarly, Stodard (2012) found that trainee psychotherapists' expectations of the outcome of homework positively predicted homework compliance. Stodard (2012)

proposed that adaptive therapist beliefs, such as 'homework should be relevant to patient goals' helped the homework process. In fact, the Cognitive Behaviour Therapy Homework Project provides a model for practice which emphasises the importance of therapist beliefs and behaviours in relation to homework success (Kazantzis, MacEwan, & Dattilio, 2005).

Not only have several therapist factors related to homework compliance been highlighted; some authors have suggested that factors influencing homework success that might have been previously attributed to the client, could actually be reconceptualised as originating from therapist skill and confidence (Kelly, & Deane, 2011). Kelly and Deane (2011) argue that client motivation, a frequently cited client factor related to homework, could be reconceptualised as a therapist failing in building motivation using clinical skills. Similarly, Haarhoff and Kazantzis (2007) found several common negative attitudes towards homework held by CBT trainees such as: "homework tasks will make the patient feel over-structured and controlled" and "homework will increase this patient's sense of vulnerability". Haarhoff and Kazantzis (2007) found evidence from therapy video recordings of trainees blaming the client for non-compliance, when actually, therapist factors were accounting for homework difficulties. As such, Haarhoff and Kazantzis (2007) hypothesised that therapist attitudes and schemas could lead therapists to avoid setting homework, or set homework in such a way that confirms their negative belief by rushing the instructions, not reviewing the homework, or not providing a sound rationale.

Several studies have suggested that a further exploration of therapists' attitudes towards homework is warranted, due to the potential impact these attitudes could have on therapists' behaviour during the homework process (e.g.

Burns, & Spangler, 2008; Fehm, & Kazanztis, 2004; Kazantsiz, Lampropoulos, & Deane, 2005). Furthermore, it has been suggested that exploring therapists' perspectives on the homework process could provide useful insight into how therapists' beliefs can influence therapy more generally (Garland, & Scott, 2005). To understand the experience of CBT homework from the therapist perspective further, it would be useful to explore what it is like for therapists to use homework and how individual therapists might make sense of the homework process.

Rationale

There is substantial evidence that homework makes CBT more effective (e.g. Kazantzis et al., 2010). However, many clients and therapists report difficulties with the homework process (e.g. Helbig, & Fehm, 2004). Previously, client factors have been explored to try to understand homework compliance, and qualitative studies have been conducted to explore clients' experiences of completing homework in CBT (e.g. Dunn et al., 2002). More recently, therapist factors such as attitudes and behaviours have been emphasised as important when understanding homework compliance (e.g. Kelly, & Deane, 2011). Yet, as is known, no qualitative study has been conducted to explore in detail what it is like for therapists to use homework in CBT.

Aims

This study aims to bridge some of the gaps in understanding what it is like to experience the homework process in CBT, from the perspective of therapists. Specifically, this study is asking the research question:

> What is the experience of using cognitive behavioural therapeutic homework like for therapists?

This primary research question is deliberately broad so that the most important aspects of the homework experience for therapists can be explored. The secondary aim of this study is to explore what therapists' sense-making of this experience can tell us about the homework process. For instance, this could include therapist factors that might be perceived to influence homework compliance. Improving the homework process has the potential to improve therapy outcomes in CBT (LeBeau, Davies, Culver, & Craske, 2013), so this study could generate new ideas to improve the use of therapeutic homework and, in so doing, improve the effectiveness of CBT.

Method

Interpretive Phenomenological Analysis

The study has been analysed using Interpretive Phenomenological Analysis (IPA), which is a qualitative approach that was first introduced by Smith (1996). IPA explores lived experience and how participants make sense of their experiences (Smith, Flowers, & Larkin, 2009). Therefore, IPA is well suited to answer both the primary research question, of what the experience of using CBT homework is like for therapists, and the secondary research question, exploring therapists sense-making of this experience.

IPA is informed by three main philosophies of knowledge (Smith, et al., 2009). Firstly, phenomenology, which is the focus on what it is like to experience something (Husserl, 1927). Secondly, hermeneutics, which focuses on the interpretation and encompasses the idea that individuals try to make sense of their experiences (Gadamer, 1975). Thirdly, idiography, the focus on

understanding of the particular (Windelband, 1984), which could be applied to this study as the focus on understanding particular therapists' experiences.

IPA is an increasingly popular research methodology (Smith, 2010), and has been highlighted as a rigorous and valid method of analysing health care related research (Pringle, Drummond, McLafferty, & Hendry, 2011). Indeed, IPA has been a useful approach for exploring therapists' experiences during therapy in previous studies (e.g. Aaron, 2012; Briggs, 2010; Maunders, 2010; Toombes, 2009).

The researcher

In IPA, the researcher plays an active role in identifying themes in the data (Braun, & Clarke, 2006). This is known as the "double hermeneutic" (Smith, & Osborn, 2003) in which both the researcher and participant are trying to make sense of an experience. As such, the participant is trying to make sense of their own first-order experience, whilst the researcher is trying to make sense of the participant's sense-making of their experience, via the participant's second-order account. Therefore, it is important to be aware of any relevant aspects of the researcher's background that could impact on the researcher's sense-making of the therapist's experience. This is because particular experiences, thoughts or beliefs of the researcher could influence the researcher's interpretation of the participant's account.

The researcher has direct experience of using therapeutic homework within CBT. Therefore, the researcher was vigilant to remain aware of her own experience and how this could influence data analysis. To facilitate this process, the researcher used a reflective diary in which personal reactions to participants' accounts were documented. Supervision was then used to explore how the

researcher's own experiences and pre-existing beliefs around homework in CBT could be impacting on the research process, to help the researcher to interpret the participants' experiences with an open mind. This process is known as bracketing (Starks, & Trinidad, 2007; Tufford, & Newman, 2011). The researcher also used the reflective diary to record the most striking point or theme made by each participant. During data analysis these key findings were re-visited to ensure that each participant's key point or theme was represented in the analysis.

Ethical review

This study obtained full university ethical approval on 17th May 2016 (see Appendix Four).

Participants

Participant selection

This study used purposive sampling to recruit a homogenous sample of 10 participants. This sample size is within the recommended number for IPA analysis (Smith, & Osborn, 2008). To be included in the study therapists needed to have a minimum of one year of experience delivering CBT with homework in independent practice (see Table 1 for full details of inclusion criteria).

Inclusion criteria	Justification of criteria
• Accredited as a Cognitive Behavioural Psychotherapist, as indicated on the British Association for Behavioural and Cognitive Psychotherapies (BABCP) website (provisional accreditation was included)	To ensure sufficient understanding and training in CBT to enable reflection of using CBT homework
• Email address provided on BABCP website • Registered as working in private practice on BABCP website	To enable recruitment of therapists in accordance with ethical approval

• Minimum of one year of experience of delivering CBT with therapeutic homework in private practice	To ensure participants had enough experience of using therapeutic homework to reflect upon during the interview
• Fluent in English	As funding for translation was not available

Table 1: Study inclusion criteria

Participant recruitment

Potential participants were identified through the CBT register on the professional network of the BABCP. Therapists on the register who were listed as working in private practice within the surrounding area were contacted about the study via email (see Appendix Six). The email provided a study information sheet which outlined the aims of the research and detailed what participating in the study would involve. If potential participants expressed interest in taking part in the project, they were given the opportunity to ask questions and were then given at least 24 hours to decide if they wanted to take part. Out of 63 therapists who were emailed, 13 therapists expressed initial interest in taking part, 11 therapists responded to follow-up emails, out of which 10 therapists met the study inclusion criteria.

Participant characteristics

Nine out of the ten participants taking part in the study were female. To protect the identity of the male participant, all participants were assigned unisex pseudonyms (see Table 2). To respect the confidentiality and protect the identity of the participants, as there is such a small sample of BABCP accredited therapists on the CBT register within the region, very limited individual participant details are provided.

All participants were Cognitive Behavioural Psychotherapists. In addition to their BABCP accreditation in CBT, eight participants had psychotherapy backgrounds and two participants had applied psychology backgrounds. At the point of interview, six participants had been CBT accredited for less than five years, two participants had been accredited for five to ten years and two participants had been accredited for over ten years. All participants had worked in a relevant discipline for over five years, with eight participants having over 10 years of relevant experience. Five participants reported using second-wave CBT as their primary model, whilst three participants reported also drawing upon third wave CBT and, as shown in Table 3, a subset of participants were also influenced by either psychodynamic, humanist or systemic approaches in their clinical work.

Participant pseudonym	Current mode of practice
Alex	Private & NHS
Ash	Private
Charlie	Private
Frankie	Private
Jamie	Private
Jesse	Private
Hayden	Private & NHS
Robin	Private
Sam	Private & NHS
Taylor	Private & NHS

Table 2: Overview of participants

Psychological model used by therapist	Number of therapists
Second-wave CBT	10
Third-wave CBT	3
Psychodynamic	2
Humanist	1
Systemic	1

Table 3: Psychological models used by participants

At the time of data-collection, participants worked with adults (nine participants), children and adolescents (four participants) and older adults (one participant). Historically, one participant had also worked in a forensic and substance misuse setting. All participants had experience of working in both

private and NHS settings. In terms of their current private work, six participants saw self-funding clients, one participant saw clients whose therapy was funded by insurance companies and three participants saw both self and insurance funded clients.

Data collection

Interviews followed a semi-structured interview schedule (see Appendix Six) and lasted between 44 to 70 minutes (mean duration was 56 minutes). The interview schedule was designed to try to capture participants' experiences of using homework in CBT. As recommended by Smith et al. (2009), the interview questions were designed to be open, to ensure the least influence of researcher agenda on the data, and were implemented flexibly, using prompts to explore areas in more detail when necessary. Five interviews were conducted at the University of Birmingham, two interviews were each conducted in therapists' consulting rooms and therapists' homes and one interview was conducted over Skype. Participants provided written consent prior to the interview. Following the interview, it was ensured that participants had the contact details of the researcher and research supervisor, and a short debrief discussing what it had been like to take part was conducted. The interviews were audio-recorded using a digital recorder, and the audio files were transferred to a password protected computer immediately after the interview.

All interviews were transcribed verbatim. In line with the ethical approval, 50% of the interviews were transcribed by the researcher and the remaining interviews were transcribed by a university approved transcription service. Transcripts completed by the transcription service were checked in full

by the researcher whilst listening to the audio file of the interview, to ensure transcription accuracy and enable researcher familiarisation with the data. Participants were given the opportunity to review the transcript of their interview over a two-week period, during which they were able to ask for their transcript to be edited. Three participants opted to review their transcripts, but no editing requests were made.

Analysis

The researcher followed a sequence of analysis (see Table 4), based on the stages of IPA analysis outlined in Smith et al. (2009).

