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The Impact of Imagery Rescripting on Non-Clinical Paranoia

by

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ABSTRACT

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Imagery rescripting (IR) is a transdiagnostic technique that aims to change the meaning associated with distressing memories. The literature review discusses advances in the evidence base for the efficacy of IR, optimal methods of delivering the technique and the mechanisms underlying it, published since the last review by Arntz (2012). Research has identified beneficial effects from single and multiple sessions of IR, both with and without additional cognitive restructuring, across a range of disorders. Exploration into the optimal approach to adopt when using IR, and the mechanisms underlying it, remains in its infancy. IR research is generally limited by methodological differences across studies, predominantly relying on case study designs, making it difficult to generalise findings. Overall, the literature supports the efficacy of IR as a transdiagnostic technique, however continued research is needed to explain the mechanisms underlying it and clarify the optimal method to delivering the intervention.

The empirical paper provides encouraging evidence for the impact of a single session of IR on non-clinical paranoia. A within subjects design was used with fifteen university students experiencing high levels of non-clinical paranoia. Participants attended three sessions. During the first session, participants recalled a recurrent, distressing memory, which was then rescripted in the second session. Participants attended a follow-up session one-week later. The impact of the intervention was assessed through measures of paranoia, affect and the self, taken at each session. Results revealed reductions in paranoia, negative affect and negative core beliefs about the self, alongside improvements in self-esteem and positive affect following IR. The impact of memory intrusions, strength of encapsulated belief, memory related distress and the emotional impact of the memory targeted were also reduced following the intervention. Effects were either further reduced or maintained at follow-up. Limitations and clinical and theoretical implications of these findings are discussed.

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Declaration of Authorship

I, Pamela McSherry, declare that this thesis entitled "The impact of imagery rescripting on non-clinical paranoia" and the work presented in it are my own and have been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signed:……

Date:……

Acknowledgements

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Finally, my thanks as ever to my husband Mark for your continued support.

Chapter 1: Literature Review

Imagery Rescripting as a Therapeutic Technique: Advances in Clinical Outcome and Experimental Research

Images are mental representations of an object, place or event that occur without the need for external sensory input (Stopa, 2009a). Images can occur in a variety of ways, ranging from the experience of intrusively recalled memories to deliberately produced prospective images of possible future events. Although predominantly a visual experience, images can also involve other sensory modalities such as bodily sensations (Somerville, Cooper & Hackmann, 2007), and auditory and olfactory elements (Price, Veale, & Brewin, 2012). Mental imagery is implicated in the formation and maintenance of many psychological difficulties. As imagery is also known to have a greater impact on emotion than verbal thoughts, therapeutic work using imagery techniques is developing within cognitive therapy.

There are many ways in which images are proposed to impact upon emotion. Lang (1979) initially proposed a link between imagery and emotion in his bio-informational theory. This theory suggests that when an image includes information about associated sensory arousal, for example, experiencing an increased heart rate, it evokes particularly strong emotions. Neurobiological research into fear conditioning supports this theory as sensory cues can rapidly elicit lower order processing responses in the brains emotion regulation system, such as the amygdala, in line with our evolutionary response to danger (LeDoux, 2000). This is not a universal response, however, as there is evidence of individual variation in the extent of activation of the amygdala to fear-related stimuli that is affected by higher order processing such as attentional control (Mathews, Yiend, & Lawrence, 2004). Despite these individual differences, mental images may therefore evoke strong emotions by directly influencing the emotion systems of the brain that respond to specific sensory signals.

Imagery may also impact emotion due to the link between imagery and perception. Neuro-imaging studies have shown that these two processes share similar neural mechanisms as they activate similar areas of the brain (Ganis, Thompson, & Kosslyn, 2004). They are also considered to draw on similar cognitive resources, as there is evidence of competition between the two processes when they receive information from the same sense; for example, the

vividness of an image is reduced when an individual performs a visuospatial task at the same time as holding an image in mind (Baddeley & Andrade, 2000). Studies investigating the recollected qualities of autobiographical memories, such as emotion and vividness, have also highlighted how emotional memories are associated with greater activity in the hippocampal brain region (Addis, Moscovitch, Crawley & McAndrews, 2004), again potentially reflecting the influence of the amygdala on memory retrieval (Dolcos, Labar, & Cabeza, 2005). When images are experienced, they may therefore be being interpreted as similar to real-life emotional events due to the overlapping activation of many of the same brain systems.

Imagery may also connect with specific episodes from autobiographical memory and reactivate similar emotional states to those experienced at the time of the event. Neuro-imaging studies have found that remembering and imagining personal events activates the same brain regions (Addis, Wong & Schacter, 2007) and it is hypothesised that if images draw on the information contained in autobiographical memories, such as the emotions experienced at the time, then the constructed image will likely evoke the same emotional response (Holmes & Mathews, 2010). In fact Conway and Pleydell-Pearce (2000) propose that emotionally salient memories may actually be stored in memory in a form similar to an image. When a new image is constructed based on this memory, it will therefore likely contain emotionally salient elements of the original memory representation. These studies suggest that imagery may also impact on emotion by enabling connection with the original feelings associated with the memory and re-experiencing them through the reconstructed image of the memory.

Imagery based interventions within cognitive therapy are primarily aimed at challenging the beliefs and assumptions associated with negative imagery and transforming them into a more positive experience for the individual (Hackmann, Bennett-Levy, & Holmes, 2011). Several therapeutic techniques have been developed that aim to evoke and subsequently modify the emotion associated with intrusive mental images in order to reduce distress. Imaginal exposure (Foa, Steketee, Turner & Fischer, 1980) and systematic desensitisation (Wolpe, 1958), for example, are well-established techniques used to treat a range of fear – responses, such as phobias. In this technique individuals are asked to vividly

imagine a feared object or outcome in detail until their associated fear begins to reduce. These techniques are hypothesised to work through extinction of the automatic activation of a 'fear module' within the amygdala (Ohman & Mineka, 2001). Exposure therapy such as this can be a lengthy process however as it has to be completed in a range of different contexts so that the individual learns that the fear response will no longer be triggered in a variety of situations (Arntz, 2012).

Prolonged exposure (PE; Foa, Rothbaum, Riggs & Murdock, 1991) is a similar imagery technique that is often used within trauma-focused cognitive behavioural therapy (CBT). PE incorporates imaginal exposure to the trauma memory with *in vivo* exposure to trauma triggers, such as the sights or sounds that commonly increase arousal or trigger flashbacks to the trauma. PE is often used in the treatment of PTSD (Rothbaum, Meadows, Resick & Foy, 2000) and is proposed to work by first activating the fear memory before feeding new information into the fear structure and facilitating emotional processing of the event (Foa & Kozak, 1986). PE has been found to be as effective as Eye Movement Desensitisation and Reprocessing Therapy (EMDR; Shapiro 1996) in the treatment of PTSD (Rothbaum, Astin & Marstellar, 2005) however PE is an emotionally demanding intervention with significant drop out and failure rates (Grunert, Smucker, Weis & Rusch, 2003).

EMDR, although evidenced for use with PTSD (see Bisson & Andrew 2007 for a review) remains unclear in its theoretical foundation. The therapy involves the individual making therapist led bilateral eye movements (although hand-tapping and audio stimulation may also be used) while they imagine a traumatic experience. Similar to other imagery-based techniques the therapy is proposed to work by initially facilitating access to the trauma memory network whereby enhanced information processing can occur by forming new associations between the traumatic memory and new information available (Shapiro, 1995, 2001). It is hypothesised that the bilateral eye movements act as a concurrent visuo-spatial task, thus providing competition for resources within the trauma image (Andrade, Kavanagh, & Baddeley, 1997). This "imagery competition" may therefore reduce the vividness of the image and intensity of the associated distress (Baddeley & Andrade, 2000).

Increasing attention is also being given to the development of imagery interventions that aim to create positive images independently of first activating a negative image. Within compassionate mind training (CMT; Gilbert, 2005, 2009; Lee, 2005) for example, one of the main interventions is the construction of an image of the ideal qualities of compassion (Lee, 2005). This image is then designed to act as an ever-present reminder for individuals to show compassion towards themselves, with the eventual aim of the image becoming internalized. Advances in computerized training have also led to the development of cognitive bias modification training (Koster, Fox, & MacLeod, 2009; MacLeod, Koster, & Fox, 2009); in which participants are trained to focus on developing more positively biased outcomes to ambiguous situations. The training aims to positively impact the automatic interpretations people make of novel situations and has shown that using positive imagery rather than verbal processing, to resolve situations, had a more positive impact on emotion (Holmes, Mathews, Dalgleish & Mackintosh, 2006). It is hypothesized that training in positive imagery may lead to a more adaptive positive response to novel situations in every day life, however research into this area is just developing and therefore conclusions about the efficacy of this technique cannot yet be drawn.

Although effective in reducing fear and anxiety, exposure-based therapies such as those discussed are unlikely to be helpful in reducing other trauma related emotions such as shame, as they do not directly target meanings about the self often embedded within memories (Stopa, 2009a). Imagery Rescripting however, is a set of therapeutic imagery techniques that primarily aims to update the meaning of a distressing memory by incorporating new perspectives of the event, thereby facilitating change in the negative view of self associated with that memory (Stopa, 2009b). The technique has been in existence for many thousands of years (Edwards & Arntz, 2012); however, the seminal work by Arntz and Weertman (1999) and Smucker and Dancu (1999) into distressing childhood memories has established its place in the scientific community.

IR is primarily an experiential technique (Arntz & Weertman, 1999) that is thought to provide more direct access to core schemas than verbal techniques (Edwards, 1990; Layden, Newman, Freeman, & Morse, 1993). IR begins with imaginal exposure during which individuals visualise a specific autobiographical memory in the present tense. It has been suggested that reliving the event in this

way enables the emergence of dominant schemas, making them more accessible to change (Arntz & Weertman, 1999). The memory is then rescripted, by imagining intervening in some way, to bring about a more positive outcome.

The evidence base for the use of IR is not extensive. The technique has proven to be effective in the treatment of a range of psychological disorders, such as posttraumatic stress disorder (e.g. Arntz, Tiesema & Kindt, 2007), social phobia (e.g. Wild, Hackmann & Clark, 2008), simple phobia (e.g. Hunt & Fenton, 2007), depression (Brewin et al., 2009), bulimia nervosa (Ohanian, 2002), cancer (Whitaker, Brewin, & Watson, 2010) and personality disorder (e.g. Weertman & Arntz, 2007). These studies are methodologically limited however as few of them used randomised designs or compared IR with established treatment techniques for disorders.

IR is also a core component of many treatment protocols such as schema-based therapy for borderline personality disorder (Giensen-Bloo, et al., 2006) and imagery rehearsal therapies (IRT; Krakow et al., 2001). IRT's are among the most evidence-based interventions for posttraumatic nightmares and there are several IR intervention protocols that incorporate this approach, such as Exposure Relaxation and Rescripting Therapy (ERRT; Davis & Wright, 2006) and Imagery Rehearsal and Exposure Therapy (Long et al., 2011). Most recently, Accelerated Resolution Therapy (ART; Kip et al., 2013) has incorporated IR with imaginal exposure, alongside the use of bilateral eye movements, for the treatment of combat-related PTSD.

While the growing evidence base for IR, as a means of alleviating distress is promising, little research has focused on the mechanisms of change or on its theoretical underpinnings. Arntz and colleagues (Arntz & Weertman, 1999; Arntz, 2012) have suggested that IR directly changes the meaning associated with an unconditioned stimulus (US), known as US-revaluation. This theory is based on neurobiological research into memory reconsolidation that proposes fear memories can be changed (e.g. Strange, Kroes, Fan, & Dolan, 2010; Soeter & Kindt, 2011). Arntz (2012) suggests that IR may psychologically modify the fear memory, enabling it to be reconsolidated with a different meaning, thereby reducing the original fear response and subsequent memory vividness and distress. The evidence for this theory however, is only supported by two

published studies, using non-clinical samples, in laboratory based experiments (Hagenaars & Arntz, 2012; Dibbets, Poort, & Arntz, 2012).

Brewin (2006) has suggested a different explanation for the effectiveness of IR based on memory retrieval competition. He argues that at any given time individuals have multiple memories involving representations of the self that constantly compete for retrieval. During IR, alternative representations of a negative autobiographical memory are deliberately created, which are accompanied by more positive emotions. When the original memory is then triggered, this new positive self-representation competes with and potentially reduces the accessibility of, the original negative self-representation thereby reducing the emotional impact of the memory. There is one unpublished dissertation that is consistent with this proposal by Cili, Pettit and Stopa (2016), who found that IR led to reappraisals of an aversive memory, which were less influential on the participants' sense of self than the pre-IR appraisals.

Arntz first reviewed the evidence base for IR in 2012. In this review he discussed clinical trials and basic studies that assessed the efficacy of IR and possible processes underlying the technique. Arntz concluded that IR was a transdiagnostic technique that was at least, or more, effective than exposure alone for a range of disorders. He also highlighted the limited research into the mechanisms underlying IR. Importantly, Arntz outlined a research agenda for IR, and it is advances made in this agenda that the current review aims to highlight. He emphasised the need for controlled studies, investigating IR as a standalone intervention, compared with alternative treatment approaches, and the long-term effects of these interventions. Furthermore he emphasised a need to dismantle IR into separate components, investigate the mechanisms of change within the technique, and evaluate the optimal approach to take with IR.

Although only four years have passed since this review was published, clinical interest in the use of IR has burgeoned and recent advances in the literature suggest that it is timely and useful to evaluate progress against the criteria that Arntz suggested in his 2012 review. As this review aims to focus on the use of IR, as a standalone technique, independent from established protocols, intervention using IRT were excluded from the current review.