Stage	Procedure
Step 1 Read and re-read	• Recording of initial reflections • Underlining important text and noting why this stood out
Step 2 Initial noting	• Colour-coded noting performed by hand to identify: a) Descriptive comments: relationships, values, principles, things that matter to the participant, key words/phrases, objects that structure the participant's thoughts and experiences b) Linguistic comments: the language used e.g. pauses, laughter, tone of voice, repetition, degree of fluency, metaphor c) Conceptual comments: what are the possible meanings of the descriptive comments to the participant, what is it like for the participant, participants understanding of what they are talking about, differences in participant's perspective over time
Step 3 Developing emergent themes	• Mapping of interrelations, connections and patterns between step two notes • Producing a short phrase to capture what was important to the participant (i.e. emergent theme) • Developing a word document for each participant with all the emergent themes. Recording the number of times each emergent theme was cited, where in the transcript this theme was cited • Starting process of grouping emergent themes into clusters
Step 4 Searching for connections across emergent themes	• Entering all emergent themes from every participant into one spread sheet • Continuing to group emergent themes into related clusters • Discussing and revising key themes in supervision • Using post-it notes to: map interrelations between themes graphically, consider themes which may sit opposite each other and condense themes into superordinate and subordinate themes • Reviewing transcripts to check that emergent themes represented the data and that each participant's unique voice was represented • Finalising superordinate and subordinate themes

Table 4: Stages of IPA analysis, based on Smith et al. (2009)

As shown in Table 4, the analysis involved initial reading and re-reading, noting of descriptive, linguistic and conceptual comments, then development of emergent themes (see Appendix Seven for an example of this process). During this process, the researcher kept a reflective diary to document personal

emotions and experiences that were evoked and key comments that stood out with each individual transcript. Stages two and three were a dynamic process, in which emergent themes from previous transcripts shed light on subsequent transcripts. Indeed, some transcripts were revisited following illumination from other cases. Stage four of the analysis was an in-depth process of searching for connections across emergent themes to organise the findings into superordinate and subordinate themes. This was a highly iterative process in which the researcher repeatedly jumped from exploring clusters of emergent themes at the study level to individual emergent themes at the participant level.

A criterion for the degree of recurrence needed for superordinate and subordinate themes was set. It was decided that all participants needed to contribute to each superordinate theme, and that over half of the participants (i.e. six participants or more) needed to contribute to each subordinate theme. However, two smaller subordinate themes were included, despite not meeting this criterion, due to the marked contrast of these smaller subordinate themes to other subordinate themes. Inclusion of these smaller themes enabled divergence and paradoxes across experiential accounts to be represented. Once data analysis was complete, a graphical metaphor was developed as a pictorial summary to represent the researcher's interpretation of one way of conceptualising the relationship between the different superordinate and subordinate themes.

Credibility and triangulation

To ensure validity of interpretation, the researcher received regular supervision during data analysis and took part in a peer-supervision IPA group with other researchers. To triangulate data analysis both the researcher and the supervisor coded a section of a transcript independently, before cross-checking

for validity and reliability in coding. The peer-supervision IPA group was also used to explore interview questions, interview technique and to examine the validity in using a metaphorical graphical representation of the relationship between themes.

Results

Overview of superordinate themes

Data-analysis yielded three superordinate themes that were represented by every participant (see Table 5). These superordinate themes each contained several subthemes.

Superordinate theme	Brief description
1. The essence	The essence referred to what is meant by the term homework. This encompassed the value participants held to homework and the function of homework. In other words, why homework is used and what homework does
2. The strategy	The strategy incorporated the way in which therapists approached using homework and what this was like for therapists and clients
3. The process	The process of homework included a series of difficult experiences, thoughts and emotions, which each had the potential to interfere with the homework process

Table 5: Overview of superordinate themes

The researcher interpreted these themes to be intertwined with one another. A graphical metaphor was developed to offer an interpretation of one way in which the superordinate themes were inter-related for the ten participants who took part in this study. This metaphor was designed not as a theory, but merely as a way to represent how the researcher interpreted the relationships between the superordinate themes.

As shown in Figure 1, *the essence* of homework could be represented as a trophy: something that was perceived to be extremely valuable to therapists, serving several essential functions within therapy. For homework to become so valuable, *the strategy* in which therapists approached homework was needed, hence *the strategy* could be seen as the stand supporting *the essence* of homework. There was one subordinate theme within both *the essence* and *the strategy* superordinate themes which was represented in fewer participants, but was contrasting and in some ways contradictory to other subordinate themes in the same category. As such, these subordinate themes could be viewed as shadows of the trophy and the stand. *The process* theme involved experiences of therapists during therapy which, without proper handling, could have the potential to reduce the value and function of homework. Therefore, *the process* theme could be represented as ribbons which run through the arms of the trophy, which have the potential to pull the trophy over.

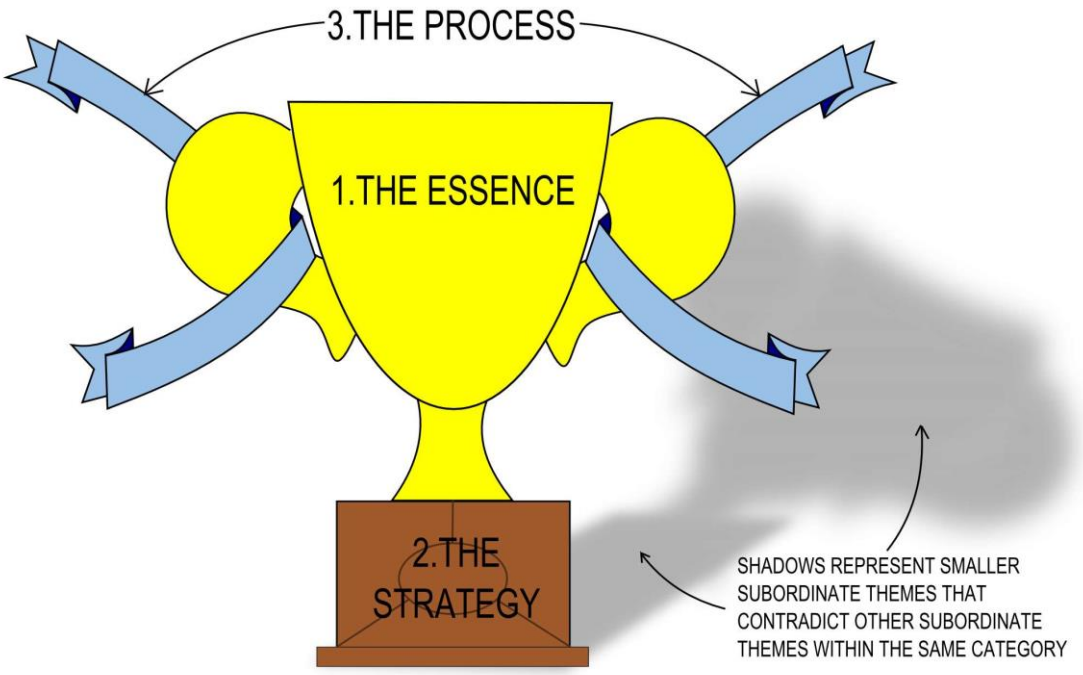

Figure 1: Interpretation of the relationship between superordinate themes

Superordinate theme one: *The essence*

There was unanimous consensus over the value of homework, and popular consensus over two main functions that homework fulfilled. Figure 2 represents the subthemes included within the first superordinate theme.

1.a.i. Homework is valuable

All participants were passionate in the way that they spoke about homework, considering homework to be central in CBT and very related to client progress.

> *"Homework is quite an integral part of the therapy... I think it's, it's, the essence of the therapy and I think sometimes we don't get that or see the relevance or the significance but it's very much key. And if they don't do the homework, then it's, for me, virtually impossible to get them closer to the goals."* (Alex)

The participants seemed to view homework as an entity that was not merely practically or professionally important, but that was personally valuable to the therapist. For instance, Charlie described homework as:

> *"…something that I fundamentally value."* (Charlie).

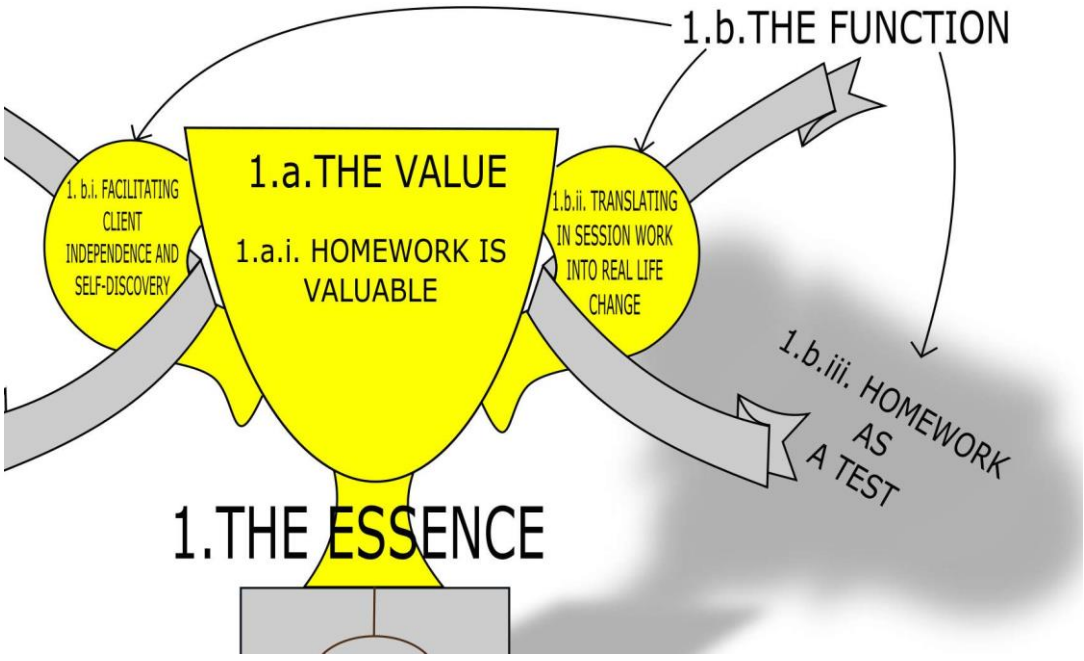

Figure 2: Subthemes within superordinate theme one - *the essence*

1.b. The function of homework

Participants described several functions of homework.

1.b.i. Facilitating client independence and self-discovery. Every participant discussed how homework enabled clients to become independent, for instance:

> *"I've noticed with some clients, there seems to be another gain in that they then become, kind of, CBT therapists themselves".* (Sam)

This idea of independence was further extended, as participants saw homework as a way for clients to make their own discoveries rather than learning directly from the therapist. For instance, Jamie describes this process cementing and building trust in the therapeutic relationship:

> *"So when people discover that things can change, usually through going out and trying things out, you know at home, homework tasks, it can really change the way that they relate to you because they're not just, sort of, going, seeing you as…what are they seeing you as? As somebody who means well, but can't really help. They're sort of humouring you a little bit. Then there's a sort of genuine 'wow' you know 'this can genuinely do something'. And it does, you know, it does change the dynamic."* (Jamie)

It seems that Jamie believes that homework builds the client's trust in the therapist. The researcher wondered whether the homework also enables the therapist to relate to the client in a different way, and that it is perhaps more comfortable for the therapist to take the position of a guider who allows the client to make self-discoveries, rather than be in the position of a teacher who tells the client what is true.

1.b.ii. Translating in session work into real life change. Six participants described homework as a mechanism that enables in session work to be transported outside of the session, subsequently leading to long-term, real life changes, for example:

> *"If you don't do anything in between, those changes that you talk about live in the room, they have to be live outside, they have to be transported."* (Taylor)

As such, it seems therapists viewed homework as the key translator, or bridge linking the work done in therapy to the clients' everyday lives. Without homework, therapists felt that it was much harder to translate changes into everyday life, especially as therapy often only consisted of one hour a week.

1.b.iii. Homework as a test. A contrasting theme of homework being viewed as a test was articulated by a small subset of participants and has been included to represent the divergence both between and within different therapists. Three participants talked about using homework as a tool to test out clients' motivation, readiness for therapy and appropriateness for CBT. Viewed as such, the function of homework seems to be more for the therapist's benefit, rather than the client. For instance:

> *"Sometimes homework tasks are about - I think there might be a slightly hidden agenda to um, er, to figure out whether they're really committed ... I want to see whether they're actually prepared to do the work. So there is an element about testing out people's motivation."* (Jamie)

The slight hesitance in the phrasing of Jamie's quote, in the rephrasing in the opening sentence and the use of "um" and later pause, could indicate a slight discomfort within the therapist of holding this view. It could be that this discomfort exists in light of how perceiving homework as a test directly contradicts other ideas that Jamie, and other participants, held about homework being more for the clients' learning and self-discovery.

Superordinate theme two: *The strategy*

There was widespread agreement upon the technical aspects that needed to be in place for homework to be successful. These technical aspects included

the importance of anticipating and addressing potential barriers to homework (discussed by eight participants), allocating sufficient time for homework setting and review and linking homework to client goals (each discussed by six participants). These technical aspects reflected theoretical guidelines (e.g. Garland, & Scott, 2002; Kazantzis, & Deane, 1999; Kazantzis, Deane, Ronan, & L'Abate, 2005; Scheel et al., 2004) and linked to the competency ratings on the Cognitive Therapy Scale (CTS-R; Blackburn et al., 2001) which all participants would have been rated on during CBT training. These technical aspects were interpreted by the researcher to be a precursor to the superordinate theme of *the strategy* of homework, which consisted of a richer narrative around the way in which participants employed these techniques (see Figure 3). As such, the technical aspects could be seen as declarative knowledge, whilst *the strategy* could be seen as procedural knowledge (Binder, 1993, 1999).

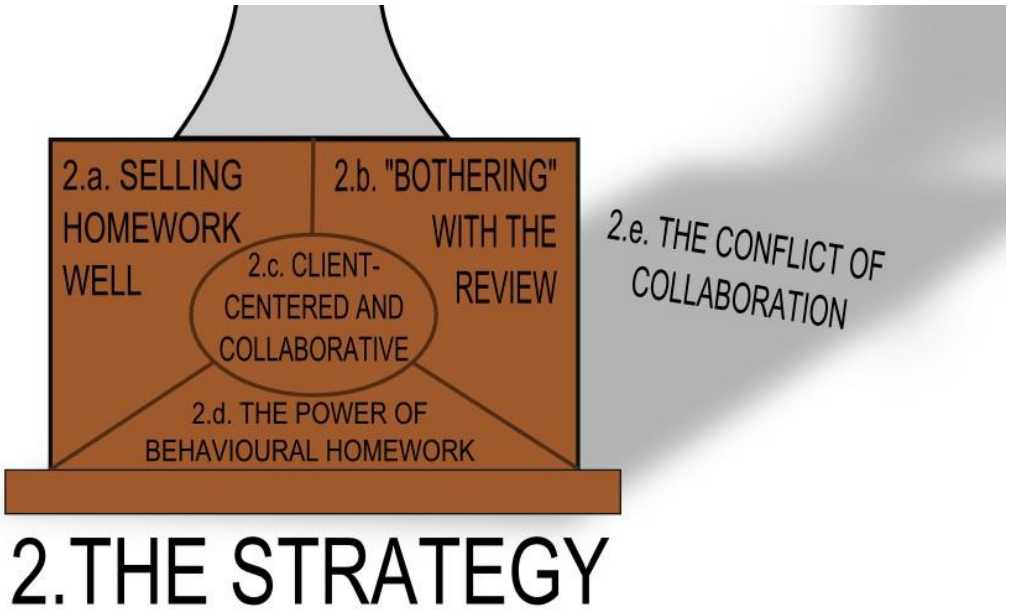

Figure 3: Subthemes within superordinate theme two - *the strategy*

2.a. Selling homework well

Nine therapists described feeling responsible to portray homework as having great potential to help the client, in order to build a sound rationale as to why the client should partake in homework tasks:

> *"I think it's about the tone you, kind of, use with the client. So, if you're not really excited about the homework, and you don't put it across as being something really beneficial, you know, you're not demonstrating that rationale there, then of course they're not going to be on board."* (Sam)

The way in which participants spoke about selling the homework made the researcher sense that this was not just about communicating the evidence base that homework contributes to therapy outcome, but was also about the therapist personally having a passion for homework and convincing the client of this passion. The researcher noticed feeling passionate about homework when participants described how much they value homework, which could indicate a parallel process of how the client feels, or how the therapist intends the client to feel, when the therapist is selling homework during therapy.

2.b. "Bothering" with the review

There was general consensus amongst participants that reviewing homework was important. Seven participants explored the meaning behind the review, and seemed to make sense of the review as a way to demonstrate the therapists' commitment to the therapy and to show appreciation for the clients' efforts, rather than merely a need to practically review the homework task. For instance:

> *"I believe if you don't honour the homework, so if you, if you, don't spend time reviewing it, I believe that then clients don't really commit to the homework, or will stop committing to the homework, because we just had a cursory glance at it and went 'Oh yeah, OK great so now what are we doing?'. So, you know, if you do that then why bother?"*(Jamie)

It seems that therapists were anticipating how clients would experience the therapist if they did not review the homework. It could be that therapists thought that if they did not conduct a review, the client would experience the therapist as not having bothered to do so. As such, the therapist predicted that the client will then themselves not bother to complete the homework, due to thinking it is unfair to engage in so much effort with the homework if the therapist is not recognising the client's effort, nor exerting effort of their own.

2.c. Client-centred and collaborative

All participants expressed that homework should be centred around the client, taking into consideration the client's goals, skills, resources and formulation. Therapists described a collaborative approach being necessary in order to achieve this. For example:

> *"You can't always do exactly what the books say you can do, you've got to refer to the client, you've got to refer to the formulation and work collaboratively with the client according to what they feel they can change or what they feel they can begin with."* (Ash)

Participants described this client-centred collaboration as a way to make homework more meaningful to the client, making the client more likely to complete the homework. The researcher also wondered whether a collaborative approach could be a more comfortable position for the therapist to be in, in which the client is generating tasks for themselves, rather than the therapist perceiving themselves as telling the client to do something.

2.d. The power of behavioural homework

An unexpected commonality shared by eight participants was a preference for behavioural over cognitive homework. For example:

> *"I think probably behavioural changes have more impact in terms of homework. I think people find them, those, easier to do as well 'cause it's something actually physical to do rather than a sort of flouncy thing in your head."* (Sam)

Underlying a reported personal preference for behavioural tasks was a critique of cognitive tasks, in terms of how they might be experienced by the client, but also how valuable they were to the therapist. It seemed that therapists experienced behavioural homework as more powerful and worthwhile, holding more potential to engender changes in the client's everyday life. For instance:

> *"I mean it tends to be things -either exposure tasks or behavioural experiments - it tends to be stuff like that, um, that, that that, well is a big revelation and people come back transformed."* (Jamie)

Interestingly, the way in which participants backed up this perspective tended to rely more on personal preference, suggesting that generally the experience of the participants had been that behavioural homework tasks were most powerful.

2.e. The conflict of collaboration

Half of the participants mentioned difficulties in being fully collaborative with homework throughout therapy. This contrasts with the unanimous subordinate theme of being *client-centred and collaborative*. Thus, it seems that half of the participants were conflicted in their views about collaboration. Participants described needing to be more didactic, particularly during the early stages of therapy, due to therapist knowledge over what types of homework task could benefit the client. For instance, Jesse commented:

> *"In the early sessions, it's about being quite didactic and giving, giving, them the information. And quite often, they almost look to you. I think in the very first early sessions."* (Jesse)

Other participants agreed with Jesse that they can be more didactic in early sessions. However, Jesse appears to be quite comfortable being didactic whereas others, such as Robin, appeared to be less comfortable:

> *"I'm obviously trying to be Socratic all of the time, but sometimes I notice that I get a bit didactic , … especially at the beginning of therapy, … whether I might overwhelm them with too much information, or - I have to hold back."* (Robin)

Robin's abrupt self-interruption at the end of this quote could be seen as a way to correct self-perceived failings of becoming too didactic in therapy. However, other therapists shared Jesse's perspective and expressed frustration that the theoretical guidance did not reflect the reality of how didactic therapists need to be when setting homework. For example:

> *"… done it collaboratively - and I use that word loosely because everyone says, all the literature, 'It must be collaborative', but the client doesn't know what will be helpful. So I don't think you can be as collaborative as the literature would imply."* (Alex)

An alternative interpretation of Alex's quote could be that Alex is re-directing the frustration felt for holding such contradictory views on collaboration, onto the literature.

Superordinate theme three: *The process*

Participants described thoughts, feelings and emotions that they had experienced when encountering difficulties with homework (see Figure 4).

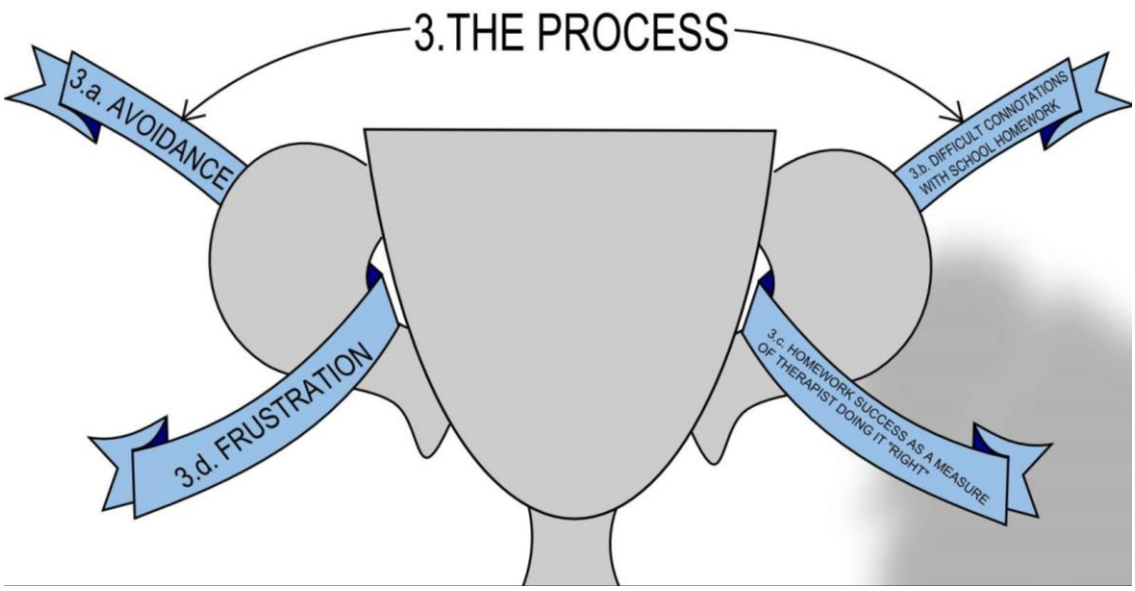

Figure 4: Subthemes within superordinate theme three - *the process*

3.a. Avoidance

Seven participants described three ways in which their own thoughts or emotions could have led them to withdraw or avoid setting homework. Firstly, Sam describes putting more effort into homework with motivated clients and setting less for clients who are struggling:

> *"So, I tend to find that if I reflect - that as a therapist, if the client has had CBT before, their socialised to the model, they're very motivated; actually I'll probably set more homework than for clients that have come in very severely depressed maybe, haven't got a lot of motivation… Whereas actually it's probably the latter that need it more?"* (Sam)

Sam said the last sentence in a questioning tone, as if to ask the researcher or ask themselves whether it was right to set more homework for clients who are already motivated and understand the CBT model and less homework for less motivated clients. Sam could have been wondering how this conflicted with other ideas that had been spoken about, such as the importance of *selling homework well* and *building client independence*. This could be experienced as clashing with being *client-centred* and working in line with the client's resources and motivation, or actually could be considered as a self-fulfilling prophecy in that

Sam is inadvertently putting less effort in with clients who struggle with homework, thus making it less likely for them to have homework success. This could be to avoid difficult conversations if homework has not been completed, or to avoid a feeling of failure if homework is attempted unsuccessfully.