Aims of the Literature Review

This review discusses advances in the field of IR since the last review of the literature by Arntz in 2012. It aims to evaluate and synthesise the current evidence base for IR, to answer the following key questions:

1. What advances have been made in the use of IR as a transdiagnostic technique?
2. What is the optimal delivery approach with IR?
3. What are the mechanisms of change underlying IR?

Method

Search Strategy

Three electronic databases, Web of Science, PsycINFO and Pubmed were used to conduct a systematic search of the literature. As the last review was conducted in 2012, the titles and abstracts of papers published between 2012 and April 2016 were initially reviewed for eligibility. The search terms used were "image* rescript*". The literature retrieved was then scrutinised according to predetermined inclusion and exclusion criteria detailed below. A manual search of the reference lists of included papers was also conducted, although no additional papers were identified.

Inclusion and Exclusion Criteria

Articles were included in the review if they were empirical papers written in the English language and published in peer-reviewed journals, with a primary focus on the clinical application of IR as an intervention technique. Articles focusing on IRTs were excluded, as were non-empirical papers, including theoretical, discussion or review papers. Book chapters and duplications were also excluded.

Data Synthesis and Extraction

The initial search returned 110 papers and after removing duplications, book chapters and an off-topic article from another discipline, 45 abstracts were screened for eligibility. Of these abstracts, a further eight papers were removed as they focused on IRTs, six were not empirical and two further papers had been included in the original review paper that was also excluded from the search. Full-text articles of the remaining 28 papers were then reviewed and a further ten papers were removed as they did not primarily focus on IR as an intervention technique. Although the scientific quality of the included studies was not formally assessed, PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman,

2009) were consulted prior to conducting the review. These guidelines informed the researcher's informal rating of studies in terms of key characteristics such as the presence of clearly focused research questions, the appropriate use of study designs and analysis and the use of standardised measures to test hypotheses. A flowchart illustrating this selection process is presented in Figure 1.

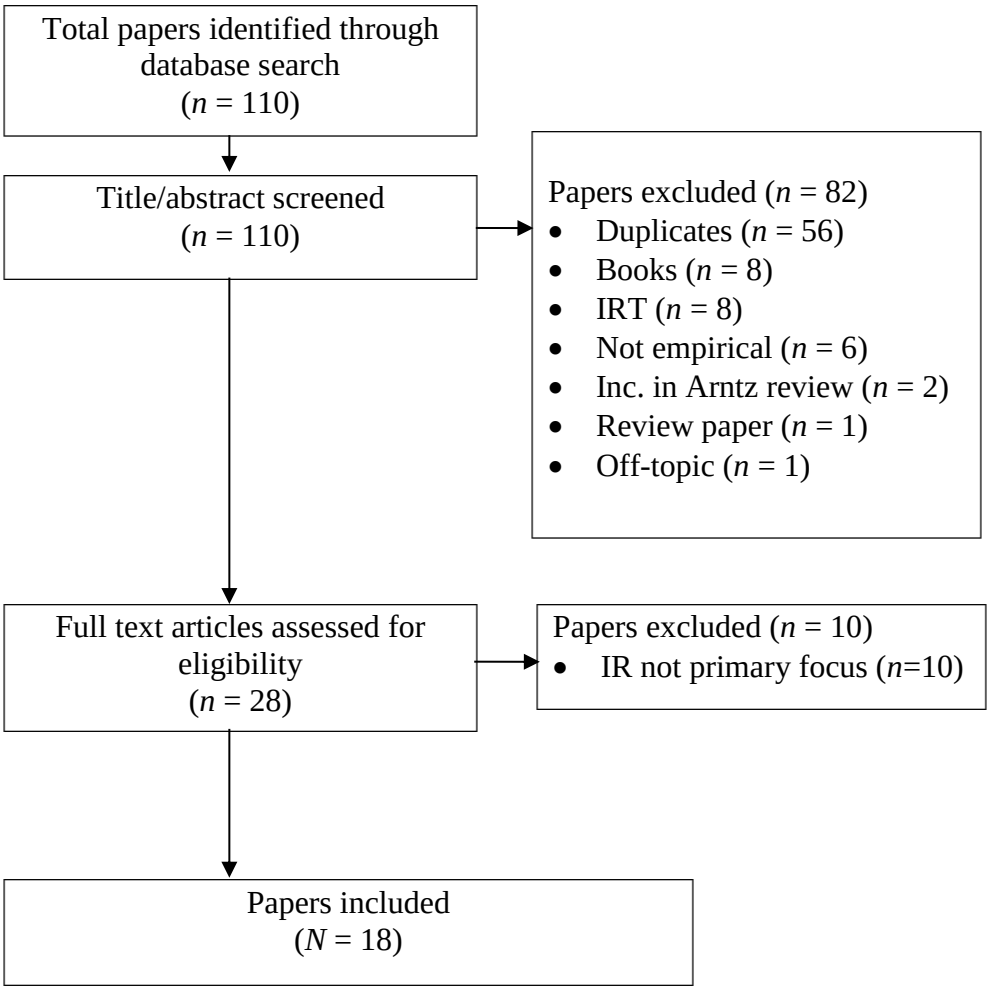

Figure 1: Literature Search Selection Process

Results

Summary of Methodologies

Eighteen studies were included in the review. Five utilised a single case series design (Ison, Medoro, Keen, & Kuipers, 2014; Frets, Kevenaar, & van der Heiden, 2014; Pajak & Kamboj, 2014; Raabe, Ehring, Marquenie, Olff, & Kindt, 2015; Ritter & Stangier, 2016), four an experimental design (Philips & Samson, 2012; Reimer & Moscovitch, 2015; Watson, Rapee, & Todorov, 2015; Norton & Abbott, 2016) and three an experimental analogue trauma induction (Hagenaars,

2012; Seebauer, FroB, Dubaschny, Schonberger, & Jacob, 2014; Dibbets & Arntz, 2016). The remaining six studies comprised a randomised single experimental intervention (Nilsson, Lundh, & Viborg, 2012), multiple baseline case series (Arntz, Sofi, & van Breukelen, 2013), randomised controlled trial (RCT; Lee & Kwon, 2013), phenomenological case study (Padmanabhanunni & Edwards, 2014), single case experimental design (Veale, Page, Woodward, & Salkovskis, 2015) and a multiple baseline single case experimental (Willson, Veale, & Freeston, 2016). The key characteristics, findings and comments on some limitations of these papers are detailed in Table 1.

Table 1
Key characteristics of included studies

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Hagenaars (2012)	Replication of the beneficial effects of IR over imagery re-experiencing (IRE) and exploration of the impact of anxiety on manipulations	Experimental analogue trauma induction	Non-clinical (N = 73)	Structured Clinical Interview for DSM-IV (SCID-I) Thought Control Questionnaire (TCQ) Daily Record Diary	More intrusive thoughts and images following IRE than IR (p = .002; η^2 = .12); anxiety symptoms in IRE led to increased intrusive images (p = .003; η^2 = .13)	Lacks ecological validity Impact of film and intervention both assessed by subjective ratings
Philips & Samson (2012)	Assess the impact of IR on emotions, appraisals and pain experience in pain sufferers	Experimental	Clinical (N = 55)	Hospital Anxiety and Depression Scale (HADS) Pain Self Perception Scale (PSPS) PTSD checklist (PCL-C)	Reductions in negative emotions, pain and appraisals (all ps < .001)	Only assessed immediate effects of IR

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Nilsson, Lundh, & Viborg (2012)	Examine the effects of IR, without cognitive restructuring, on social anxiety disorder	Experimental between-groups	Clinical (N = 14)	Fear of Negative Evaluation (FNE) Social Interaction Anxiety Scale (SIAS) Beck Depression Inventory (BDI)	Reduced symptoms on FNE (p = .03; d = 1.18); SIAS (p = .03; d = .63)	Control condition not matched for exposure to trauma memory No measure of behaviour change
Arntz, Sofi, & van Breukelen (2013)	Examine the effectiveness of IR for complicated war-related PTSD in refugees	Concurrent multiple baseline	Clinical (N = 10)	Structured Clinical Interview for DSM-IV (SCID-I) Posttraumatic Symptoms Scale (PSS) Beck Depression Inventory (BDI)	Reductions in PSS scores (p < .001; d = 2.87) and BDI (p = .001; d = 1.27)	Small case series Therapist and patient not blind to treatment

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Frets, Kevenaar, & van der Heiden (2014)	Evaluate the application of IR as a standalone treatment for social phobia	Single case series	Clinical (*N* = 6)	Social Interaction Anxiety Scale (SIAS) Social Phobia Scale (SPS) Anxiety Avoidance Scale (AVS) Social Phobia Subscale of the Dutch Social Phobia Anxiety Inventory (SPAI-N) Brief Fear of Negative Evaluations Scale (BFNE) Beck Anxiety Inventory (BAI)	Reductions in symptoms of social anxiety; largely maintained at six month follow-up	Small case series Reliance on self-report measures No assessment of behaviour change
Ison, Medoro, Keen, & Kuipers (2014)	Explore use of imagery rescripting with people with psychosis who experience intrusive images	Single case series	Clinical (*N* = 4)	Psychotic Symptom Rating Scales for Hallucinations and Delusions (PSYRATS) Voice Power Differential Scale Depression Anxiety Stress Scale (DASS) Brief Core Schema Scale (BCSS) PTSD Scale	Reductions in distress, negative affect, encapsulated belief, frequency of image intrusions and an increase in control; maintained at follow-up.	Small case series No control group

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Lee & Kwon (2013)	Examine efficacy of IR as a stand alone treatment for social phobia	Randomised controlled trial	Clinical (N = 23)	Social Avoidance and Distress Scale (SADS) Fear of Negative Evaluation Scale (FNE) Liebowitz Social Anxiety Scale (LSAS) Questionnaire Mental Imagery (short-SQMI) Traumatic Experience Scale	Improvements in SADS (p < .001; d = 1.53); BFNE (p < .001; d = 1.61); LSAS-fear (p < .01; d = .56) LSAS-avoidance (p <. 001; d = 1.15); maintained at follow-up	Severity of SAD assessed using self report measures Lack of IR adherence check
Padmanabhanunni & Edwards (2014)	A phenomenological exploration of the therapeutic impact of imagery	Systematic case study	Clinical (N = 1)	Posttraumatic Diagnostic Scale (PDS)-Part 3 Beck Anxiety Inventory Beck Depression Inventory Young Schema Questionnaire (YSQ-3)	Reductions in PTSD, anxiety and depression	Case study design IR delivered within cognitive therapy

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Pajak & Kamboj (2014)	Explore the impact of a single session of IR on distressing memories related to bowel/bladder-control anxiety	Single case series	Clinical (N = 3)	Credibility Expectancy Questionnaire (CEQ) Structured Clinical Interview for DSM-IV (SCID-I) Impact of Events Scale Revised (IES-R) Beck Depression Inventory (BDI) Beck Anxiety Inventory (BAI) Difficulties in Emotion Regulation Scale (DERS)	Reductions in distress, anxiety, shame and belief strength of belief	Small case series Brief follow up period
Seebauer, FroB, Dubaschny, Schonberger, & Jacob (2014)	Explore the impact of revenge fantasies within IR	Experimental analogue trauma induction	Non-clinical (N = 46)	SCL-K9 (9-item version of SCL-90) State Trait Anger Expression Inventory (STAXI) Spontaneous Use of Imagery Scale (SUIS)	Safe place decreased anger more than IR with violence (p = .011) and without (p = .03); also increased relaxation more than IR with violence (p < .001) and without (p < .001)	Lacks ecological validity Behavioural measures of aggression not assessed Lacks neutral control condition

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Raabe, Ehring, Marquenie, Olff, & Kindt (2015)	Explore the efficacy of IR as a standalone treatment for PTSD related to childhood abuse	Single case series	Clinical (N = 8)	Clinician administered PTSD Scale (CAPS) Impact of Event Scale-Revised (IES-R) Beck Depression & Anxiety Inventories (BDI/BAI) Difficulties in Emotion Regulation Scale (DERS) Inventory of Interpersonal Problems-32 (IIP-32)	Reductions in scores pre-treatment to follow-up on: CAPS (p = .01; d = 1.80); IES-R Intrusions (p = .02; d = 1.32) and Avoidance (p = .001; d = 1.47)	Small case series Strict exclusion criteria Lack of control group Intensive twice weekly sessions Only completers data obtained Lack of IR adherence check
Reimer & Moscovitch (2015)	Examine efficacy of IR, without CR, in Social Anxiety Disorder (SAD) and examine specific changes in autobiographical memory appraisals	Experimental	Non-clinical but clinical diagnosis (N = 25)	Social Phobia Inventory (SPIN) Liebowitz Social Anxiety Scale – Self Report Version (LSAS-SR) Depression Anxiety Stress Scales (DASS)	Reductions in SAD symptoms (SPIN p = .05; d = .86); more positive (p = .007; d = 1.26) and less negative (p < .001; d = 1.94) appraisals of autobiographical memories	Non treatment seeking sample Reliance on self report data Follow-up data completed online without any prior recall of the memory

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Veale, Page, Woodward, & Salkovskis (2015)	Investigate the use of IR with individuals with Obsessive Compulsive Disorder (OCD)	Single case experimental design	Clinical (*N* = 12)	Yale-Brown Obsessive Compulsive Scale (Y-BOCS) Obsessive Compulsive Inventory (OCI) Responsibility Interpretations Questionnaire (RIQ) Beck Depression Inventory (BDI) Beck Anxiety Inventory (BAI)	Clinically significant changes in mean scores baseline to follow-up: Y-BOCS (24.1 to 10.7; *d* = 1.90) OCI (57.0 to 34.1; *d* = .80) RIQ (1077.1 to 687.9; *d* = .90) BAI (21.3 to 11.3; *d* = .70) BDI (22.6 to 15.4; *d* = .40)	Selected cases Therapist also conducted YBOCS
Watson, Rapee, & Todorov (2015)	Evaluate the impact of imagining forgiveness, avoidance or revenge responses during IR	Experimental	Non-clinical (*N* = 135)	Depression Anxiety Stress Scales (DASS-21) Positive and Negative Affect Schedule (PANAS)	Reductions in negative affect when either avoidance ($p \leq .001$; *d* = .90) or forgiveness ($p \leq .001$; *d* = .80) described during IR, but not revenge.	Only immediate impact of IR assessed Guided imagery