Secondly, some participants described avoiding homework tasks that they felt less confident with. For example:

> *"The difficulty probably for a lot of people is my confidence, or my sense that I'm getting it right or wrong. And if I'm getting it wrong, I'd rather not do it, so I… if I get it wrong it will all be a disaster. And I think a lot of, it, a lot of, therapists have those sort of thoughts around and so, you know, they might become a bit avoidant of things."* (Robin)

As Robin switches between first and third person, this could reflect a slight defensiveness, or perhaps the idea of admitting to avoiding setting certain homework tasks is hard for Robin to own up to. The researcher reflected further as to whether Robin's sense-making could reflect another self-fulfilling prophecy in which therapists become better able to sell homework tasks that they are confident in, thus making clients more likely to fully commit to these homework tasks and experience success, furthering the therapist's confidence in specific homework tasks. In contrast, therapists could be less able to sell tasks that they are less confident in, setting up clients not to fully engage and building evidence for the therapist that these tasks are not helpful.

Thirdly, some participants expressed discomfort around setting exposure homework tasks:

> *"Exposure is, is one of those …that always fills me with a little bit of trepidation, asking people to go away and do that, to do that process by themselves… and that's probably because they're particularly distressing things to ask people to do."* (Frankie)

This reflects an interesting paradox that participants described experiencing exposure as one of the most powerful, but also most anxiety-provoking homework tasks. The researcher wondered how this fear impacted upon the setting of homework tasks for Frankie, and whether this could have led Frankie to avoid using exposure tasks.

3.b. Difficult connotations with school homework

Eight participants spoke about the term: 'homework' and how this term has automatic associations with school homework. Therapists described how this can alter clients' perception of the task and automatically set clients up to be defiant about not completing the task. For instance:

> *"The term homework is just, I think, it's a loaded term that we've all known for all of our lives, that comes from school and it's a, kind of like: 'Urgh homework', it doesn't set you up to be particularly motivated…. It's a bit like, you know, 'I've been told I've got to do this'. And it automatically is kind of like an un-Socratic term because it kind of, it, it, kind of comes with this um sense of 'I've got to do something which I've been told to do' when you're trying to be Socratic is not that -that is the very opposite of being Socratic really."* (Sam)

As participants, such as Sam, spoke about the connotations of school homework, on the surface it appeared that therapists were thinking about how it feels for the client to be told to do something and what previous experiences of school homework therapeutic homework could bring up for the client. Underneath participants' comments seemed to be the idea that these connotations are also uncomfortable for the therapist. For example:

> *"When I used to word it as homework, that can almost make me feel like teacher and it puts me in a position of power and them less so. And you get people that say: 'Oh, I'm sorry I haven't done my homework for you.' And I have to reiterate: 'It's not for me, it's your life, it's for you.'"* (Alex)

The researcher sensed Alex expressing discomfort in being put in the position of a school teacher, which could perhaps be linked to therapists' own

connotations with teachers and school homework. It could be that being put into the role of the teacher jars with some of the earlier themes such as being *collaborative* and enabling the client to achieve *self-discovery.*

3.c. Homework success as a measure of therapist doing it "right"

Six participants described successful homework experiences as confirming, validating and reinforcing for the therapist. For example:

> *"It reinforces: this is right, this is working, you know, the, the theory is right, um, I'm doing it right, I'm doing a good job."* (Charlie)

Other participants described times in which homework was unsuccessful, and how the absence of this positive reinforcement could lead to self-criticism:

> *"I think it taps into my fear, my fears, of not being good enough, for being a rubbish therapist."* (Robin)

Some participants deduced that if successful homework reinforces that they have done the right thing, unsuccessful homework was an indication that they had not done the right thing, and had actually done something wrong or failed in some way:

> *"You do feel, you know, like: 'What am I doing wrong?' "* (Jesse)
> *"I think I ended up feeling like a failure in the end, that I couldn't sort of do anything to help her."* (Hayden)

The researcher found herself wondering whether therapists placed similar judgments on their clients, such that therapists wanted clients to do the homework in the "right" way. It is possible that these feelings could have impacted upon therapists' motivations for setting homework, and could make the homework experience less about helping the client but more about measuring therapist success.

3.d. Frustration

The most overriding emotion expressed by seven therapists when describing difficulties with homework was frustration. This emotion seemed to be very close to the surface for therapists, due to homework difficulty jarring with the therapist's aims:

> *"The word that comes to mind is quite frustrating. Um, because I know how it can work, and I suppose my need for her is to, is to, feel better. That's what she's come to me for is to feel better, um, so it's quite frustrating"* (Charlie)

The researcher noticed becoming curious about how the client experienced therapists' frustration and how this influenced the homework process. It was noticeable that with other themes, participants reflected on how their actions or feelings had impacted upon therapy, but not one of the therapists who described feeling frustrated explored the wider impact of their frustration. It could be that this was not explored because therapist frustration impacted on therapy in a way that the participant was ashamed of, for instance, leading to reprimanding the client or giving up setting homework.

Overview of themes

Table 6 provides an overview of the superordinate and subordinate themes that have been described, detailing which participants contributed to these themes and providing an example quote for each theme.

Superordinate	Themes	Key:		Contributed to theme				Did not contribute				Example quote
	Subordinate	Alex	Ash	Charlie	Frankie	Hayden	Jamie	Jesse	Robin	Sam	Taylor	
The essence	**The Value:**											
	Homework is valuable	■	■	■	■	■	■	■	■	■	■	*" my belief is that homework is very, very, positive and it's a real essential in CBT, um, and I guess my thoughts're backed up by six years worth of evidence, where I've kind of seen that when clients really do complete homework their progress is so much faster than than clients that don't."* (Sam)
	The function:											
	Translating in session work into real life change			■	■		■		■	■	■	*"…to take those skills and implement them into their life to have a long-term beneficial effect."* (Sam)
	Facilitating client independence and self-discovery	■	■	■	■	■	■	■	■	■	■	*"you actually facilitate and engender self-efficacy for them so that they take responsibility for some of their care."* (Taylor)
	Homework as a test					■	■				■	*"I think it's a test to see whether it's the right type of therapy for them. Whether they're gonna engage in change, um, and whether they're sort of motivated, really, to do something in between sessions."* (Hayden)
The strategy	**Selling homework well**	■		■	■	■	■	■	■	■	■	*"It's very much about getting the person to buy into the idea of self help and the fact that actually CBT is very useful."* (Jesse)
	"Bothering" with the review	■		■			■	■	■	■	■	*"I don't think it would be any good if I just said: 'Ooh' - if we decided that they were going to experiment with such and such and, and, then when they came back the next week I just didn't bother asking them about it. Or I did and I just went: 'Oh', you know, there's a kind of like - the review is almost as important as the actual doing of it."* (Robin)

	Client-centred, collaborative										*"…making sure it's collaborative … I think that's really, really important. If the client isn't involved in what they're doing to do, I just, I just think they're less invested in it."* (Frankie)
	The power of behavioural homework										*"I mean it tends to be things -either exposure tasks or behavioural experiments - it tends to be stuff like that, um, that, that, that, well is a big revelation and people come back transformed."* (Jamie)
	The conflict of collaboration										*"…done it collaboratively, and I use that word loosely because everyone says, all the literature, 'It must be collaborative'. But the client doesn't know what will be helpful. So I don't think you can be as collaborative as the literature would imply."* (Alex)
The process	**Avoidance**										*"The difficulty probably for a lot of people is my confidence, or my sense that I'm getting it right or wrong. And if I'm getting it wrong, I'd rather not do it, so I… if I get it wrong it will all be a disaster. And I think a lot of, it, a lot of, therapists have those sort of thoughts around and so, you know, they might become a bit avoidant of things."* (Robin)
	Difficult connotations with school homework										*" Um, I think sometimes the way that we refer to it as homework can be a bit, um, misleading and sometimes I'm more likely to call it between session practice or, you know, rather than -homework has connotations of schoolchildren."*(Ash)
	Homework success as a measure of therapist doing it "right"										*"…it reinforces: this is right, this is working, you know, the, the theory is right, um, I'm doing it right, I'm doing a good job."* (Charlie)
	Frustration										*"…you think: 'Oh, if you only did this little bit of thing, you'd be over this difficulty and you can have your life back.' So it can be frustrating."* (Alex)

Table 6: Summary of superordinate and subordinate themes

Discussion

Three superordinate themes emerged through exploring what the experience of using cognitive behavioural therapeutic homework was like for therapists. These themes encompassed the value and function therapists held to homework (*the essence*), the way in which therapists approached homework (*the strategy*) and thoughts and emotional reactions around making sense of difficult experiences with homework (*the process*). The subordinate themes within these three overarching themes have been explored in relation to theoretical and research literature. The study is then evaluated and suggestions for future research are made.

Applying theories of learning to therapists' experiences

"Bothering" with the review

Therapists discussed the importance of *"bothering" with the review*. Indeed, the literature reflects that reviewing homework is key (Garland, & Scott, 2002; Kazantsiz et al. 2005; Kazantsiz, & Deane, 1999; Scheel et al., 2004) and is correlated with homework compliance (Bryant, Simons, & Thase, 1999). In keeping with the participants' sense-making of the importance of the review, research suggests that the homework process is affected negatively if homework is not reviewed (e.g. Burns, & Spangler, 2000; Garland, & Scott, 2005).

The function of the homework review could be understood using several different learning theories, such as, operant conditioning (Skinner, 1971), social learning theory (Bandura, & Walters, 1977), modelling (Bandura, 1974) and theory of reasoned action (Fishbein, & Ajzen, 2011). For instance, according to the behaviourist theory of operant conditioning, behaviour is maintained by the consequences that follow it (Skinner, 1971). As such, reviewing homework

could be seen as positive reinforcement of the client's behaviour of completing homework, making it more likely for clients to complete homework again in the future.

Translating in session work into real life change

Participants described homework as translating the work that began in the therapy room into a real life setting, which participants in turn associated with engendering long lasting change. This is in keeping with cognitive behavioural theory, which suggests that homework is a "vehicle" which enables skills to be transferred out of therapy sessions (Beck et al., 1979). Perhaps this could be understood using the principles of context-dependent learning, which suggest that individuals will have a better memory of something that is tested in the same environment in which it is learnt (Smith, & Vela, 2001). As such, therapists may have been noticing that a longer lasting change can be seen in clients who have had the opportunity to learn new skills in their everyday environment when completing homework tasks.

Facilitating client independence and self-discovery

Participants described homework enabling clients to engage in *self-discovery*. This narrative has clear links to Padesky's (1993) guided discovery, of which the "purpose is not to change the clients mind but to guide discovery". Padesky (1993) argues that guiding discovery facilitates long-term benefit, as clients develop skills to use on their own. Indeed, there is evidence that learning through discovery via collecting one's own evidence is a particularly productive form of learning (Zachry, 1985). This could be because discovery learning is a way to develop procedural knowledge, which is acquired through applying and practicing skills (Binder, 1993; 1999).

Understanding the impact of therapists' thoughts, emotions and behaviours

Avoidance, frustration and homework success as a measure of therapist doing it "right"

Participants described thoughts (*homework success as a measure of therapist doing it "right"*), emotions (*frustration*) and behaviours (*avoidance*) as difficult parts of their experiences with homework. Several relevant theories could be applied to understand how therapists' thoughts, emotions and behaviours could impact on the homework process (e.g. Bennet-Levy, 2007; Kazantsiz et al., 2005; Rudd, & Joiner, 1997). For instance, Rudd and Joiner (1997) propose a framework to explore how therapist and client beliefs about themselves and each other are associated with emotions and behaviours in therapy. In this framework, it is proposed that the therapist could see him or herself as a victim, collaborator or saviour. Rudd and Joiner (1997) argue that if therapists see themselves as victims, they could think that they are inadequate or incompetent, which could then lead to blaming and rage. This framework could be applied to participants' experiences of homework, as participants expressed feeling frustration when clients did not complete homework. As such, participants could be blaming themselves, or their client, due to fears that difficulties with homework are exposing them as incompetent.

When participants were describing their difficult experiences, they appeared to reflect upon how their cognitions and emotions might have impacted upon their behaviour when using homework. During the debrief, several participants commented on how this reflection has made them think about changing some of their behaviour when using homework. As has been

suggested previously (Bennett-Levy, & Thwaites, 2007), it appeared that reflecting on homework had been a useful experience for the therapists. Bennett-Levy and Thwaites (2007) proposed the declarative, procedural, reflective model of therapist skill development. This model highlights the importance of therapists' reflective skills in building a perception of themselves and their clients. According to this model, reflection is the necessary process by which therapists develop from average to expert. As such, a greater emphasis on therapist reflection on the homework process during CBT training, could engender change in therapist behaviour when using homework and, in so doing, could improve the homework process.

Difficult connotations with school homework

Therapists' experiences reflected previous research in indicating that clients may feel negatively towards therapeutic homework due to connotations with school homework (e.g. Barnes et al., 2013; Coon & Gallagher-Thompson, 2002; Garland, & Scott, 2002). This is not the first time that therapists have reported that the term homework can be discouraging or deterring for the client (Fehm, & Kazantsiz, 2004). However, as is known, this is the first study to find that the term homework may also have negative associations for therapists, in that it could put them in an uncomfortable role of a schoolteacher. As the term homework could hold negative connotations for therapists as well as clients, there is even more rationale for a change in terminology as suggested by Kazantsiz et al. (2005).

Homework as a test

Another therapist attitude that was held by a minority and, as is known, has not yet been referenced in the literature was that homework could be used

as a test to determine clients' readiness for change and motivation for therapy. Indeed, three participants described approaching the use of homework as a covert test with a "hidden agenda". This is an interesting perspective, particularly in light of how it conflicts with key therapist qualities that have been previously emphasised, such as genuineness, transparency, sincerity and openness (Young, & Beck, 1982). As such, this is a perspective that might be worth exploring further in more detail.

Selling homework well

Nine participants described the importance of being enthusiastic and passionate in the way that they introduced homework to clients. Similarly, Detweiler and Whisman (1999) predicted that therapists who were more persuasive, or enthusiastic, about homework might have higher homework compliance. Indeed, previous research of maths teachers demonstrated that teachers who were more enthusiastic showed higher quality instructional behaviour as rated by both students and teachers (Kunter et al., 2006). Therefore, it seems that *selling homework well*, in addition to getting clients to buy into homework, could have engendered therapist behaviours which were also more likely to foster homework compliance.

How do therapists' experiences fit in with CBT theory?

The power of behavioural homework

Interestingly, most participants reported a preference for behavioural homework tasks. This contrasts with previous research which has reported that psychologists use similar rates of purely cognitive, e.g. cognitive restructuring, and cognitive behavioural, e.g. behavioural experiments, tasks (Fehm, & Kazantzis, 2004). In fact, preference for behavioural tasks is more reflective of

third-wave CBT practitioners, who were found to be more likely to use behavioural tasks, and less likely to use cognitive strategies, than second-wave CBT practitioners (Brown, Gaudiano, & Miller, 2011).

There are several factors that could have contributed to the preference for behavioural tasks. Firstly, third-wave CBTs are growing in popularity (Hunot et al., 2013) and indeed three participants reported using third-wave CBTs in their work. Secondly, the West Midlands could be considered as a particular hub of recent interest and training in third-wave approaches and all participants were recruited from the region. Thirdly, this could reflect a genuine shift in preferences of CBT therapists to behavioural tasks, which could merit further exploration. However, it is important to be aware of the possible influence of researcher bias on this finding. The research supervisor, who sent out the recruitment emails, has a special interest in, and reputation for, Acceptance and Commitment Therapy, and thus this could have meant that potential participants were more likely to respond to the recruitment email if they shared this third-wave interest. Furthermore, the researcher herself has a growing interest in third-wave CBT approaches and, despite performing triangulation checks, it could be that this influenced the interpretation of participants' experiences during data analysis.

Client-centred, collaborative, and the conflict of collaboration

There was unanimous consensus around the importance of being client-centred and collaborative, which was also emphasised when CBT was first developed (Beck et al., 1979). Indeed, the value of adapting the way that homework is delivered according to the individual case conceptualisation and the therapeutic relationship has been emphasised previously (Cronin, Lawrence,

Taylor, Norton, & Kazantzis, 2015). Furthermore, Harris and Hiskey (2015) argued that therapists need to maintain awareness of the client's zone of proximal development and emotional connection with homework throughout the homework process.

When discussing collaboration, there were some contradictions in therapists' experiences, with some stating that at times there is a need for the therapist to be less collaborative. This is not the first time that the meaning of collaboration in CBT has been questioned. For instance, Proctor (2008) argued that underneath collaboration in CBT is the idea that the client will conform to the therapist's perspective. The discrepancy in participants' accounts poses questions over what is meant by the term collaboration. Some participants expressed difficulty in meeting collaboration if defined as the therapist and client being completely equal partners in the therapy relationship. As such, alternative definitions of collaboration could be considered more in keeping with the participants' experiences. For instance, Turnbull (1996) defines collaboration as a "joint enterprise", in which the client and therapist occupy "different roles" according to their relative expertise in the life of the client and CBT theory, respectively. The conflicting experiences of the participants could reflect the lack of a clear consensus on a definition for collaboration in CBT.

Evaluation

As with all qualitative approaches (Smith et al. 2009), the possible impact of researcher bias on the findings is important to acknowledge. The researcher is White British and in her late twenties, but it was judged that the researcher's ethnicity and age did not significantly bias her interpretation of participant's experiences. However, it is noteworthy that the researcher is relatively new to

delivering CBT and using homework in therapy. This could have made the researcher more likely to pick up on therapists' insecurities and anxieties in using homework in CBT, as such anxieties have recently been experienced by the researcher herself. However, attempts were made to guard against this bias by triangulating data analysis and setting a requirement of at least six participants having discussed a topic to make this a theme. This criterion ensured that themes were representative of the data, rather than being led by the researchers own agenda.

The way in which participants were recruited via responses to an email about CBT homework could have biased the sample to include therapists who were particularly interested in homework, and thus could have contributed to the value participants assigned to homework. However, CBT therapists have previously been found to rate homework as 'very important' (Kazantzis, & Dattilio, 2010). Equally, it could be argued that it is of particular interest to explore the experiences of therapists who value homework, as these therapists may be more likely to have successful experiences of using homework (Stodard, 2012). The requirement of participants to work in independent practice could have also impacted on the experiences described, as the dynamics around homework could be different when therapy is self-funded. However, four therapists were also working in the NHS at the time of participation, and several other therapists reflected on previous experiences of working in the NHS during their interviews.

One of the biggest strengths of this study was the richness in the participants' account of their experiences. Furthermore, this study also has a relatively large sample for IPA studies (Smith et al. 2009). The size of the sample

enabled a high criterion of at least six participants needing to discuss a topic for inclusion as a subordinate theme. Indeed, every participant contributed to each superordinate theme, suggesting that the analysis did capture the common voice across participants. The large sample also facilitated exploration of the idiosyncrasies across participants' accounts, providing a good balance between convergence and divergence across the sample.

Future directions

This study yields several recommendations for future research. Firstly, it would be useful to run focus groups with CBT course directors to discuss increasing the emphasis on reflection on homework during CBT training and to explore ideas around changing the term homework. These ideas could then lead to piloting changes in CBT curriculum with the aim of improving the homework process and decreasing the negative connotations that both therapists and clients might hold around the term homework. Secondly, further exploration of novel themes that emerged from the study, such as: therapists' attitudes towards behavioural versus cognitive tasks, therapists' attitudes towards using homework as a covert test and reaching a consensus on a formal definition of collaboration is warranted.

Concluding remarks

As is known, this is the first study that has been conducted to explore therapists' experiences of homework in CBT using IPA. This unique approach has provided an insight into what the homework process is like and how therapists make sense of this. These insights have facilitated suggestions for future directions in CBT homework research which have the potential to

improve the homework experience for both therapists and clients and, in so doing, could improve CBT effectiveness.

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Chapter Three

PUBLIC DISSEMINATION DOCUMENT

This chapter gives an overview of the literature review and research study that were completed for the doctorate degree in clinical psychology.

Literature review: Investigating the relationship between mindfulness homework and outcome improvement: A meta-analysis

Background

Over the past 40 years, a new form of group therapy has become very popular (Lau, & Yu, 2009). This form of group therapy is called mindfulness. Mindfulness originates from Buddhist meditation practices, but is now offered as a non-religious programme with the aim of improving mental health (e.g. Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2002). Mindfulness uses meditation and other exercises to try to develop attention skills, asking people to practice paying attention to what is happening right now, without being judgmental about this experience (Kabat-Zinn, 1994). Mindfulness has been found to benefit many different types of people (e.g. Fjorback, Arendt, Ornbol, Fink, & Walach, 2011). Particularly, mindfulness has been shown to help with several difficulties, including: depression (e.g. Bondolfi et al., 2010), the way people cope with physical health problems (e.g. Wong et al., 2011) and anxiety (e.g. Kabat-Zinn et al., 1992). Equally, mindfulness has been found to improve well-being (e.g. Keng, Smoski, & Robins, 2011).

Mindfulness group therapy is delivered over several sessions, and everyone attending the group is expected to practice some mindfulness exercises at home in between sessions. Many have argued that this home practice is very important (e.g. Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2012), and so individuals attending mindfulness groups are asked to spend 30 to 60 minutes doing home practice every day.