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Dibbets & Arntz (2016)	Examine if it is necessary to incorporate centrally aversive parts of a memory during IR	Experimental analogue trauma induction	Non-clinical (N = 100)	Jellinek-PTSD Screening Questionnaire (JPSQ) Self-Assessment Manikin (SAM) Intrusion Diary	Reduced intrusion frequency (p < .05) and vividness (p < .05) following IR incorporating most aversive scene	Lacks ecological validity Brief time between the traumatic experience and intervention
Norton & Abbott (2016)	Examine the efficacy of IR compared with cognitive restructuring for social anxiety disorder	Repeated measures randomised controlled	Non-clinical but clinical diagnosis (N = 60)	Anxiety Disorders Interview Schedule (ADIS-IV) Brief Fear of Negative Evaluation Scale (B-FNE) DASS-Depression Subscale (DASS-21-D) Performance Questionnaire (PQ) Probability and Consequences Questionnaire (PCQ) Self Beliefs Related to Social Anxiety Scale (SBSA) Daily Recording Card	Both IR and CR equally efficacious interventions; SIAS: IR (p < .01; d = 1.70); CR (p < .01; d = 1.46) B-FNE: IR (p = .01; d = 1.24); CR (p < .01; d = 1.60) Reductions in depression following CR only (p < .01; d = 1.50)	Non treatment seeking sample Brief follow-up period

Authors	Aims	Design	Sample	Measures	Key findings	Comments
Ritter & Stangier (2016)	Examine the use and efficacy of IR in Body Dysmorphic Disorder (BDD)	Single case series A-B design	Clinical (N = 6)	Structured Clinical Interview for DSM-IV (SCID-IV) Body Dysmorphic Disorder Diagnostic Module (BDDDM) Obsessive Compulsive Scale for Body Dysmorphic Disorder (BDD-YBOCS) Body Dysmorphic Symptoms Inventory (FKS) Beck Depression Inventory (BDI)	Reduced BDD-YBOCS scores (p < .001; d = 9.45); Reduced FKS scores after IR (p <. 01; d = 1.56) and follow-up (p < .001; d = 2.39); Reduced BDI scores at follow-up (p < .05; d = .52);	Small case series Lack of control group Brief follow-up period
Willson, Veale, & Freeston (2016)	Evaluation of IR as a brief standalone intervention for Body Dsymorphic Disorder	Multiple-baseline single-case experimental	Clinical (N = 6)	Body Dysmorphic Disorder (BDD-YBOCS) Beck Depression Inventory (BDI) Daily Record Sheet	Reduced appearance-related checking behaviours (p < .001); Reliable improvement BDI (>9 points)	No IR adherence check Previous cognitive behaviour therapy (CBT) treatment for three treatment responders

The following discussion of the current evidence base is organised first around research conducted into the treatment of specific clinical disorders, and second by a review of studies that have specifically investigated aspects of the rescript itself.

Clinical Intervention Studies

Arntz (2012) reviewed the efficacy of IR for the treatment of social anxiety, posttraumatic stress and obsessive-compulsive disorders and the current review has identified advanced research in these areas. The technique has also now been expanded for use with body dysmorphic disorder, bowel/bladder control anxiety, pain and psychosis, adding to the evidence base for IR as a transdiagnostic technique. The evidence for each of these disorders is individually discussed in terms of the efficacy of IR, the optimal approach to intervention and the proposed mechanisms of change within the technique.

Social Anxiety Disorder (SAD). Socially anxious individuals are often concerned with how they appear to others and have negatively biased expectations of their performance in social situations. Research into the role of imagery within SAD found that most individuals experience spontaneous negative images of themselves (Hackmann, Surawy, & Clark, 1998). These images tend to be recurrent and associated with memories of distressing experiences related to the origins of the disorder (Hackmann, Clark, & McManus, 2000). IR may therefore be useful in enabling socially anxious individuals to re-evaluate the memories of aversive events that led to the development of SAD.

There were three studies investigating the use of IR with social anxiety identified in Arntz's (2012) review. The research suggested that IR effectively reduced the distress and negative beliefs associated with early traumatic memories in addition to improving SAD difficulties. All three studies were limited by their use of IR in combination with cognitive restructuring (CR), which does not allow for the independent effects of each component to be distinguished. Five studies published since then have examined the impact of IR in social anxiety, four of which assessed its potential as a standalone intervention for the disorder. Four studies reviewed have investigated the use of IR, in the absence of CR, while one combined the two components.

The strongest evidence for the efficacy of IR as a standalone intervention for social anxiety comes from Lee and Kwon's (2013) randomised control trial (RCT). It is the only reviewed study within this disorder to combine IR and CR. They found that two sessions of IR yielded improvements in symptoms of social phobia and reduced the distress associated with images and memories, the vividness of the image and strength in meaning associated with the memory, in comparison with controls, who received supportive therapy. The effects were maintained at three-month follow-up and the authors suggest the long-term efficacy of the intervention is due to the addition of CR, which they argue enhanced the therapeutic effects of IR, although this was not formally tested. Neither imagery ability nor trauma severity moderated the impact of IR in the study. Although promising, the combined use of CR with IR does not allow for the independent effects of each component to be distinguished in this study.

Four studies examining the efficacy of IR, in the absence of CR, all reported improvements in SAD difficulties. Nilsson and et al. (2012) found greater reductions in SAD difficulties, memory distress and the distress associated with spontaneously occurring images directly following a single session of IR, in comparison to controls, who completed a reading task. The effects were maintained at one-week follow-up and memory distress had continued to reduce in the week following IR. Nilsson et al. suggest that continued distress reduction may occur as a result of further spontaneous reappraisals about the memory, based on the new information elicited through the rescript. Despite the absence of CR, effect sizes in this study were large (.63 – 1.38) and comparable to those reported in an earlier study by Wild et al. (2008) that combined the two components. In line with this earlier study, Nilsson et al. posit that IR may work through the processing of traumatic events, in a concrete manner, leading to emotional reappraisals of their meaning. These authors did not assess IR as a standalone intervention, and while they argue that IR can be powerful, they do not recommend it as an intervention in itself. Instead, they suggest that it should be used as a possible adjunct to current treatment protocols.

In contrast, Frets et al. (2014) have suggested that IR is a viable standalone intervention for social anxiety. By comparison to other studies reviewed in this area, participants in this case series intervention completed between five and 17 sessions of IR. All participants reported improved outcomes

on a range of social anxiety difficulties, such as interaction and performance anxiety, relative to pre-treatment baseline. These effects were largely maintained at six-month follow-up. Although these results are encouraging, this study did not employ an active control group, and therefore it is difficult to conclusively comment on the efficacy of the intervention as a standalone intervention.

Single-session IR, without CR, has also led to altered appraisals of negative autobiographical memories and reduced negative core beliefs about the self and others. Reimer and Moscovitch (2015) studied twenty-five university students with a diagnosis of SAD and concluded that IR alone might effectively impact upon cognitions in this disorder. Effect sizes in this study were also large (.86 – 1.94) and clinically significant change was observed. At one-week follow-up however, only 23% of participants had recovered from SAD, suggesting that although beneficial, a single session was not sufficient to achieve remission from the disorder.

One reviewed study dismantled the components of IR, and assessed the individual benefits of IR and CR as standalone interventions for SAD. Norton and Abbott (2016) found that single sessions of both techniques yielded significantly greater reductions in social interaction anxiety compared with controls. Both techniques facilitated more accurate appraisals of social performance during an impromptu speech task, although reductions in imagery vividness and distress were only observed following IR. Similar to the findings of Reimer and Moscovitch (2015), all participants remained in the clinical range for both SAD and depression at one-week follow-up however. The authors suggest that preparatory work focusing on CR may be necessary to enhance the impact of IR, however they did not formally assess this. These findings add to the suggestion that while IR may benefit individuals with SAD, a single session intervention is not sufficient to fully alleviate difficulties.

Taken together, the five studies reviewed provide consistent support for the efficacy of IR with individuals with social anxiety. They advance the previous review by evidencing the efficacy of IR for this disorder in the absence of CR. They raise questions, however, about the optimal approach to delivering IR, as the studies reviewed used between one and 17 treatment sessions, and one combined IR with CR. Two of the studies suggest that CR might enhance the impact of IR, although this was not tested. This would be important for future

research to elucidate, by comparing the effects of IR with CR, and IR without CR on difficulties. The effectiveness for IR as a standalone intervention for social anxiety is currently equivocal. Two reviewed studies noted participants remained in the clinical range for symptoms following a single session of IR, while the other three reported that intervention effects were maintained at between one week and six months follow-up. Future research should aim to clarify these questions and ascertain the optimal number of sessions and IR components necessary to alleviate SAD difficulties.

Posttraumatic Stress Disorder (PTSD). Smucker, Danuc, Foa, and Niederee (1995) originally pioneered the use of IR for adult survivors of childhood sexual abuse, experiencing PTSD. The technique, known as Imagery Rescripting and Reprocessing Therapy (IRRT), aimed to replace imagery of victimisation, with that of mastery, thereby enabling victims of abuse to respond to traumatic experiences as an empowered adult. IRRT is one of a range of effective trauma focused cognitive behaviour therapy (CBT) interventions for PTSD, such as prolonged exposure and EMDR that involves re-experiencing a traumatic event in a safe and controlled environment. In his review, Arntz (2012) reported six studies that used IR for PTSD for a range of traumatic experiences, from PTSD following a single industrial injury to chronic PTSD as a result of multiple traumas. All of the studies reviewed provided IR either as part of a treatment package such as IRRT, cognitive therapy or in combination with prolonged imaginal exposure, therefore the individual effects of IR could not be assessed.

Three studies published since then have examined the impact of IR in PTSD, two of which have focused on its application with complicated PTSD. Arntz et al. (2013) were the first to explore the use of IR, without CR, for complicated PTSD in refugees by comparing ten weekly sessions of IR with baseline, and five-week follow-up, as part of a multiple baseline case series. They reported strong effects of IR on both PTSD and depressive symptoms for eight out of ten participants. Reductions in depressive symptoms were maintained at follow-up and nine participants remitted from PTSD. The authors suggest that purposefully rescripting the image to prevent the trauma occurring, thereby bringing safety into the image, improved the effectiveness of the technique, although this was not formally assessed. While these results are

promising, the study is significantly limited in highlighting the unique impact of IR as participants were also in receipt of supportive care during the baseline phase of the study, details of which were not provided.

A small case series by Raabe et al. (2015) has suggested that IR, without CR, may be an effective standalone intervention for complicated PTSD related to childhood abuse. Significant improvements in PTSD symptoms were reported following sixteen, twice weekly sessions of IR and were maintained at three-month follow-up. They too suggested that intervening early in the rescript, to prevent the trauma occurring, may enable functional processing of the event without the need to relive the trauma in detail, however the impact of this approach was not formally assessed during the study. As this is the first study to investigate IR as a standalone intervention with this population, conclusive results about its efficacy cannot be drawn at this time; however, it highlights the need for further controlled trials in the area.

A phenomenological case study conducted by Padmanabhanunni and Edwards (2014) examined the impact of IR within a wider cognitive therapy approach for an adult woman with PTSD. IR was used to address three memories and the authors reported reduced PTSD, anxiety and depressive symptoms following intervention. They postulated that IR may work through a transformative process: within a rescript, as the child's needs are met, they can both experience positive emotions related to this new experience, while simultaneously grieving for their loss as a child. IR therefore enables the continued development of the child that was crucially interrupted at the time of the distressing event(s). While this explanation may have good face validity for clinicians working in the area, the methodology seriously limits generalisability of the findings.

These three studies expand the findings of the previous review, by providing preliminary evidence for the efficacy of IR, without CR, with complicated PTSD and as a standalone intervention for PTSD related to childhood abuse. Two of the studies suggest that rescripting should be started early in the image, so that the trauma is not relived. While clinically interesting, neither of these studies has explicitly tested the impact of IR when the rescript either prevents or allows the trauma to be relived, and it would be important for future studies to address this. They are also methodologically limited by the use

of case series designs, and the addition of cognitive therapy and undefined supportive therapy in two of the studies. Future studies should aim to compare the efficacy of IR with other established evidence-based methods, such as EMDR, that rely on similar processes and are known to reduce PTSD symptoms.

Obsessive Compulsive Disorder (OCD). The National Institute for Health and Care Excellence guidelines (NICE, 2005a) currently recommend CBT approaches to the treatment of OCD; however, many individuals do not respond to this approach (e.g. Rufer, Fricke, Moritz, Kloss, & Hand, 2006). Research into new intervention techniques has highlighted a role for intrusive images in OCD. One study found that 81% (N = 37) of individuals with the disorder reported experiencing intrusive imagery linked to beliefs about themselves or their responsibilities and associated with earlier aversive experiences (Speckens, Hackmann, Ehlers, & Cuthbert, 2007). IR may therefore be a useful intervention with some OCD presentations. Arntz (2012) reviewed one study using IR with OCD and reported effective outcomes for eight participants who had not previously responded to standard CBT.

Since then, one further study has been published in the area that suggests IR may be a promising technique for some individuals with OCD. Veale et al. (2015) found clinically significant changes in severity of obsessive-compulsive difficulties in seven out of 12 participants following a single session of IR, with CR, and at three months follow-up. These participants all experienced intrusive images, associated with earlier aversive memories. The authors suggest that for OCD presentations such as these, difficulties may be associated with emotionally conditioned memories that have been incompletely processed. In line with Rachman's theory of emotional processing (1980), targeting this memory through IR may enhance previously failed emotional processing thereby reducing associated difficulties. Veale et al. suggest that IR may also be more successful in treating individuals with mild-moderate OCD difficulties, as five out of the seven participants that achieved clinically significant change fell into this range prior to intervention.

This finding is encouraging and highlights a need for more research into the use of IR with this disorder. For example, Veale et al. have suggested that the technique should be used early on in treatment and it would be beneficial to examine the impact of doing this, in comparison to different stages of

intervention. As this study, and the one reported in Arntz (2012) used one or two sessions of IR, it also would be useful to investigate the effect of multiple sessions on difficulties, particularly to explore if this is beneficial in the treatment of more severe cases.

Body Dysmorphic Disorder (BDD). BDD is characterised by excessive preoccupation with a perceived defect or flaw in ones physical appearance, that is either not observable to others or appears as slight (American Psychiatric Association, 2013). CBT models of BDD highlight the role of mental imagery in the maintenance of the disorder (e.g. Veale, 2004) and the research suggests that intrusive images linked with past aversive experiences are prevalent in this disorder (Osman, Cooper, Hackmann, & Veale, 2004; Buhlmann, Cook, Fama, & Wilhelm, 2007; Buhlmann, et al., 2011). In light of the prevalence of intrusive images, IR may therefore be a potentially useful intervention to investigate with this population.

Two studies reviewed are the first to explore the use of IR in the treatment of BDD and highlight the expansion of this transdiagnostic technique into fresh areas of research. Both studies found significant improvements in BDD difficulties following a single session of IR, with additional CR. The first study by Ritter and Stangier (2016) additionally reported reduced depressive symptoms in all six participants at two-week follow-up, compared to pre-treatment. Post-treatment reductions in vividness, distress, encapsulated belief strength and negative affect was also observed in five participants, and were either maintained or further decreased at follow-up. The observed changes were comparable to those reported in a study using modular CBT for BDD over a period of twenty-four weeks (Willhelm et al., 2014). The authors suggest that IR enables individuals with BDD to view past distressing experiences as a memory, rather than an event that is currently relevant to them and to update the meaning of this memory using CR. The findings are encouraging; however, the ability of this study to assess the unique impact of IR is significantly limited by the fact that participants received IR within a standard course of bi-weekly sessions of cognitive therapy for BDD.

The second study, by Willson et al. (2016), explored the use of IR in the absence of any other intervention and cautiously concluded that it may be an effective adjunct to the current modular CBT approach for this disorder.

Following IR, with CR, clinically significant improvements were found in preoccupation with appearance and distress in four of the six participants, which was maintained at six-month follow-up. Additionally, there was an observed shift in participants' views of BDD away from relation to a physical defect, towards identification of a psychological difficulty. The authors suggest this may be because through IR, participants focus on concrete experiences from their past that have contributed to the development of their difficulties. This may allow them to consider alternative origins for their disorder, rather than solely focusing on perceived physical defects. Willson et al. suggest that if used as part of modular CBT, IR should be used early on in treatment, to enable participants to develop a psychological understanding of their problem as soon as possible.

As these are the first two studies in the area, limited conclusions can be drawn about the efficacy of IR with BDD, or optimal delivery methods; however, the results are promising. In particular, the suggestion by Willson et al. that IR may facilitate engagement in a psychological model of the disorder warrants continued investigation, as it has important clinical implications. Research trials should now focus on the optimal time to deliver the intervention and whether it is a suitable addition to the current modular CBT approach.

Bowel/Bladder Control Anxiety (BBCA). This specific form of anxiety is characterised by an overwhelming fear of losing control over ones bowel or bladder (Kamboj, et al., 2015). It is often accompanied by catastrophic mental imagery of the event that is significantly influenced by distressing past events (Pajak, Langhoff, Watson, & Kamboj, 2013). This finding suggests that IR may be a suitable intervention with this disorder.

One reviewed study by Pajak and Kamboj (2014) was the first to examine the use of IR with BBCA. The authors reported reductions in distress, anxiety, shame and strength of belief associated with a distressing memory in all four participants. Participants were instructed to practise replacing their negative image/memory with the image developed during the rescript whenever the distressing memory was triggered in the week following the intervention. At follow-up, all participants reported that image associated bodily sensations had been eliminated. It is not explicitly stated whether CR was used in addition to IR. The authors suggest that these findings are in line with Brewin's (2006) competition retrieval hypothesis, which proposes that IR enables formation of an

alternative representation of an aversive memory that competes for retrieval with the original representation when the memory is triggered.

This study provides further evidence for the use of IR as a transdiagnostic technique; however, it is difficult to draw conclusions about the potential theoretical underpinnings of the approach. Although the authors suggest the findings align with Brewin's retrieval hypothesis, the fact that participants were specifically directed to replace their distressing memory with the rescripted one, when triggered, has potentially biased the observed results. Replication of the study, in which this instruction was not given to participants, would aid clarification and determine whether this instruction is a necessary addition to the delivery of IR with this disorder.

Pain. Little research has been conducted into the experience of images in pain sufferers. Phillips (2011) reported that 78% (N = 59) of pain sufferers in her study experienced images associated with their pain experience. These images related to both past events, for example the accident that led to the onset of pain, and future events, such as feared loss of independence. During exposure to these images, participants reported increased anxiety, anger and pain and appraised their images as being associated with threat, responsibility and motivation. In the only reviewed study in this area, Phillips and Samson (2012) found IR substantially reduced negative emotions, pain and appraisals following a single session of IR, without CR, in comparison to controls.

In their study, fifty-five participants formed and rated their most distressing pain image (index image) before random allocation to one of two groups. In the IR group, following exposure to the index image, participants elicited a preferred rescripted version of the index image. They then formed this new image, rated its characteristics and, following a brief distraction, repeated exposure to the rescripted image. By comparison, those in the control group repeated exposure to their index image only. During the rescript, 49% of participants reported no pain at all. The authors suggest the impact of IR on pain is likely due to its influence of cognition on pain levels, however this was not tested and needs further exploration.

These findings are promising, although as the only study published in the area, replication is needed to determine the stability of effects over time as this study only examined immediate effects of IR. In light of the authors' suggestion

that IR has impacted on cognition, it would also be interesting for future studies to examine the effect of adding CR to the intervention and whether multiple sessions enhanced the observed effects.

Psychosis. CBT is the psychotherapeutic approach recommended in the treatment of psychosis (NICE, 2014). The evidence base for this approach is not as robust as previously thought, however (Jones, Hacker, Cormac, Meaden & Irving, 2012; Turner, van der Gaag, Karyotaki, & Cuijpers, 2014), highlighting a need for the exploration of other intervention options. Research into the use of imagery with this population is developing. A small study by Morrison et al. (2002) found that 74% (N = 35) of participants with psychosis experienced negative intrusive images associated with their difficulties and suggested a role for images in the maintenance of psychotic symptoms. Moreover, research into trauma and psychosis has highlighted the prevalence of PTSD in psychosis (e.g. Hardy et al., 2005), which suggests that IR may be a suitable intervention.

Ison et al. (2014) completed the first study in this area with four people with psychosis who experienced intrusive images or memories, and heard voices. Following a single session of IR, three participants experienced reductions in distress, negative affect, encapsulated belief, and frequency of intrusive images. An increase in perceived sense of control over the image and memory was also noted in three participants. One participant experienced reduced severity of her voices and another in her negative schemas about others.

These findings provide preliminary evidence that IR may be beneficial with this population. Further research is now needed that investigates possible mechanisms of change during IR with psychosis and the optimal methods of delivering the intervention.

Conclusions from Clinical Intervention Studies

The current review has identified further advances in research into disorders that were reviewed by Arntz in 2012, and has identified four new areas in which IR has been successfully applied. These results are encouraging and provide increased evidence for the use of IR as a transdiagnostic intervention technique. Research into the use of IR as a standalone intervention has been investigated in several disorders and promising results have been found when it is used in the absence of CR. Methodologically, the evidence remains limited. Only one RCT

has been conducted to date and many studies rely on case study designs, with only single studies published in some areas of research.

Optimal Approach to Rescripting

Much of the research reviewed regarding the clinical application of IR has focused on delivery methods in terms of the number of sessions required, IR components necessary and whether IR is most effective as a standalone or adjunctive intervention. In his research agenda, Arntz (2012) also highlighted a need to investigate the optimal method to adopt during the actual rescript itself, such as whether it is helpful to prevent the trauma from occurring or to imagine revenge fantasies against a perpetrator.

IR will inevitably evoke a range of difficult emotions and a study by Hackmann and Holmes (2004) found that (helpless) rage, shame, anxiety and guilt are often reported during imagery exercises. Individuals with PTSD also frequently report revenge fantasies in relation to trauma scenarios (Horowitz, 2007), therefore research into engaging in avoidance or revenge strategies within a rescript are vitally important. Four published studies have employed an experimental analogue trauma induction paradigm to investigate the impact of these strategies during rescripting and the influence of anxiety on IR.

Hagenaars (2012) found that the presence of anxiety had no effect during IR; however, it did lead to the experience of more frequent intrusive images during imagery re-experiencing. She suggested that IR might therefore protect against the development of intrusive images in the early stage following a trauma, through its impact on encoding and consolidation processes. This suggestion has important implications for the timely treatment of PTSD, as intervention is currently not recommended in the first month following a trauma (NICE, 2005b). Trials into the use of IR at varying time points following a trauma would determine the optimal time to use the technique after a traumatic event.

Incorporating the most aversive film scenes during an IR exercise resulted in fewer and less vivid film-related intrusions in a study by Dibbets and Arntz (2016). The film elicited PTSD-like symptoms in participants and provided some evidence that incorporating the trauma during a rescript may be beneficial in the treatment of these difficulties. These findings are in contrast to earlier research, by the same author, which suggested that it was not necessary to

imagine or relive the trauma in detail in order to effect change within IR (Arntz et al., 2013). It may be that reliving the trauma is only necessary for certain disorders, such as in the treatment of PTSD, in which avoidance of the trauma is a maintaining factor in the presentation. Further research, with a range of disorders, in which the trauma was both relived and avoided, would help to clarify this.

Two studies examined the impact of fantasising revenge during a rescript and reported mixed results. Seebauer et al. (2014) compared the use of three imagery strategies: IR with revenge, in which participants violently punished the perpetrator; IR without violence, in which participants helped the victim using any means except violence; or "safe space", in which participants left the distressing situation and entered a positive and safe one. Interestingly, the safe place strategy yielded greater reductions in angry emotions (anger, rage, aggression) and increased positive emotions (happiness, relaxation) than either of the IR strategies. The authors suggested that this finding might be related to their use of a non-clinical sample with no history of trauma. In this sample, avoidance of distressing images through a safe place strategy might be a helpful way to deal with short-term distress. In a clinical sample, however IR may be more effective due to its impact on deeply held negative cognitions and affect, which may not have been present in this sample. No differences were observed between IR with or without revenge and Seebauer et al. concluded that engaging in revenge strategies during IR therefore does not pose a particular risk to participants. Behavioural measures of actual aggression were not assessed during this study however, so it is difficult to conclusively posit that this is the case.

A second study by Watson et al. (2015) found that IR describing either avoidance or forgiveness, related to a past bullying incident, led to significant reductions in negative affect, whereas IR describing revenge did not. When revenge was described, positive evaluations about the self in the situation decreased, whereas they remained consistent when either avoidance or forgiveness was described. These authors therefore suggest that revenge is not an effective component of IR.

Both of these studies, although clinically interesting, are limited by their use of guided imagery, in non-clinical samples, in which participants were instructed which strategy to adopt. It may be the case that people who have

experienced repeated traumas and developed persistent negative beliefs about themselves as a result may experience differential benefits from engaging in imaginal revenge exercises, however this remains to be tested.

Conclusions from Approaches to Rescripting Studies

Research into the optimal method of delivering IR is only beginning and the four studies reviewed that focus on this are limited by their lack of ecological validity. One study has suggested a role for the early implementation of IR following a trauma. This is an important area for continued research, particularly with disorders such as PTSD, in which watchful waiting is currently recommended for the first month following a trauma. It remains unclear whether incorporation of the most aversive scenes of a trauma is a necessary component of a rescript, or if this is in fact disorder specific. Likewise, research into the use of revenge fantasies need to be further investigated, with a range of disorders, and with the inclusion of behavioural measures of aggression.

Discussion

Summary of Findings

Eighteen papers examining the efficacy of IR as a transdiagnostic approach, the optimal approach to delivery, and the mechanisms involved in IR have been published in the four years since the last review of the literature. This reflects considerable growth in clinical interest in this area. The review has identified advances in disorders previously reviewed and the successful application of the technique now extends to BDD (Ritter & Stangier, 2016; Willson et al., 2016), BBCA (Pajak & Kamboj, 2014), pain (Phillips & Samson, 2012) and psychosis (Ison et al., 2014).

The studies reviewed demonstrate that IR can effect change swiftly and with significant magnitude of observed effects. Both Willson et al. (2016), and Ritter and Stangier (2016), for example, highlight that for significant change to occur in individuals with BDD using current, standard treatment protocols individuals usually require multiple sessions over several weeks. By comparison, their studies reported symptom reduction following a single session of IR. The current review has also highlighted studies that have dismantled the components of IR (e.g. Norton & Abbott, 2016) and found efficacy for its use in the absence of CR (e.g. Nilsson et al., 2012).