Despite the strong emphasis placed upon daily home practice, there is not very much evidence to support the importance of mindfulness home practice (e.g. Vettese. Toneatto, Stea, Nguyen, & Wang, 2009). Some studies have tried to see whether the amount of home practice individuals do is linked to how much they benefit from taking part in a mindfulness course, but the findings have been mixed (e.g. Baer, 2003; Fjorback et al., 2011). When findings are mixed in this way, it can be useful to combine the findings from all of the available research using a statistical technique called a meta-analysis. This study aimed to combine the results from all available research to see if, overall, there is an association between the amount of home practice people do and the amount of benefit that people get over a mindfulness course.

Method

A systematic search of the research literature was conducted. This search was based on a previous review conducted by Vettese et al. in 2009. From this search, 25 relevant research articles were found. These articles were then combined to see whether overall the amount of home practice that people did was associated with the amount people improved over a mindfulness course. Several tests were also conducted to see if the quality of the articles made a difference to the findings.

Main findings

Overall, small associations were found between the amount of home practice that was completed and the amount that people improved in terms of their depression, anxiety, coping with physical health problems and well-being. It was also found that more home practice was associated with people getting

better at paying attention. Overall, the quality of the studies included in the review did not have a big impact on the findings.

These findings suggest that mindfulness homework is important, as has been found previously (e.g. Crane et al., 2014). However, the size of the association between the amount of home practice and improvement was slightly smaller than one might have expected, considering how much emphasis is placed upon home practice. This could be because there were some common problems with the studies. In particular, studies were not very accurate in the way that they measured the amount of homework that people completed.

Conclusions

This study shows that the amount of home practice people complete during a mindfulness course is related to the extent that people benefit from taking part in the course. This is an important finding and could be used to help to explain why home practice is important for people taking part in a mindfulness course.

It would be interesting for future research to build upon this finding, to try and see why there is such an association. Future research would also be able to build stronger conclusions if studies started measuring home practice more accurately, and if more studies examining the relationship between home practice and improvement were carried out.

Research paper: Therapists' experiences of cognitive behavioural therapeutic homework: An interpretive phenomenological analysis

Background

One of the most popular forms of psychological therapy is called Cognitive Behavioural Therapy, otherwise known as CBT. CBT suggests that if we can

change the way that we think, or change what we do, we will be able to change how we feel. When delivering CBT, therapists ask clients to complete some therapy tasks at home, in between therapy sessions. These between-session tasks are referred to as 'homework'. Many researchers have found that people are more likely to benefit from CBT if they do their homework (e.g. Glaser, Kazantzis, Deane, & Oades, 2000). Therefore, the importance of using homework in CBT has been repeatedly emphasised (e.g. Beck, Rush, Shaw, & Emery, 1979).

However, many clients and therapists have reported difficulties in using homework in CBT (e.g. Gaynor, Lawrence, & Nelson-Gray, 2006; Kazantzis & Shinkfield, 2007). For instance, some clients have said that homework is the biggest challenge of CBT (Barnes et al., 2013). Equally, some therapists have expressed negative attitudes towards homework (Haarhoff, & Kazantzis, 2007). Several studies have argued that therapists' attitudes towards homework could have an impact on how successful homework is in CBT (e.g. Kazantsiz, Lampropoulos, & Deane, 2005).

Therefore, the aim of this study was to ask what the experience of using homework in CBT was like for therapists. It was hoped that this might highlight areas in which the homework process could be improved, which could have the potential to increase the effectiveness of CBT.

Method

Ten cognitive behavioural psychotherapists were interviewed about their experiences of using homework in CBT. These interviews were then analysed using a qualitative research method, namely: Interpretive Phenomenological Analysis (IPA; Smith, Flowers, & Larkin, 2009). This enabled detailed analysis of how all of the therapists made sense of their experiences of using homework in

therapy and enabled exploration of what it had been like for these therapists to use homework in CBT.

Main findings

Three main topics, or themes, were discussed by all of the therapists. Firstly, therapists described what homework meant to them. This was referred to as *the essence* of homework and participants described homework as something that was very valuable and fulfilled several different important functions in therapy. Secondly, therapists described the way in which they approached using homework and what this experience was like (*the strategy* of homework). Thirdly, therapists described difficult experiences, thoughts and emotions around homework and discussed how these factors might have interfered with the homework process (*the process* of homework).

Conclusions

This study provided an insight into what the homework process is like for therapists. These insights yielded several recommendations for future directions in CBT homework research.

For instance, when discussing difficult experiences, therapists reflected on how they might change their approach to homework in the future. Indeed, the importance of therapists reflecting on experiences has been emphasised previously (e.g. Bennett-Levy, & Thwaites, 2007). Therefore, this study suggests that putting a greater emphasis on therapist reflection on homework in the training of CBT practitioners could improve the homework process.

Additionally, this is the first study to find evidence that therapists, as well as clients, might hold negative connotations of therapy homework with school homework. For example, therapists described feeling like they had been put into

the uncomfortable role of a schoolteacher when using homework. Therefore, this study adds to the existing rationale that the term 'homework' could be changed in CBT training.

Understanding therapist experiences yielded new suggestions which, if explored in more detail, could have the potential to improve the homework process, and so could make CBT more effective.

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APPENDICIES

APPENDIX ONE: Examples of excluded studies

Did not report a correlation coefficient (*r*) and number of participants for this correlation (n) of the association between homework and change in outcome. If there was evidence that this may have been calculated but not reported authors were contacted, but did not respond.

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Only looked at individual trajectories of change

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Only reported association between homework and post therapy outcome scores, rather than change from pre to post therapy outcome scores

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Table A.1: Breakdown of examples of studies that did measure and report the amount of homework participants completed, but were not eligible for the meta-analysis

APPENDIX TWO: Risk of bias for each individual correlation within each study

Study name	Subgroup	Outcome measure	Measurement of outcomes	Measurement of homework	Reporting	Attrition	Power	External Validity	Total Quality Score
Campbell et al. 2012	Mindfulness	MAAS	1	0.5	1	1	0	1	0.79
Canby et al. 2015	Well-being	GSI (distress)	1	0	1	1	0	0.5	0.64
Canby et al. 2016	Well-being	SCS (self-control)	1	0	1	1	0	0.5	0.64
Canby et al. 2017	Well-being	SVS (vitality)	1	0	1	1	0	0.5	0.64
Canby et al. 2018	Mindfulness	MAAS	1	0	1	1	0	0.5	0.64
Eyles et al. 2014	Physical health	Brief fatigue inventory	1	0	1	1	0	1	0.71
Eyles et al. 2014	Depression	HADS depression	1	0	1	1	0	1	0.71
Eyles et al. 2014	Anxiety	HADS anxiety	1	0	1	1	0	1	0.71
Eyles et al. 2014	Mindfulness	Toronto Mindfulness Scale - Curiosity	1	0	1	1	0	1	0.71
Eyles et al. 2014	Mindfulness	Toronto Mindfulness Scale - Decentering	1	0	1	1	0	1	0.71
Malcoun 2008	Mindfulness	Kentucky Inventory of Mindfulness Skills (global mindfulness)	0.5	0.5	1	1	0.5	0.5	0.71
Malcoun 2008	Mindfulness	Kentucky inventory of mindfulness skills (non-reactivity)	0.5	0.5	1	0.5	0.5	0.5	0.64
Malcoun 2008	Physical health	brief symptom inventory for psychological symptoms	1	0.5	1	1	0.5	0.5	0.79
Malcoun 2008	Physical health	physical component summary	0.5	0.5	1	1	0.5	0.5	0.71
Malcoun	Physical	physical functioning	0.5	0.5	1	1	0.5	0.5	0.71

2008	health								
Malcoun 2008	Physical health	role physical	0.5	0.5	1	1	0.5	0.5	0.71
Malcoun 2008	Physical health	bodily pain	0.5	0.5	1	1	0.5	0.5	0.71
Malcoun 2008	Physical health	general health	0.5	0.5	1	1	0.5	0.5	0.71
Tamagawa et al. 2015	Physical health	POMS tension/anxiety	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS depression/dejection	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS anger/hostility	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS vigor/activity	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS fatique	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS confusion	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	POMS total (profile of mood states)	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	PTGI (post traumatic growth inventory)	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Physical health	FACIT-sp (functional assessment of chronic illness therapy spiritual wellbeing)	1	0.5	1	0	0	1	0.64
Tamagawa et al. 2015	Mindfulness	MAAS	1	0.5	1	0	0	1	0.64
Carmody & Baer 2008	Mindfulness	Mindfulness - observe (FFMQ)	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Mindfulness	Mindfulness - describe	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Mindfulness	Mindfulness - act with awareness	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Mindfulness	Mindfulness - nonjudge	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Mindfulness	Mindfulness - nonreact	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Well-being	Psychological well-being (scales of psychological wellbeing)	1	0.5	1	0	1	1	0.79
Carmody & Baer 2008	Physical health	Medical symptoms (medical symptoms checklist)	0.5	0.5	1	0	1	1	0.71

Carmody & Baer 2008	Well-being	Percieved stress (percieved stress scale)	1	0.5	1	0	1	1	0.79
Carmody & Baer 2008	Anxiety	Somatization	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Obsessive-compulsive	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Interpersonal sensitivity	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Depression	Depression	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Anxiety	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Hostility	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Phobic Anxiety	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Paranoia	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Anxiety	Psychoticism	0.5	0.5	1	0	1	1	0.71
Carmody & Baer 2008	Well-being	Global severity	1	0.5	1	0	1	1	0.79
Barnhofer et al. 2015	Depression	Suicide cognition scale scores	1	0.5	1	1	0.5	1	0.86
Goldin et al. 2013	Anxiety	Negative emotion in emotional regulation	0.5	0.5	1	0.5	0	0.5	0.57
Lengacher et al. 2009	Physical health	overall concerns about recurrence	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Physical health	problems from recurrence concerns	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Anxiety	state anx	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Anxiety	trait anx	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Depression	depression (CESD)	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Physical health	life orientation	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Physical health	percived stress	1	0.5	1	1	0.5	1	0.86
Lengacher et al. 2009	Physical health	QoL - physical functioning	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - role limitations physical health	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - pain	0.5	0.5	1	1	0.5	1	0.79

Lengacher et al. 2009	Physical health	QoL - general health	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - energy	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - social functioning	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - role limitations emotionl problems	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - emotional wellbeing	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL -aggregate phy health	0.5	0.5	1	1	0.5	1	0.79
Lengacher et al. 2009	Physical health	QoL - aggregate mental health	1	0.5	1	1	0.5	1	0.86
Rosenzweig et al. 2010	Physical health	Overall psyc distress (GSI)	1	0	1	0.5	0	1	0.64
Rosenzweig et al. 2010	Physical health	Somatization	1	0	1	0.5	0	1	0.64
Rosenzweig et al. 2010	Physical health	general health	0.5	0	1	0.5	0	1	0.57
Rosenzweig et al. 2010	Physical health	Reduction in role limitations due to emotional problems	0.5	0	1	0.5	0	1	0.57
Rosenzweig et al. 2010	Physical health	Social functioning	1	0	1	0.5	0	1	0.64
Rosenzweig et al. 2010	Anxiety	Anxiety	1	0	1	0.5	0	1	0.64
Rosenzweig et al. 2010	Depression	Depression	0.5	0	1	0.5	0	1	0.57
Rosenzweig et al. 2010	Physical health	Bodily pain	0.5	0	1	0.5	0	1	0.57
Speca et al. 2000	Physical health	Total mood disturbance	1	0.5	1	0.5	1	1	0.86
Speca et al. 2000	Physical health	Stress symptoms	1	0.5	1	0.5	1	1	0.86
Kristeller & Hallett 1999	Eating disorders	BES	1	0.5	0.5	1	0	1	0.64
Kristeller & Hallett 1999	Depression	BDI	1	0.5	0.5	1	0	1	0.64
van Aalderen et al. 2011	Depression	unknown	1	0	0.5	0	1	1	0.57
Cash et al. 2015	Physical health	Pain (VAS)	1	0	0.5	0.5	0	0.5	0.43
Cash et al.	Physical	Symptom severity -	1	0	0.5	0.5	0	0.5	0.43