The long-term effects of IR and evidence for its use as a standalone technique remain limited. Only four of the eighteen studies (Frets et al., 2014; Raabe et al., 2015; Veale et al., 2015; Willson et al., 2016) assessed the long-term impact of the intervention, and although their results were positive, further research needs to adopt this approach. Within social anxiety research, of the four studies that assessed the potential for IR as a standalone intervention, two (Reimer & Moscovitch, 2015; Norton & Abbott, 2016) reported that participants remained in the clinical range for the disorder following the intervention. Both of these studies used single sessions of IR and it may be that either a single session is not sufficient, or that the addition of CR would enhance these effects and future studies should aim to test this. Similarly, research into PTSD suggests preliminary support for the use of IR as a standalone intervention (Raabe et al., 2015); however, this has yet to be compared with evidenced based approaches, such as EMDR that are known to reduce difficulties in this disorder.

The optimal approach to take when delivering IR remains unclear as a wide range of sessions was used in the reviewed studies, both with and without additional CR. Several studies have suggested implementing IR early on in an intervention but have not yet formally assessed the benefits of doing this. Furthermore, only three studies have examined aspects important to the rescript itself and they report inconsistent results that have been discussed previously.

Similarly, hypotheses about the mechanisms of change in IR have been discussed throughout this review. Four of the studies (Nilsson et al., 2012; Ritter & Moscovitch, 2015; Veale et al., 2015; Willson et al., 2016) suggest that in line with Arntz and colleagues' US-revaluation theory (Arntz & Weertman, 1999; Arntz, 2012), IR enables past events to be processed in a concrete manner, thereby allowing an aversive memory to be updated, based on currently available knowledge. None of these studies have allowed for the formal testing of these mechanisms. Similarly Pajak and Kamboj (2014) have suggested their study findings align with Brewin's competition retrieval hypothesis but the limits of their study design in relation to this have been previously highlighted. Padmanabhanunni and Edwards (2014) have also suggested that a transformative process occurs during IR, though methodological issues similarly limit their study. Arntz's (2012) supposition that IR was a technique in need of a theory continues to be the case.

In light of the current review, research now needs to focus on (a) controlled outcome studies, comparing IR with standardised treatments, across a range of presentations, (b) further dismantling of the components of IR in order to establish, for example, whether additional CR is always necessary, or only with certain disorders, (c) the optimal method of delivery of IR and whether a general protocol or disorder specific protocols are necessary and (d) clear identification of the mechanisms of change underlying IR. This would clarify whether IR is best implemented as a powerful intervention tool as an adjunct to standardised treatments, or as a standalone intervention for specific disorders, and the necessary elements of IR.

Strengths and Limitations of the Review

This review benefitted from a priori design in which the research questions and associated inclusion and exclusion criteria were established before the review was conducted. A comprehensive search of the literature was performed that included three electronic sources followed by a further manual search of the reference list of identified papers. Additionally, characteristics of included studies, such as participants, interventions and outcomes were illustrated in a table for ease of reference to key findings.

The review is limited by its use of systematic search criteria aimed at specifically examining the efficacy of, optimal delivery approaches for and mechanisms underlying IR in papers published since 2012. It is therefore limited both by the number of studies retrieved and the exclusion of studies focusing on IRTs. Unintentional language and publication bias may have been introduced into the review, as the search was restricted to only include published journal articles that were written in the English language. It is possible that authors are more likely to publish their work in peer-reviewed journals if the results are positive. Applying these exclusion criteria may therefore have influenced the conclusions drawn from the evidence base as it reduced the possibility of identifying negative results, more likely to be published in smaller journals. The methodological quality of the included papers was also not formally assessed. This may have further introduced unintentional bias as the ways in which the studies were designed, conducted and analysed may have biased the estimates of the reported intervention effects (Moher, et al., 1995). Finally, the studies included were screened and selected by a single reviewer, which has potentially

introduced a bias into the review, and could be improved through the addition of a second reviewer.

Conclusion

This review has highlighted advances made in the field of IR in the last four years, focusing on the efficacy of the technique, the optimal methods of delivery and mechanisms of change in IR. Studies indicate efficacy of the technique with an increasing range of psychological difficulties, using both single and multiple sessions of IR, with and without additional CR. The limited number of studies together with the varied methodological approaches used makes it difficult for definitive conclusions to be drawn about the application of IR as a standalone intervention or the optimal delivery approaches to adopt. Similarly, research into the mechanisms underlying IR remains largely hypothetical. Further research, through well-designed studies that address the methodological issues identified in this review will improve our understanding of this potentially valuable transdiagnostic therapeutic technique.

Chapter 2: Empirical Paper

The Impact of Imagery Rescripting on Non-Clinical Paranoia

Imagery rescripting (IR) is a transdiagnostic therapeutic technique designed to modify the meanings associated with distressing intrusive memories. This paper investigates a one-off intervention, using IR for non-clinical participants, with high levels of paranoia. The study aimed to explore the impact of IR on paranoia, affect and memory intrusions, and examine whether IR could change meanings and beliefs about the self that may be implicated in the maintenance of paranoia. The rationale for the study is presented in more detail below.

In order to understand IR, it is important to understand the role of intrusive imagery in psychological difficulties. Intrusions are mental representations that often occur repetitively, causing significant distress in a range of psychological difficulties (Brewin, Gregory, Lipton, & Burgess, 2010). Intrusions can be triggered unintentionally (Hackmann & Holmes, 2004) and are often linked to the memories of past aversive experiences (Cili & Stopa, 2015). Imagery is more likely to elicit strong emotions related to an event than verbal processing (Holmes, Mathews, Mackintosh, & Dalgleish, 2008) and is hypothesised to contribute to the maintenance of psychological difficulties (Beck, Emery, & Greenberg, 1985). The development of imagery-based techniques to treat intrusive memories is therefore of clinical importance.

Paranoia

Little is currently known about the experience of intrusive images in paranoia. Paranoia is defined as the unfounded fear that others intend to cause us harm (Freeman et al., 2015) and studies estimate that the prevalence of paranoid thinking in the general population ranges from 18.6% (Freeman et al., 2011) to nearly 30% (Bebbington et al., 2013). It is a central feature of psychotic disorders (Freeman et al., 2011); however, a recent study identified paranoia as a distinct, dimensional trait (Ronald, Sieradzka, Cardno, Haworth, McGuire, & Freeman, 2014), thus warranting research into paranoia as an independent phenomenon.

Cognitive models of psychosis have identified similarities between the processes involved in the development and maintenance of psychosis with those of anxiety. As persecutory delusions and anxiety are both related to threat beliefs (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002), it has been

hypothesised that the maintaining processes in both may also be similar (Freeman & Garety, 1999; 2002). One of the main processes implicated in the maintenance of anxiety difficulties is spontaneous mental imagery (Clark, 1999); though, little is yet known about similar experiences in people with paranoia.

Epidemiological studies have found that paranoid thinking occurs on a continuum (van Os, Hanssen, Bijl, & Ravelli, 2000; Combs, Michael, & Penn, 2006; Vermissen et al., 2008; Freeman, Pugh, Vorontsova, Antley, & Slater, 2010). The paranoia hierarchy illustrated in Figure 2 (Freeman et al., 2005), suggests that at a non-clinical level, paranoia occurs as commonly held social-evaluative beliefs, while at its most clinically severe, it is experienced as intense persecutory delusions.

Figure 2*: Paranoia Hierarchy*

The experience of non-clinical symptoms increases the likelihood of a diagnosis of psychotic disorder (Kaymaz et al., 2012; Kelleher et al., 2014), therefore studying non-clinical paranoia may both increase understanding of this experience in the general population and inform our understanding of more severe psychotic phenomena (Freeman et al., 2008).

Intrusive Images and Paranoia

To date no studies have examined intrusive images specifically in paranoia. The impact and prevalence of intrusive imagery in psychosis is supported by two published studies. Morrison et al. (2002) found that 74% (*N* = 35) of individuals experiencing hallucinations or delusions reported experiencing recurrent intrusive images. These images were linked to negative emotions and beliefs about the self, the world or others and were associated with traumatic memories. More recently, Schulze, Freeman, Green and Kuipers (2013) reported similar findings with individuals who experience persecutory delusions. In their study 73% (*N* = 40) of individuals reported recurrent, distressing, intrusive images that were associated with high levels of anxiety and distress. The images themselves were described as vivid and threatening and participants identified predominantly negative encapsulated beliefs, about the meaning of their memories and images. These findings suggest that psychological interventions directly targeting intrusive images and memories, such as imagery rescripting (IR), may be beneficial with this population.

Imagery Rescripting

As noted above, IR is a transdiagnostic technique (Stopa, 2011), and there is converging evidence that it is effective in the treatment of anxiety disorders characterised by intrusive imagery, such as social phobia (e.g. Lee & Kwon, 2013), and PTSD (e.g. Arntz et al., 2013). The technique aims to modify the meaning attached to intrusive and distressing memories (the 'encapsulated belief') by developing alternative perspectives on past events (Arntz & Weertman, 1999). Through this process, individuals can reformulate the meaning of memories, leading to new and more positive emotions in relation to difficult past experiences (Holmes, Arntz, & Smucker, 2007). IR has been found to reduce negative affect (e.g. Phillips & Samson, 2012), negative core beliefs (Reimer & Moscovitch, 2015), strength of encapsulated beliefs (e.g. Lee & Kwon, 2013) and both the frequency (e.g. Ison et al., 2014) and impact (Raabe et al., 2015) of intrusions across a range of psychological difficulties. It also reduces the vividness and distress associated with memories (e.g. Wild, et al., 2008).

A dissertation investigating the mechanisms of change in IR has reported improvements in self-esteem and positive affect following a single session of IR,

and suggests that IR may influence aspects of the self (Cili et al., 2016). Cili draws on Brewin's (2006) retrieval competition hypothesis to explain how IR might work. Brewin's theory suggests that individuals possess multiple self-representations that constantly compete for retrieval. The activation of specific self-representations is determined by factors such as environmental triggers and the importance of self-representations. In support of this theory of the mechanism of change, Cili and Stopa (2015) found that recalling a positive autobiographical memory led to more positive self-evaluations and a higher degree of self-concept in participants, that is the extent to which beliefs about the self are consistent and clearly defined (Campbell et al., 1996).

To date no studies have examined the use of imagery interventions with paranoia and there is very limited evidence for their use with psychosis. Morrison (2004) found that working with distressing images associated with persecutory delusions led to reduced distress, belief in, and preoccupation with delusions. Incorporating mental imagery techniques with standard cognitive behaviour therapy (CBT) has also led to reduced delusion frequency in a single case study report (Serruya & Grant, 2009). Most recently, Ison et al. (2014) conducted the only study to date using IR with people with psychosis who heard voices, and found reductions in distress, negative affect and beliefs related to the image following a single session of IR.

As paranoia has been identified as both an independent experience and a central feature of psychotic disorders, examining the impact of IR on non-clinical paranoia will address an important gap in the current literature base.

The Current Study

Arntz (2012) highlighted a need for IR to be investigated for use with psychosis in his research agenda, aimed at advancing the evidence base for IR as a standalone intervention technique. As paranoia is a both a component of psychosis and a phenomenon in its own right, it is of increasing clinical interest. Moreover, Arntz emphasised the need for studies to examine the processes underlying IR. Based on Cili and Stopa's (2016) findings, it is also important to examine the impact of IR on aspects of the self, such as self-esteem and self-concept clarity, to clarify some of the cognitive changes that occur within IR as well as looking at the impact on emotions and beliefs. To date there are no

studies that have investigated the use of imagery techniques with paranoia specifically.

Hypotheses

It was hypothesised that a single session of IR would result in:

1. Reduced levels of paranoia, negative affect and negative core schemas, and reduced impact of memory intrusions
2. Increased levels of positive affect, self esteem, self-concept clarity and positive core schemas
3. Reduced vividness, distress, encapsulated belief strength, emotion intensity and frequency of memory intrusion

Method

Design

As IR is a novel intervention for people with non-clinical paranoia, the original design for this study was mixed, with one between-subjects variable (type of imagery intervention) and one within-subjects variable (time pre and post intervention and follow up). This design aimed to assess the impact of IR on non-clinical paranoia, compared to an imagery exposure alone condition. It was predicted that IR would reduce interpersonal threat beliefs associated with a distressing memory more than exposure alone. Recruitment issues within the timeframe available however, necessitated the study be altered to a within subjects design (time pre and post IR and follow up) which is the focus of this thesis.

The dependent variables for the study were paranoia, affect, core schemas, self-esteem, self-concept clarity and the impact of memory intrusions. Memory characteristics were similarly assessed as dependent variables, specifically memory vividness, memory distress, encapsulated belief strength, emotion intensity, and frequency of memory intrusions.

Participants

The study was advertised to students and staff in a local university, seeking people who had a recurrent memory of a distressing event, in which other people were involved and that had occurred at least six months ago. There is increasing evidence to suggest that people experiencing paranoia, and other psychotic type presentations such as delusions, often link their experience of current intrusions to past events (Garety & Freeman, 2013). Although there is no clear evidence

yet to suggest whether it is more beneficial to focus on current intrusions or the linked memories, neurobiological research has suggested that imagined and predicted future experiences are based on information already stored in memory (Schacter, Addis, & Buckner, 2007). Given that the experience of paranoia and other psychotic like symptoms are also increasingly linked to past trauma (Read, van Os, Morrison & Ross, 2005; Varese, et al., 2012) and IR is known to be effective in reducing the distress associated with traumatic memories, this study chose to focus on the memory of a past event, as opposed to a distressing prospective image. Participants were offered either course credits or payment of twenty pounds. Paranoia was screened for using the Paranoia Scale (PS; Fenigstein & Vanable, 1992), and as the study aimed to recruit a non-clinical sample of participants the Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, & Williams, 1999), and the Primary Care PTSD screen (PC-PTSD; Prins, Ouimette, and Kimerling, 2003) were used to screen for depression and PTSD respectively. The PC-PTSD was replaced partway through the recruitment process with the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013), as the PC-PTSD was found to be insufficiently specific at detecting PTSD.

Inclusion criteria for the study was a high level of non-clinical paranoia, defined as those who scored above 42.7 on the PS, as this was the mean used in the original validation study by Fenigstein and Vanable (1992). Exclusion criteria, related to depression and the presence of PTSD symptoms, were also applied. Participants who reported being severely depressed (i.e. scored 19 or above on the PHQ-9) or reported experiencing current thoughts of self-harm or suicide (i.e. scored above zero on question nine of the PHQ-9) were excluded from the study. Similarly, participants who reported moderate PTSD difficulties, defined as those who scored at or above the developers' recommended cut off (at the time) of 38 on the PCL-5 were also excluded. Participants who did not meet the study criteria were emailed to advise them of this. If their responses on the screening questionnaires indicated current difficulties with their mood, they were also signposted towards available support services.

Based on the medium to large effect sizes reported in other studies using IR, a priori power analysis using G' Power version 3 (Faul, Erdfelder, Lang & Buchner, 2007) determined that 12 participants were required to obtain sufficient

statistical power to detect a large effect, and 24 for a medium effect, at the recommended .80 level (Cohen 1992). The final sample comprised of fifteen university students (thirteen female), who ranged in age from 18 to 30 years (*M* = 20.67; *SD* = 2.92). Four participants identified as White British, four as Chinese, three as any other White background, one as Black or Black British Caribbean, one as Asian or Asian British Indian, one as any other mixed background and one as any other ethnic group. Figure 3 illustrates the recruitment flow from screening through to the final sample.

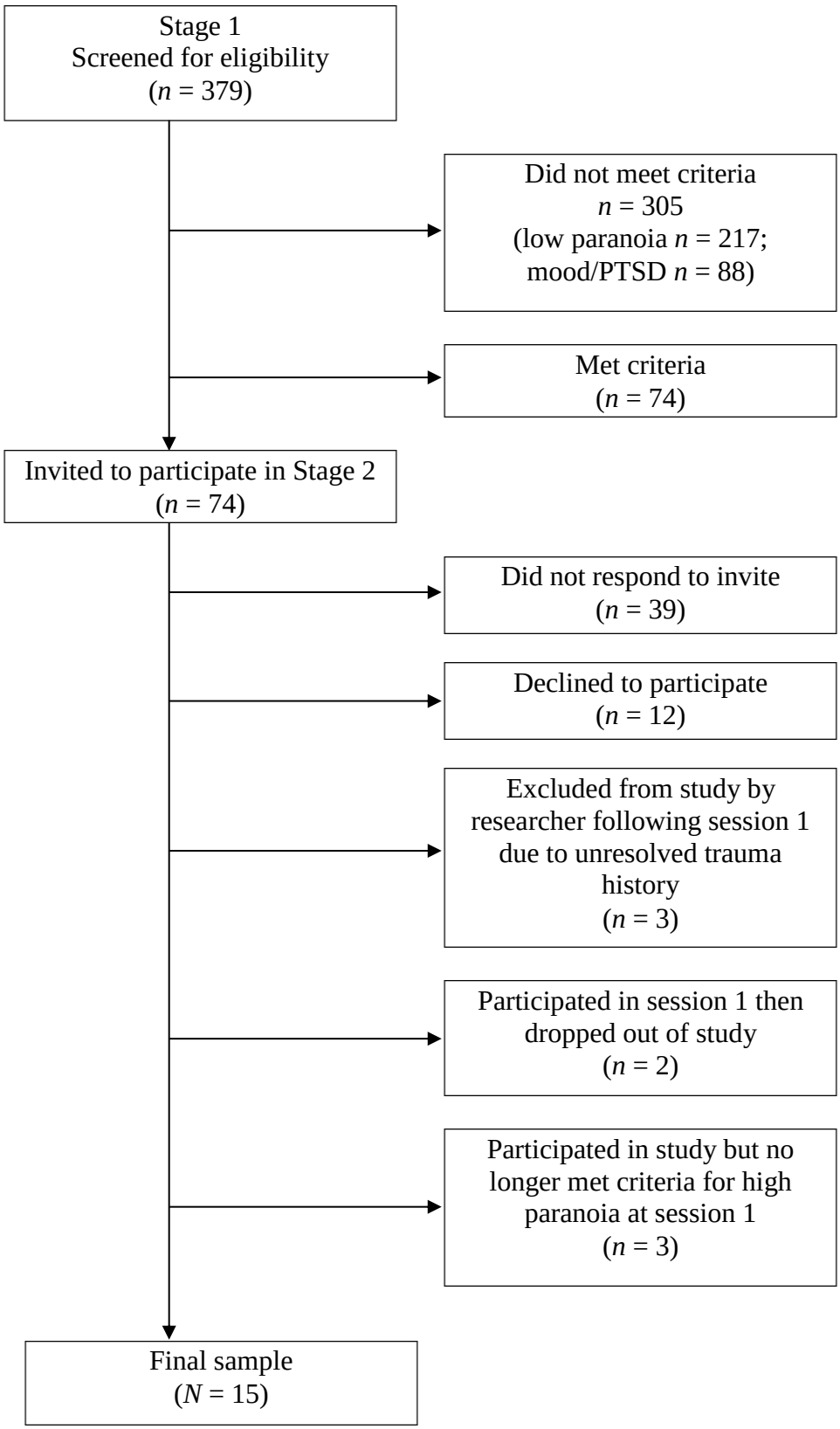

Figure 3: Recruitment Flowchart

Materials

Paranoia Scale (PS; Fenigstein & Vanable, 1992; appendix A). The 20-item, self-report PS was developed to measure paranoia in college students. Each item is rated on a five-point scale (1 = not at all applicable, 5 = extremely applicable). Scores range from 20 to 100, with higher scores indicating greater levels of paranoia. It is the most widely used dimensional measure of paranoia and the authors report good internal consistency (α = .84), good test-retest reliability (*r* = .70) and internal reliability (*r* = .72). In the current study, this questionnaire was administered twice, at the beginning of session one (time one) and the end of session three (time three). The Cronbach alpha coefficient was .65 at time one and .81 at time three.

The State Social Paranoia Scale (SSPS; Freeman et al., 2007; appendix B). The SSPS is a 10-item, self-report measure of paranoid thinking. Each of the ten items contains elements of both threat and intention, and is scored on a five-point scale (1 = do not agree, 5 = totally agree) with higher scores indicating greater levels of paranoid thinking. The authors report excellent internal reliability (α = .91), good validity and test-retest reliability (*r* = .78). In the current study, this questionnaire was administered six times, at the beginning and end of each session. The Cronbach alpha coefficient ranged between values of .47 and .92; however .47 occurred only once, during time two.

Patient Health Questionnaire (PHQ-9; Spitzer et al., 1999; appendix C). The PHQ-9 is a nine-item measure used to screen, diagnose, monitor and measure the severity of depression based on the criteria for depression within the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; American Psychiatric Association, 2000). Question nine in the scale screens for the presence and duration of suicidal ideation. Each item is rated on a four-point scale (0 = not at all, 3 = nearly every day) and scores range from zero to 27 with higher scores indicating more severe depression. The measure has shown excellent internal reliability in a primary care sample (α = .89) and excellent test-retest reliability (Kroenke, Spitzer, & Williams, 2001).

Primary Care PTSD screen (PC-PTSD; Prins et al., 2004; appendix D). The PC-PTSD screen is a four-item screen, designed for use in primary care. Each of the four items map onto the PTSD symptoms of re-experiencing a

traumatic event, emotional numbing, avoidance and hyperarousal. Respondents are asked about whether they have experienced any of these difficulties in the past month, in relation to a traumatic experience and items are scored dichotomously as either zero or one (no = 0; yes = 1). The developers suggest that the results of the screen should be considered "positive" for the presence of PTSD if a respondent answers "yes" to any three items and report test-retest reliability of .83.

PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013; appendix E). The PCL-5 is a 20-item self-report measure for assessing the 20 DSM-5 symptoms of PTSD in the DSM-5. Each item is scored on a five-point scale (0 = not at all, 4 = extremely). Scores are totalled to gain a symptom severity score, with higher scores indicating greater severity of symptoms. The measure has been found to have strong internal consistency (α = .94), test-retest reliability (r = .82) and convergent (rs = .74 to .85) and discriminant (rs = .31 to .60) validity (Blevins, Weathers, Davis, Witte, & Domino, 2015).

Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995; appendix F). The 21-item, self-report DASS is a set of three scales designed to measure depression, anxiety and stress. Participants are asked to rate the extent they have experienced each of the three states over the last week using a four-point severity/frequency scale. The DASS scales have been shown to have excellent internal consistency (α = .95, .90 and .93 for depression, anxiety and stress respectively; Crawford & Henry, 2003).

In the current study, this questionnaire was administered twice, at the beginning of session one (time one) and the end of session three (time three). The Cronbach alpha coefficient for depression was .79 at time one and .90 at time three; for anxiety it was .40 at time one and .46 at time three; for stress it was .56 at time one and .71 at time three.

Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988; appendix G). The PANAS is a 20-item self-report measure of positive and negative affect. The scale consists of 10 positive and 10 negative feelings and emotions and respondents are asked to rate the extent to which they experience each item "right now" on a five-point scale (1 = very slightly, 5 = extremely). Scores range from 10 to 50, for both positive (PA) and negative (NA) affect, with higher scores indicating greater degrees of affect. Both scales

had high internal consistency (PA α = .89; NA α = .85) in a non-clinical sample (Crawford & Henry, 2004).

In the current study, this questionnaire was administered six times at the beginning and end of each session. The Cronbach alpha coefficient for positive affect ranged between values of .78 at time one and values of .90 to .94 at all other time points. The coefficient for negative affect was .44 at time one, however ranged between .80 and .91 at all other time points.

Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965; appendix H). This 10-item self-report scale measures global feelings about the self on a four-point scale (1 = strongly agree, 4 = strongly disagree) and is the most widely used measure of global self-esteem (Byrne, 1996). Scores can range from 10 to 40, with higher scores indicative of higher levels of self-esteem. A study by Sinclair et al. (2010) reported an overall internal consistency of .91 across a sample of adults within the United States. In the current study, this questionnaire was administered twice, at the beginning of session one (time one) and the end of session three (time three). The Cronbach alpha coefficient was .57 at time one and .76 at time three.

State Self Esteem Scale (SSES; McFarland & Ross, 1982; appendix I). The SSES is a 12-item scale that measures explicit state self esteem based on how respondents feel "right now". Items are rated on an 11-point scale (1 = not at all; 11 = extremely) and measure both positive and negative self-esteem. Scores range from 12 to 132, with higher scores indicative of higher self-esteem. The scale has high internal consistency (α = .92; Heatherton & Polivy, 1991). In the current study, this questionnaire was administered six times at the beginning and end of each session. The Cronbach alpha coefficient for positive items ranged between values of .80 and .99. The coefficient for negative items ranged between .63 at time one and .81 to .93 for all other time points.

State Self Concept Clarity Scale (SSCCS; Nezlek & Plesko, 2001; appendix J). This is a four-item measure, taken from the 12-item trait self-concept clarity scale by Campbell et al. (1996). Participants are asked to indicate "right now" to what extent they agree with each statement based on five-point scale (1 = strongly disagree, 5 = strongly agree). The authors report good internal reliability (r = .98) and validity (r = .73). In the current study, this

questionnaire was administered six times at the beginning and end of each session. The Cronbach alpha ranged from .82 to .87.

Brief Core Schema Scale (BCSS; Folwer et al., 2006; appendix K). The BCSS is a 24-item measure of beliefs about the self and others. Each item is assessed on a five-point rating scale (0 = do not hold the belief, 4 = believe it totally). Four scores are obtained from the scale: negative self (six items), positive self (six items), negative others (six items), positive others (six items). Higher scores on each domain endorse stronger beliefs in the schema. The authors report internal consistencies of .78 and .86 for the positive and negative self-schema scales respectively, in a non-clinical sample, and .88 for both the positive and negative other schema scales.

In the current study, this questionnaire was administered twice, at the beginning of session one (time one) and the end of session three (time three). The Cronbach alpha coefficient for negative self was .35 at time one and .74 at time three; for positive self it was .76 at time one and .88 at time three; for negative others it was .60 at time one and .77 at time three; for positive others it was .45 at time one and .88 at time three.

Intrusion Subscale of the Impact of Event Scale-Revised (IES-R), Weiss & Marmar, 1997; appendix L). The complete IES-R is a 22-item self-report measure that assesses subjective distress caused by traumatic experiences. The intrusions subscale, contains only eight of these items, specifically related to intrusive symptoms such as dreaming about the event, or having pictures of it pop into your mind. Respondents are asked to rate how distressing each of the items has been for them in the last seven days and to rate their distress on a five-point scale (0 = not at all, 4 = extremely). Scores range from zero to 32, with higher scores indicating greater levels of intrusions. The intrusions subscale had high internal consistency ($\alpha = .90$) in a sample of motor vehicle accident survivors (Beck et al., 2008). In the current study, this questionnaire was administered twice, at the beginning of session one (time one) and the end of session three (time three). The Cronbach alpha coefficient ranged between .76 at time one and .80 at time three.

Imagery Interview. A semi-structured interview schedule (appendix M), adapted from that developed by Hackmann et al. (1998) for imagery work with social anxiety, was used to elicit memory characteristics. Part one of the

schedule asked participants to recall a recurrent, distressing memory and describe it to the researcher in the past tense. Participants were then asked to close their eyes and re-create the memory as vividly as possible in their mind. In part two, they were asked to rate how vivid and distressing the memory was, on a scale of zero (not at all) to 10 (extremely). Participants were then asked what emotion they felt while imagining this memory, and asked to rate the intensity of this emotion using the same scale. The encapsulated belief related to the memory was also elicited and rated on a scale of zero (do not believe it at all) to 100 (totally believe it). Participants were also asked to rate how frequently they thought about their memory, on a scale of zero (not at all) to 10 (several times a day).