2015	health	Fibromyalgia Impact Qnaire							
Larouche et al. 2015	Physical health	Insomnia severity index	1	0	1	1	0	0.5	0.64
Larouche et al. 2015	Physical health	Dysfunctional beliefs and attitudes about sleep	1	0	1	1	0	0.5	0.64
Larouche et al. 2015	Physical health	Wake after sleep onset in sleep diary	0.5	0	1	1	0	0.5	0.57
Larouche et al. 2015	Physical health	Quality of sleep in sleep fiary	0.5	0	1	1	0	0.5	0.57
Larouche et al. 2015	Physical health	Sleep efficiency in sleep diary	0.5	0	1	1	0	0.5	0.57
Larouche et al. 2015	Physical health	Total wake time on sleep diary	0.5	0	1	1	0	0.5	0.57
Larouche et al. 2015	Physical health	Total sleep time on sleep diary	0.5	0	1	1	0	0.5	0.57
Salmoirago-Blotcher et al. 2013	Physical health	Sleep quality	0.5	0.5	0.5	0.5	1	1	0.64
Brewer et al. 2011	Physical health	Cigarette use	0.5	0	0.5	0.5	0	1	0.43
Brewer et al. 2011	Physical health	Point prevalence abstinence	1	0	0.5	0.5	0	1	0.50
Hou et al. 2013	Depression	Chinese centre for epidemiologic studies depression scale	1	0.5	1	0.5	0.5	1	0.79
Hou et al. 2013	Anxiety	Stait anx inventory	1	0.5	1	0.5	0.5	1	0.79
Hou et al. 2013	Anxiety	Trait anx inventory	1	0.5	1	0.5	0.5	1	0.79
Hou et al. 2013	Physical health	Self compassion scale	1	0.5	1	0.5	0.5	1	0.79
Hou et al. 2013	Mindfulness	FFMQ	1	0.5	1	0.5	0.5	1	0.79
Hou et al. 2013	Physical health	PCS	0	0.5	1	0.5	0.5	1	0.64
Hou et al. 2013	Physical health	MCS	0	0.5	1	0.5	0.5	1	0.64
Hou et al. 2013	Physical health	Perceived social support	1	0.5	1	0.5	0.5	1	0.79
Labelle et al. 2015	Physical health	calgary symptoms of stress inventory	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Physical health	profile of mood states (POMS)	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et	Physical	Functional	0.5	0.5	1	0.5	0.5	1	0.71

al. 2015	health	assessment of chronic illness therapy spiritual well-being (FACIT-Sp)							
Labelle et al. 2015	Physical health	post traumatic growth (PTGI)	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	MAAS	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	FFMQ - observe	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	FFMQ - describe	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	FFMQ - act	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	FFMQ - nonjudge	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Mindfulness	FFMQ - nonreact	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Physical health	Rumination reflection questionnaire	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Physical health	Penn State Worry questionnaire	0.5	0.5	1	0.5	0.5	1	0.71
Labelle et al. 2015	Physical health	Acceptance and action questionnaire	0.5	0.5	1	0.5	0.5	1	0.71
Hawley et al. 2013	Depression	Hamilton rating scale for depressio	1	0.5	0.5	1	0	1	0.64
Carlson et al. 2001	Physical health	profile of mood states (POMS) - total score	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - tension anxiety	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - depression	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - anger	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - vigour	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - fatigue	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	poms - concentration	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi (total)	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - peripheral manifestations	0.5	0.5	0.5	1	1	1	0.71

Carlson et al. 2001	Physical health	sosi - cardiopulmonary	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - centra neurological	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - gastrointestinal	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - muscle tension	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - habitual patterns	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - depression	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - anxiety/fear	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - emotional irritability	0.5	0.5	0.5	1	1	1	0.71
Carlson et al. 2001	Physical health	sosi - cognitive disorganisation	0.5	0.5	0.5	1	1	1	0.71
Kristeller et al. 2013	Eating disorder	Binge days per month	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	Binge eating scale	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	PFS: food available	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	PFS: food present	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	PFS: food tasted	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	Eating self-efficacy	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	TFEQ: hunger	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	TEFQ: disinhibition	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	TEFQ: cognitive restraint	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	BDI	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Depression	Rosenberg Self-esteem	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Depression	BMI	1	0.5	0.5	1	0	1	0.64
Kristeller et al. 2013	Eating disorder	Weight	1	0.5	0.5	1	0	1	0.64
Carlson et al. 2003/4	Physical health	EORTC (Cancer qual of life qnaire)	0.5	0.5	0.5	0.5	0.5	1	0.57

Carlson et al. 2003/4	Physical health	POMS TMD	0.5	0.5	0.5	0.5	0.5	1	0.57
Carlson et al. 2003/4	Physical health	SOSI	0.5	0.5	0.5	0.5	0.5	1	0.57

NB – Higher score indicates higher quality study and lower risk of bias

Table A.2: Breakdown of calculated risk of bias used when inputting each individual correlation into the meta-analysis

APPENDIX THREE: Graphs for investigating the impact of methodological differences

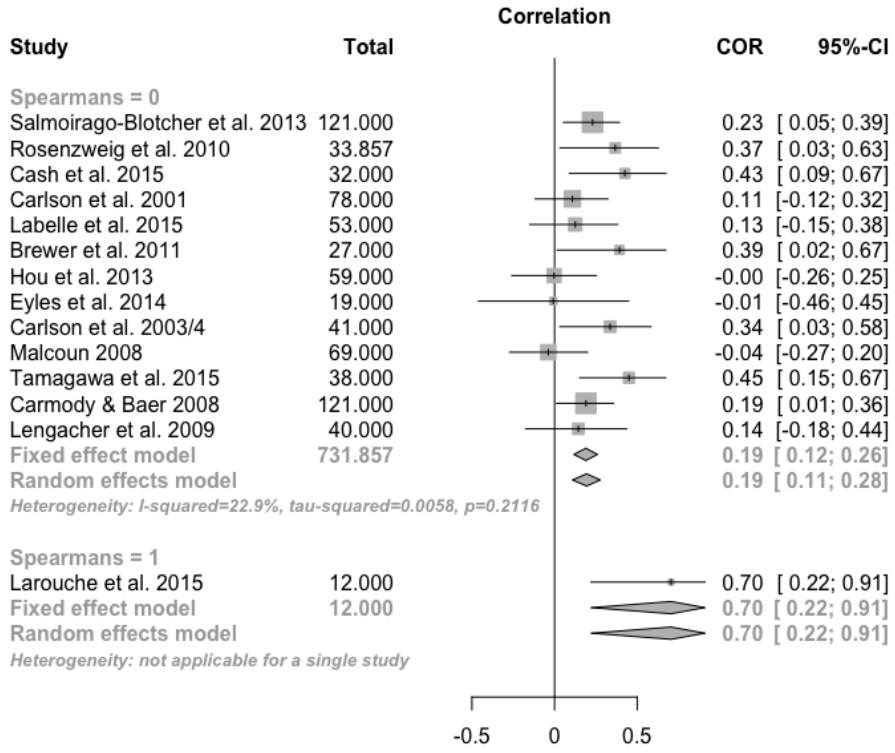


Figure A.1: Forest plot of subgroup analysis to show the influence of type of correlation coefficient on meta-analytic effect in physical health

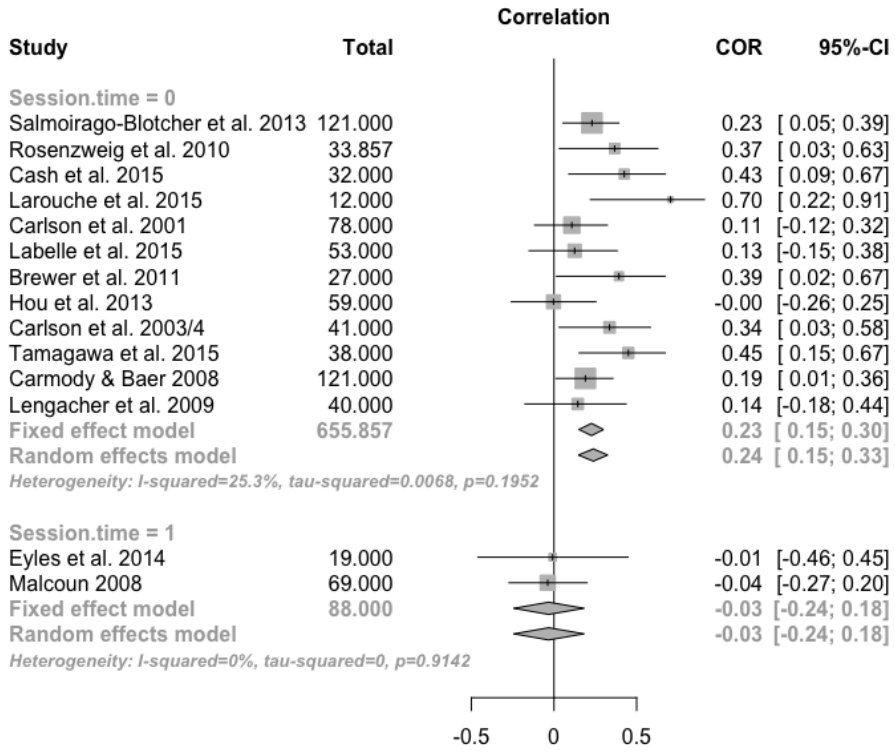


Figure A.2: Forest plot of subgroup analysis to show the influence of including session time in homework measure on meta-analytic effect in physical health