Rescripting Protocol. The study followed the three stage rescripting protocol developed by Arntz and Weertman (1999; appendix N). At the beginning of the IR session participants were reminded of the memory they discussed in the initial session and the emotion and encapsulated belief they reported during the imagery interview. They were advised that during the session they would explore their memory in detail and look at it in several different ways. Participants were then asked to close their eyes and recreate their memory in as much detail as possible and rate the memory characteristics again using part two of the interview schedule described above. They were then guided through IR by the researcher.

In stage one of IR participants were asked to keep their eyes closed and retell their memory to the researcher, in the present tense. In stage two, they were asked to retell the memory again, this time from the perspective of their current self, observing what was happening to their past self and intervening where they felt necessary. In stage three, participants were asked to retell the memory again, this time from the perspective of their past self, and were encouraged to ask their current self for anything they needed to help them manage their distressing experience.

Procedure

The study received ethical approval from the University of Southampton's School of Psychology Ethics Committee and the University Research Governance office (appendix O). Participants were recruited via online and paper adverts (appendix P) offering course credits or payment in return for

participation in a study investigating distressing memories and how they affect people over time. Informed consent was obtained at the screening stage through a brief participant information sheet (appendix Q) displayed on the survey site. Participants who met the inclusion criteria were emailed an invitation to attend three sessions with the researcher, between seven and ten days apart. The protocol for these sessions is described below and illustrated in Figure 4.

At session one, participants were presented with a more comprehensive participant information sheet (appendix R) and asked to sign a consent form (appendix S). They then completed the PS again to ensure they still met the criteria for high levels of non-clinical paranoia. Participants were asked to complete measures of self-esteem, affect, and core schemas, followed by four state measures of paranoia, self-esteem, affect and self-concept clarity before completing parts one and two of the imagery interview with the researcher. The highest reported emotion (HRE) during this interview was recorded for analysis. Following this interview, participants completed the IES-R and repeated the four state measures (SSPS, SSES, SSCCS and PANAS).

In session two, participants completed the four state measures again before completing part two of the interview schedule with the researcher. They also rated the HRE experienced just prior to IR. For seven participants, the emotion reported prior to IR differed from the HRE reported in session one; therefore these participants also re-rated the HRE reported at session one. Participants were then guided through IR by the researcher, using the rescripting protocol, before completing part two of the interview schedule, followed by the state measures. Following IR, some participants reported a different emotion to that recorded prior to IR. In addition to rating their new emotions participants also re-rated both the HRE reported prior to IR and that reported in session one. At the end of session two, participants participated in a positive mood induction task, to counteract any distress they may have experienced as a result of IR. They visualised a happy event and then wrote about it, as vividly as possible, for 10 minutes after which they rated their mood on five-point scale (0 = not at all happy, 5 = extremely happy). Sessions lasted between 45 and 60 minutes and were video recorded; 20% of recordings were rated for adherence to IR protocol by a study supervisor using the imagery rescripting coding framework manual (Salter, Parker, Brown, Leithy, & Wheatley, 2015; appendix T).

During session three, participants completed the state measures again, before completing part two of the imagery interview schedule. They also rated the HRE experienced just prior to the interview. All participants were asked to re-rate the HREs reported prior to and following IR and that reported in session one. Participants then completed the IES-R and the four state measures, together with the measures of self-esteem, affect, core schemas and paranoia that they had originally completed in session one. All participants were debriefed (appendix U) at the end of this session and offered the opportunity to ask any questions about the study.

Online screening assessment for:
Inclusion criteria: high non-clinical paranoia (Paranoia Scale)
Exclusion criteria: Depression (PHQ-9) and PTSD (PCL-5)

Session One
Paranoia Scale
Rosenberg Self Esteem Scale
Depression Anxiety Stress Scale
Brief Core Schema Scale

State Social Paranoia Scale
State Self Esteem Scale
PANAS
State Self Concept Clarity

Interview Schedule, parts one and two

Impact of Events Scale – Revised (Intrusions Subscale)
Repeat state measures

Session Two
Administer State Measures
Interview Schedule, part two
Rescripting Protocol
Interview Schedule, part two
Repeat State Measures
Positive Mood Induction Task

Session Three
Administer State Measures

Interview Schedule, part two

Impact of Events Scale – Revised (Intrusions Subscale)

Repeat State Measures
Rosenberg Self Esteem Scale
Depression Anxiety Stress Scale
Brief Core Schema's Scale

Paranoia Scale

Debrief

Figure 4: Sessions Protocol

Results

Data Analytic Procedure

Data were analysed using the IBM SPSS 23 for Windows and were tested for normality and homogeneity of variance. Visual inspection of the data suggested approximately normal distribution; however, the Shapiro Wilks test for the SSPS was significant at all six time points ($p < .01$), indicating that these scores significantly differed from a normal distribution. This data were therefore analysed using a non-parametric test. All other data were analysed using a series of t-tests and repeated measures analyses of variance, with one within-subjects factor (time pre and post IR and follow up), as they did not excessively violate the assumptions of normality. A series of post hoc t-tests were conducted to explore simple effects for each dependent variable. A Bonferroni corrected *p* value of 0.008 (0.05/6) was set for all tests.

Changes in Paranoia

Participants completed two measures of paranoia during the study: the PS and the SPSS. Table 2 shows the results of the PS, which they completed in sessions one and three. Table 3 shows the results of the SPSS, which they completed on six occasions (before and after the imagery interview in each session). There was a significant reduction in mean scores on the PS between baseline and follow-up, $t(14) = 3.89$, $p = .002$, $\eta^2 = .52$. The mean decrease in scores was 9.4 with a 95% confidence interval ranging from 4.21 to 14.59. There was no significant difference in scores on the SSPS across the six time points X^2 (5, n = 15) = 8.53, $p = .13$

Table 2
Mean scores and standard deviations of measures taken at baseline and follow-up

Measure*	Time 1 *M* (*SD*)	Time 3 *M* (*SD*)	t-test	n^2
PS	54.00 (7.02)	44.60 (2.44)	3.89	.52
DASS - D	6.87 (3.76)	4.73 (1.10)	1.91	-
DASS - A	4.20 (2.83)	3.00 (2.07)	1.56	-
DASS - S	9.07 (3.58)	6.27 (3.71)	2.59	.32
RSES	27.27 (2.37)	28.87 (3.16)	-2.09	-
BCSS – N SELF	3.67 (1.99)	2.33 (2.50)	2.12	.24
BCSS – P SELF	10.27 (3.67)	11.73 (3.96)	-1.98	-
BCSS – N OTHERS	4.60 (3.09)	4.47 (3.76)	.15	-
BCSS – P OTHERS	9.80 (4.14)	11.80 (4.84)	-1.87	-
IES-R	11.67 (5.59)	6.80(1.11)	2.68	.34

**Measures: PS (Paranoia Scale); DASS (Depression Anxiety Stress Scale); RSES (Rosenberg Self Esteem Scale); BCSS (Brief Core Schema Scale); IES-R (Intrusion Subscale of the Impact of Event Scale-Revised)*

Table 3
Mean scores and standard deviations of measures taken at each session

	Time 1		Time 2		Time 3	
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Measure**	(pre II)	(post II)	(pre IR)	(post IR)	(pre II)	(post II)
SSPS	12.13	14.00	12.00	11.33	12.53	12.53
	(3.83)	(6.06)	(2.75)	(1.59)	(3.72)	(3.89)
PANAS – P	26.87	23.33*	27.07	29.47	30.00	31.33*
	(5.48)	(8.15)	(7.40)	(9.30)	(8.48)	(8.50)
PANAS – N	33.47*	39.53*	33.53*	32.60*	31.93	32.13
	(3.00)	(5.60)	(4.22)	(3.11)	(4.01)	(4.12)
SSES – P	40.80*	32.80*	40.07	44.00*	41.40	43.07
	(8.79)	(12.50)	(11.40)	(12.05)	(10.91)	(13.46)
SSES – N	15.93*	22.27	13.60	12.53	11.00	10.00*
	(5.51)	(10.00)	(5.46)	(7.39)	(5.43)	(5.83)
SSCCS	14.13	14.27*	12.60*	12.13	12.20	11.93
	(3.27)	(3.56)	(3.27)	(3.44)	(3.14)	(3.48)

Note: II = imagery interview; IR = imagery rescripting
** Significant difference between time points*
***Measures: SSPS (State Social Paranoia Scale); PANAS (Positive and Negative Affect Scale); SSES (State Self Esteem Scale); SSCCS (State Self Concept Clarity Scale)*

Changes in Affect

Participants completed two measures of affect during the study: the DASS and the PANAS. Table 2 shows the results of the DASS, which they completed in sessions one and three. Table 3 shows the results of the PANAS, which they completed on six occasions (before and after the imagery interview in each session). There was a significant reduction in mean scores on the stress subscale between baseline and follow-up, $t(14) = 2.59$, $p = .022$, $\eta^2 = .32$. The mean decrease in scores was 2.8 with a 95% confidence interval ranging from .48 to 5.12. Mean scores on the depression and anxiety subscales did not differ significantly in this time period.

There was a significant main effect for time on positive affect scores within the PANAS-P, Wilks' Lambda = .28, $F(1,14) = 5.12$, $p = .014$, $\eta^2 = .79$. Positive affect significantly improved between that reported after the imagery

interview in session one and that reported following the final imagery interview at follow-up (p = .01).

Mauchley's test indicated that the assumption of sphericity had been violated for the PANAS-N, $X^2(14) = 24.99$, $p = .038$, therefore Greenhouse-Geisser corrected tests of a one-way repeated measures ANOVA are reported ($\boldsymbol{\varepsilon} = .611$). The results showed that there was a significant main effect for time on negative affect, $F(1,14) = 10.59$, $p < .005$, $\eta^2 = .43$. Negative affect significantly increased ($p = .035$) following the imagery interview in session one; however, this had reduced back to baseline prior to IR in session two ($p = .01$) and was further reduced following IR ($p = .003$). These effects were maintained at follow-up.

Changes in Self-Esteem

Participants completed two measures of self-esteem during the study: the RSES and the SSES. Table 2 shows the results of the RSES, which they completed in sessions one and three. Table 3 shows the results of the SSES, which they completed on six occasions (before and after the imagery interview in each session). There was a trend towards a difference in mean scores on the RSES between session one and follow-up, $t(14) = -2.09$, $p = .056$.

There was a significant main effect for time on mean positive self-esteem scores on the SSES-P, Wilks' Lambda = .21, $F(1,14) = 7.34$, $p = .004$, $\eta^2 = .79$. Positive self esteem significantly reduced following the imagery interview in session one ($p = .005$); however, this had returned to baseline levels prior to IR in session two and was significantly improved following IR ($p = .005$). This effect was maintained at follow-up.

Mauchley's test indicated that the assumption of sphericity had been violated for the SSES-N, $X^2(14) = 31.97$, $p = .005$, therefore Greenhouse-Geisser corrected tests of a one-way repeated measures ANOVA are reported ($\boldsymbol{\varepsilon} = .55$). The results showed that there was a significant main effect for time on mean negative self-esteem scores on the SSES, $F(1,14) = 13.48$, $p < .005$, $\eta^2 = .49$. Negative self-esteem significantly reduced between baseline and follow-up ($p = .025$).

Changes in Self-Concept Clarity

Mauchley's test indicated that the assumption of sphericity had been violated for this measure, $X^2(14) = 31.56$, $p = .005$, therefore Greenhouse-Geisser corrected

tests of a one-way repeated measures ANOVA are reported (**ε** = .50). The results showed that there was a significant main effect for time on mean scores on the SSCCS, $F(1,14) = 5.94$, $p < .004$, $\eta^2 = .30$. Self-concept clarity significantly reduced between that reported after the imagery interview in session one and prior to IR ($p = .038$).

Changes in Core Schemas

There was a significant decrease between mean scores on the negative-self subscale of the BCSS between session one and follow-up, $t(14) = 2.12$, $p = .053$, $\eta^2 = .24$. There were no significant differences in the subscales for positive-self, $t(14) = -1.98$, $p = .07$, negative-others, $t(14) = .15$, $p = .89$, or positive-others, $t(14) = -1.87$, $p = .08$ between session one and follow-up.

Changes in Impact of Memory Intrusions

There was a significant decrease in mean scores on the IES-R, intrusions subscale, between session one and follow-up, $t(14) = 2.68$, $p = .018$, $\eta^2 = .34$. The mean decrease in scores was 4.87 with a 95% confidence interval ranging from .97 to 8.76.

Changes in Memory Characteristics

Ratings of memory vividness, distress and encapsulated belief strength were taken at four time points across the intervention; frequency of memory intrusions was taken twice. Mean scores and standard deviations of these ratings are presented in Table 4. In sessions one and three, ratings were taken following administration of the imagery interview. In session two they were taken directly before and after IR. The mean score on the positive mood induction task in session two was $M = 4.13$, $SD = .52$ and scores ranged between three and five.

Changes in memory vividness. There was no significant difference in vividness ratings across the time points, Wilks' Lambda = .72, $F(1,14) = 1.59$, $p = .25$.

Changes in memory distress. Mauchley's test indicated that the assumption of sphericity had been violated for this measure, $X^2(5) = 14.92$, $p = .011$, therefore Greenhouse-Geisser corrected tests of a one-way repeated measures ANOVA are reported (**ε** = .59). The results showed there was a significant main effect for time on mean distress ratings, $F(1,14) = 17.22$, $p = .000$, $\eta^2 = .55$. Distress ratings significantly reduced between baseline and following IR ($p = .002$); this was maintained at follow-up.