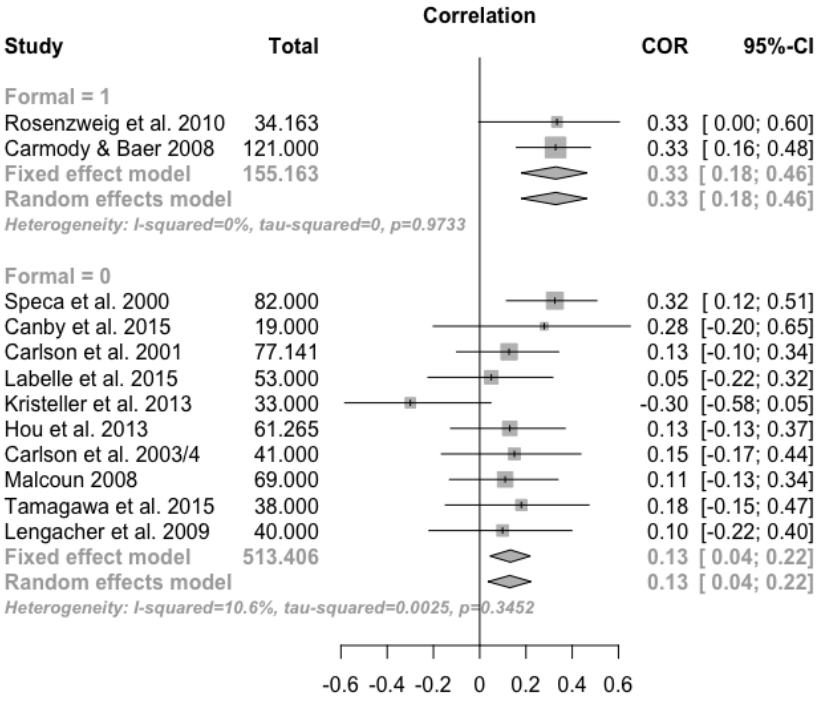


Figure A.3: Forest plot of subgroup analysis to show the influence of only measuring formal homework on meta-analytic effect in well-being

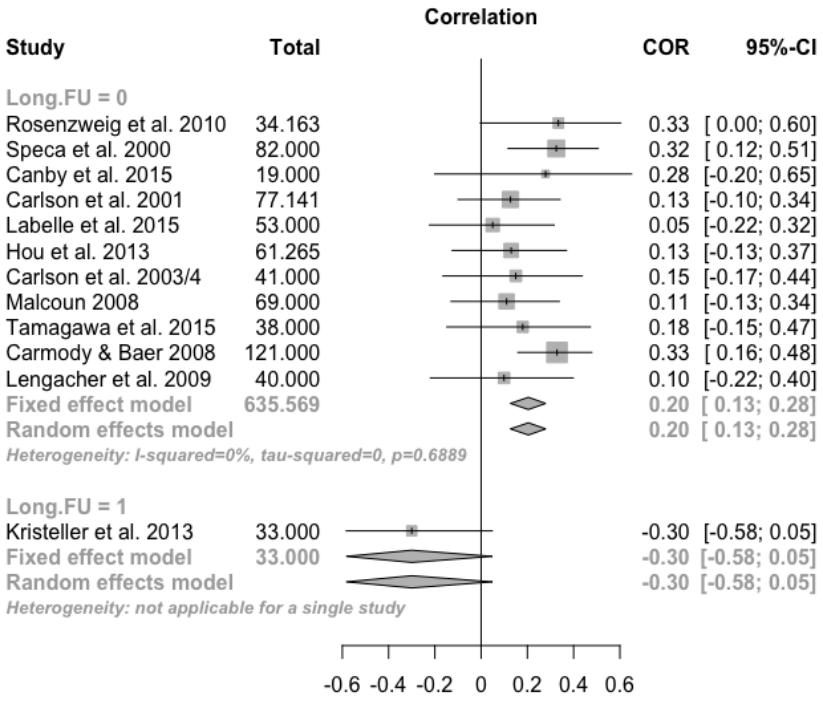


Figure A.4: Forest plot of subgroup analysis to show the influence of longer follow-up on meta-analytic effect in well-being

APPENDIX FOUR: Evidence of university ethical approval

APPENDIX FIVE: Participant Recruitment Email

I am e-mailing you to invite you to take part in a research study, designed to explore your experiences of prescribing therapeutic homework in cognitive behavioural therapy (CBT). Therapeutic homework has been found to enhance CBT efficacy, yet many therapists have reported difficulties with prescribing homework. My study aims to explore the experiences of therapists in setting therapeutic homework. The study will involve taking part in a one-off interview lasting no longer than ninety minutes to discuss your experiences of therapeutic homework. Please see the attached information sheet for a more comprehensive overview of the study. If you are interested in taking part, please feel free to contact me using the details below and I can answer any questions and we can then discuss the next stages in the process.

I look forward to hearing from any interested potential participants.

Many thanks,

APPENDIX SIX: Semi-structured interview schedule with optional prompts

1. **Tell me about the client groups that you see and the therapy that you offer**
    - What types of clients do you see?
    - What therapeutic models do you draw upon?
    - How long have you been working in this capacity?
    - *Do you think your previous experiences of delivering therapy have shaped you career to how it is today? Then how?*

2. **How does your personal approach to homework fit in with the therapy that you deliver?**
    - What is your process of setting and reviewing therapeutic homework?
    - How important is therapeutic homework?
    - Can you talk about you views around the use of homework in the context of the dynamics around it?
    - What do you think is the purpose of therapeutic homework?
    - Why do you use therapeutic homework?

3. **Do you think your range of clinical experiences have shaped your approach to using homework? If so, How?**
    - Can you tell me about a time when you found therapeutic homework worked well? Why do you think this worked well?
    - Can you tell me about a time when you found therapeutic homework has not worked well? Why do you think this happened?
    - What shapes your decisions around prescribing or using homework?
    - From your experiences, what factors have influenced how beneficial homework is (e.g. contextual factors)?
    - Does therapeutic homework influence the dynamics of the session? (Prompt – therapeutic relationship?)
    - Have you experienced a time in which something you did or felt as a therapist influenced the homework process? If so, can you tell me more about this?
    - Can you think of a time – a critical learning point/ pivotal moment in your history of using homework – it could be a clear success, or something that didn't go so well?

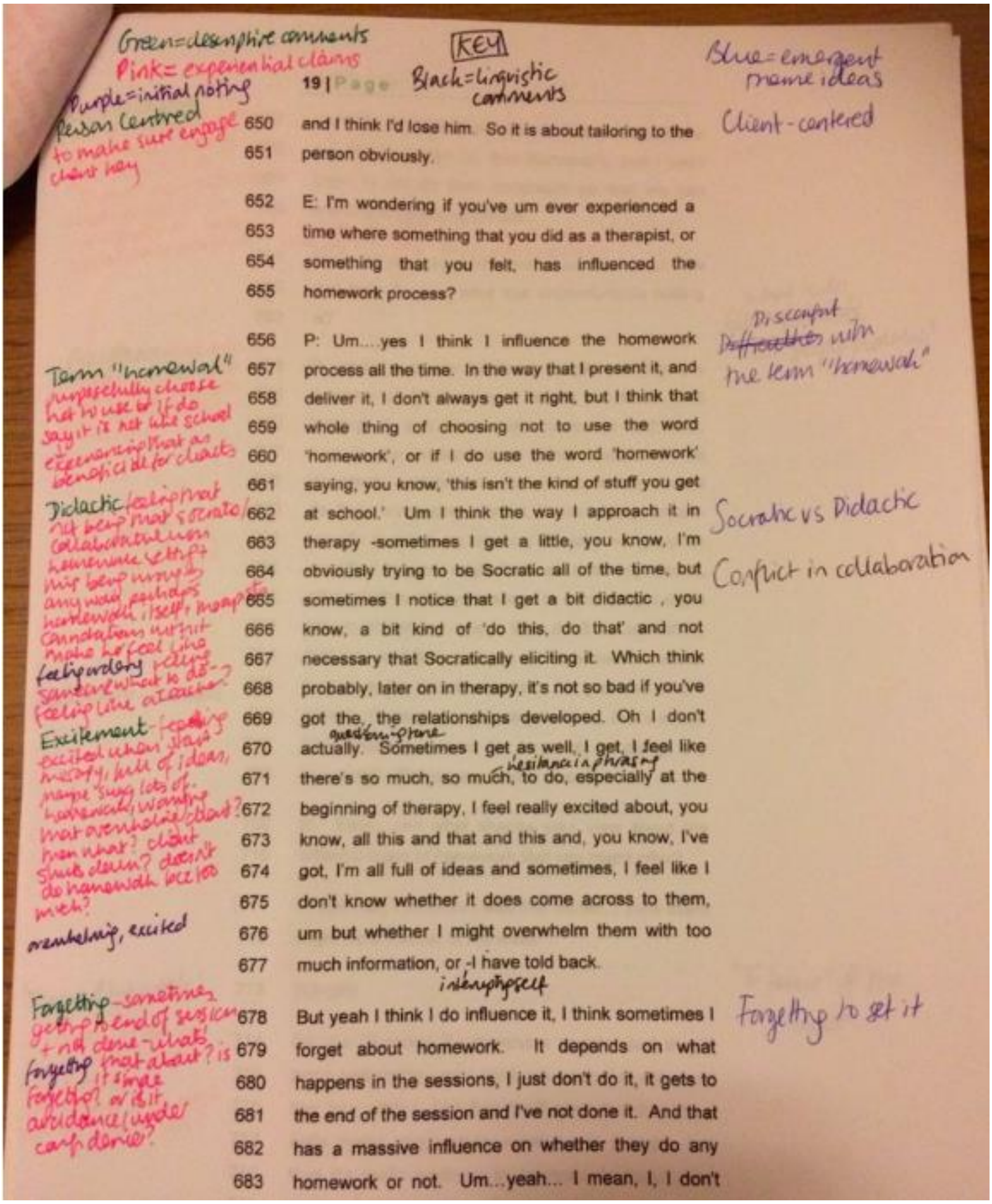
4. **What shapes your view about the different types of homework that you might offer?**
    - Thinking specifically about homework, are there any types that you particularly like prescribing? If so, why? (specific prompt if needed)

- Thinking specifically about homework, are there any types that you particularly dislike prescribing? If so, why?
- Can you tell me about an experience prescribing behavioural homework? How did that feel for you? How do you think the client found that?
- Can you tell me about an experience prescribing cognitive homework? How did that feel for you? How do you think the client found that?

5. **Where do you think the responsibility lies for homework to be beneficial?**
    - What can you tell me about the role of the therapist in the homework process?
    - What can you tell me about the role of the client in the homework process?

6. **Having had the opportunity to talk about this today, do you have any additional reflections about the way that you have been practicing, or the way you might move forward?**

APPENDIX SEVEN: Annotated example of IPA analysis



and I think I'd lose him. So it is about tailoring to the person obviously.

E: I'm wondering if you've um ever experienced a time where something that you did as a therapist, or something that you felt, has influenced the homework process?

P: Um....yes I think I influence the homework process all the time. In the way that I present it, and deliver it, I don't always get it right, but I think that whole thing of choosing not to use the word 'homework', or if I do use the word 'homework' saying, you know, 'this isn't the kind of stuff you get at school.' Um I think the way I approach it in therapy -sometimes I get a little, you know, I'm obviously trying to be Socratic all of the time, but sometimes I notice that I get a bit didactic , you know, a bit kind of 'do this, do that' and not necessary that Socratically eliciting it. Which think probably, later on in therapy, it's not so bad if you've got the, the relationships developed. Oh I don't actually. Sometimes I get as well, I get, I feel like there's so much, so much, to do, especially at the beginning of therapy, I feel really excited about, you know, all this and that and this and, you know, I've got, I'm all full of ideas and sometimes, I feel like I don't know whether it does come across to them, um but whether I might overwhelm them with too much information, or -I have told back.

But yeah I think I do influence it, I think sometimes I forget about homework. It depends on what happens in the sessions, I just don't do it, it gets to the end of the session and I've not done it. And that has a massive influence on whether they do any homework or not. Um...yeah... I mean, I, I don't