Table 4
Mean scores and standard deviations of memory characteristics

	Time 1	Time 2		Time 3
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Measure		(pre IR)	(post IR)	
Vividness	7.47	7.40	7.73	6.73
	(1.30)	(1.35)	(2.05)	(1.49)
Distress	7.73*	6.73	5.60*	4.53
	(1.10)	(1.62)	(1.84)	(1.30)
Encapsulated Belief	71.33*	70.67	51.00*	47.87
	(15.17)	(12.52)	(19.84)	(21.77)
Intrusion Frequency	3.53	-	-	2.60
	(2.48)			(.45)

*Note: IR = imagery rescripting; * significant difference between time points*

Changes in encapsulated belief. Mauchly's test indicated that the assumption of sphericity had been violated, $X^2(5) = 11.66$, $p = .040$, therefore Greenhouse-Geisser corrected tests of a one-way repeated measures ANOVA are reported ($\boldsymbol{\varepsilon} = .61$). The results showed there was a significant main effect for time on encapsulated belief ratings, $F(1,14) = 14.51$, $p < .005$; $\eta^2 = .51$. Strength of encapsulated belief significantly reduced following IR ($p = .01$) and this was maintained at follow-up.

Changes in emotional intensity. There was a significant main effect of time for the HRE reported by participants in session one ($M = 7.87$, $SD = 1.55$), Wilks' Lambda = .16, $F(1,14) = 21.42$, $p < .001$, $\eta^2 = .84$. These emotions were all negative, for example, "lonely" and "sad" and were significantly reduced following IR ($M = 4.27$, $SD = 2.05$, $p = .018$) and further reduced at follow-up ($M = 4.13$, $SD = 1.41$, $p < .001$). Seven participants reported a different HRE just prior to IR ($M = 7.73$, $SD = 1.34$) although they were similarly negative emotions, for example, "anxious" and "disappointed". Mauchly's test indicated that the assumption of sphericity had been violated, $X^2(7) = 6.71$, $p = .040$, therefore Greenhouse-Geisser corrected tests of a one-way repeated measures ANOVA are reported ($\boldsymbol{\varepsilon} = .58$). The results showed there was a significant main effect for this emotion, $F(1,6) = 7.85$, $p = .025$, $\eta^2 = .57$, which was significantly reduced following IR ($M = 4.47$, $SD = 2.30$, $p = .002$) and further reduced at

follow-up (M = 4.00, SD = 1.65, $p < .001$).

In addition to reductions in distressing emotions, twelve participants also reported positive emotions following IR in session two, such as "relief" and "satisfied" (M = 6.42, SD = 1.44). Ratings of these positive emotions were maintained at follow-up (M = 6.92, SD = 1.73), $t(12) = 1.03$, $p = .324$.

Changes in frequency of memory intrusions. There was no significant difference in mean ratings of intrusion frequency between baseline and follow-up, $t(14) = 1.54$, $p = .145$.

Discussion

Summary of Findings

This study is the first to assess the impact of IR on non-clinical paranoia. The results provide encouraging evidence, that a single session of IR may be effective as a standalone technique in reducing non-clinical paranoia. The findings supported the original hypotheses and found that IR reduced negative affect, negative core schemas about the self and the impact of memory intrusions. Improvements in positive affect and self-esteem also occurred, alongside reductions in the strength of encapsulated belief and memory-related distress and the emotional impact of the targeted memories. Effects were either maintained or further reduced at one-week follow-up and all effect sizes were large.

These results are consistent with those of other trials of IR across a range of psychological difficulties, including social anxiety (e.g. Reimer & Moscovitch, 2015; Norton & Abbott, 2016), PTSD (Raabe et al., 2015) and psychosis (Ison et al., 2014). A novel feature of this study is the focus on changes in self-variables as a result of IR. This is only the second study, alongside Cili and Stopa (2016), to highlight the positive impact of IR on self-esteem. The theoretical implications of these findings are discussed further below.

Although paranoia decreased between baseline and follow-up, there were no observed differences in the measure of state levels of paranoia across the intervention. This might be due to the wording of the SSPS, which asks participants to rate their agreement with a range of statements "based on the contact you have had with people today". Participants frequently reported limited contact with anyone prior to attending the study, particularly when

attending morning sessions. As a result, this measure may not have captured state paranoia effectively in this study.

Few studies have examined the impact of IR on core schemas, one of which was conducted with people with psychosis (Ison et al., 2014). It was encouraging to find that in the current study, a single session of IR significantly reduced negative core beliefs related to the self. By contrast, Ison and et al. did not find any impact of IR on core beliefs about the self, although they did report a change in negative schemas about others in one of the four participants in their case study. The discrepancy between the findings of Ison et al. and the present study could simply be the result of severity: participant's core beliefs in the current sample may not have been as deeply entrenched as those typical of a clinical population. Alternatively, it could be argued that as paranoia is characterised by the fear that others intend to cause us harm, negative core schemas about others may be more resistant to change in this population and repeated IR sessions may be required. Further research is required to determine the efficacy of this technique on core beliefs, and whether different approaches to IR are necessary with clinical and non-clinical populations with psychotic type presentations.

Similar to other IR studies (e.g. Holmes, Arntz, & Smucker, 2007) IR had a substantial effect on intrusive images, effectively reducing the distress associated with the adverse memory, the encapsulated belief strength and the emotional impact of intrusions. There were no differences, however, in either the vividness of the memory or the frequency of memory intrusions following IR. Not all IR studies report differences in these measures (e.g. Nilsson et al., 2012) and the study design may have impacted on the current results. Participants in the current study were frequently asked to recall their memory over a brief, three-week, intervention period, which may explain why their memories remained vivid. The frequency of memory intrusions reported in this sample was also very low at baseline and so significant change in this measure was unlikely.

Although positive affect increased across the intervention and negative affect and stress decreased, no differences were observed on the anxiety and depression subscales of the DASS. The non-clinical nature of this sample may have resulted in floor effects with both this scale and the frequency of memory

intrusions. Scores on the DASS anxiety and depression subscales were similarly low at baseline, therefore greater variability in the sample might have been needed in order to adequately test hypotheses using these measures.

This study adds to the current evidence base for the efficacy of IR as a transdiagnostic technique and has advanced the research agenda set out by Arntz (2012) by providing preliminary evidence for its use with non-clinical paranoia. It has highlighted the effectiveness of IR as a standalone technique, in the absence of CR, using only one treatment session. The use of a brief follow-up period demonstrated the stability of the effects. A further strength of this study was that IR adherence was assessed and the researcher demonstrated excellent adherence to the suggested protocol.

Theoretical Implications

Despite the growing body of evidence supporting the clinical effectiveness of IR, the mechanisms of change are still poorly understood. The results of the current study are consistent with two interlinked theories that have been proposed as possible explanations for how IR achieves its effects, namely the competition retrieval hypothesis (Brewin, 2006) and the US-revaluation theory (Arntz & Weertman, 1999; Arntz, 2012).

The competition retrieval hypothesis suggests individuals have multiple self-representations that continually compete for retrieval. The theory suggests that the process of IR deliberately creates more positive self-representations in relation to a negative autobiographical memory. The newer and more positive self-representations then compete with the original negative self-representation when the memory is triggered. The theory is supported by the self-memory system (SMS) model that suggests individuals possess multiple working selves, comprised of a complex set of goals and associated self-images (Conway, 2005; Conway & Pleydell-Pearce, 2000). The working self associated with distressing memories is considered highly accessible as it poses a threat to the achievement of individual goals.

In line with this theory, in the current study following initial activation of the distressing memory in session one, participants' positive self-esteem reduced. This suggests that their negative working selves may have become more easily accessible following exposure to the memory. This in turn may have destabilised participants' sense of self, as reflected in their reduced self-concept clarity

scores. Following IR, positive self-esteem improved once more, suggesting a newer, more positive self-representation may then have been more easily retrieved.

Although these findings are consistent with the SMS model and the retrieval competition hypothesis, there are aspects of the present results that would also fit with Arntz's proposal regarding underlying mechanisms of change. Arntz suggests that IR modifies the original memory, allowing it to be reconsolidated with a different meaning, thereby reducing the associated distress. In this study, twelve participants reported positive emotions directly following IR, such as "relief" and "calm". Moreover, all fifteen participants reported new, more positive encapsulated beliefs about their memories at follow-up, for example, "I am stronger than I think I am". These findings suggest that participants had formed new meanings about their memories following the intervention, and subsequently associated more positive emotions with the event.

This is only the second study to examine the impact of IR on aspects of the self and their potential role in the efficacy of IR, and the first in a sample with non-clinical paranoia. Cili and Stopa (2016) similarly found that recalling a negative autobiographical memory in an initial imagery interview led to reduced positive self-evaluations and a diminished degree of self-concept clarity. Taken together these results provide initial converging evidence of a role for the self in IR. Future studies need to directly assess these effects, as each of these theoretical approaches may explain different aspects of the changes that occur through IR. Whereas the SMS and competition retrieval hypotheses offer a cognitive explanation for change at a conscious level, the US-revaluation theory posits an unconscious approach to change in line with learning theories. Dismantling studies, in which IR is compared with cognitive restructuring for example, will help to discriminate between these different theoretical explanations.

Clinical Implications

This study provides initial evidence for the efficacy of IR as a brief, standalone technique in reducing high levels of non-clinical paranoia. Despite the brevity of the intervention, the impact of IR on a range of variables was large and comparable to those reported in studies with other disorders. Importantly, the observed effects were maintained at one-week follow-up, suggesting

sustainability of intervention effects. Replication of the study, using a randomized controlled approach with a non-clinical sample, would provide further evidence for its efficacy and enable the approach to be developed for use with clinical populations. This research should then focus on the efficacy of IR, both in comparison and as adjunct to current evidence based treatment approaches such as trauma focused CBT. Dismantling studies would also help to clarify the mechanisms underlying the processes of change in IR.

Study Limitations

This is the first study to investigate IR with non-clinical paranoia, and so the findings require replication before generalising the results. The effect sizes in this study were large and the study had adequate power to detect this effect. Increasing the sample size however, would increase the power of the study to detect small and medium effects and therefore increase the ability to draw more meaningful conclusions about the effectiveness of the technique with this population. The study sample also consisted predominantly of females, which may have unintentionally introduced a gender bias into the observed results. Although not yet conclusively proven, there is evidence of a difference in the expression of psychotic like symptoms across the continuum between men and women (Barajas, Ochoa, Obiols & Lalucat-Jo, 2015) and a more balanced gender sample would enable more conclusive results to be drawn about the effect of the treatment with both genders. The study would therefore benefit from replication with a larger, controlled non-clinical sample, with a more balanced gender mix before extending research into clinical trials. Further studies are needed with a matched control group, to establish the efficacy of the technique over exposure alone, as has been demonstrated in research with other psychological difficulties using IR.

The internal consistency of some questionnaires was low in this study, bringing into question the validity of these measures with the current sample. Replication studies should check for good internal consistency to ensure confidence in the results. This study was not designed to compare the effects of IR with CR, however it would be important for future research to differentiate the effects of adding CR to the intervention, to determine whether it is a necessary component for IR interventions with this population. Finally, as the same therapist-researcher completed all of the treatment sessions, it cannot be

said that the observed effects were not a result of specific therapist factors. Future studies should therefore aim to use multiple therapists to address this.

Conclusion

This study provides preliminary evidence that a single session of IR, as a standalone intervention technique, may be effective in reducing non-clinical paranoia. The results need to be interpreted in light of design limitations. Randomised controlled studies of the impact of IR with larger, randomised samples, using multiple therapists are now needed. This will help to provide an evidence base, with the aim of developing the technique for use with clinical populations. Component studies will clarify the mechanisms of change in IR and elements necessary to optimise the technique for use with non-clinical paranoia.

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Appendix A Paranoia Scale

Please indicate to what extent the following statements apply to you, with
1 being not at all applicable to me, and **5 being extremely applicable to me**

1	Someone has it in for me	1	2	3	4	5
2	I sometimes feel as if I'm being followed	1	2	3	4	5
3	I believe that I have often been punished without cause	1	2	3	4	5
4	Some people have tried to steal my ideas and take credit for them	1	2	3	4	5
5	My friends and family find more fault in me than they should	1	2	3	4	5
6	No-one really cares that much what happens to you	1	2	3	4	5
7	I am sure I get a raw deal from life	1	2	3	4	5
8	Most people will use somewhat unfair means to gain profit or an advantage, rather than lose it	1	2	3	4	5
9	I often wonder what hidden reason another person may have for doing something nice for you	1	2	3	4	5
10	It is safer to trust no one	1	2	3	4	5
11	I have often felt that strangers were looking at me critically	1	2	3	4	5
12	Most people make friends because friends are likely to be useful to them	1	2	3	4	5
13	Someone has been trying to influence my mind	1	2	3	4	5
14	I am sure I have been talked about behind my back	1	2	3	4	5
15	Most people inwardly dislike putting themselves out to help other people	1	2	3	4	5
16	I tend to be on my guard with people who are somewhat more friendly than I expected	1	2	3	4	5
17	People have said insulting and unkind things about me	1	2	3	4	5
18	People often disappoint me	1	2	3	4	5
19	I am bothered by people outside in cars, in stores, etc. watching me	1	2	3	4	5
20	I have often found people jealous of my good ideas just because they had not thought of them first.	1	2	3	4	5

Appendix B State Social Paranoia Scale

We are interested in your views. Please circle how much you agree or disagree with the following statements based on contact you have had with people today.

	Do not agree	Agree a little	Agree moderately	Agree very much	Totally agree
1. Someone was hostile towards me	1	2	3	4	5
2. No-one had any particular feelings about me	1	2	3	4	5
3. Someone had bad intentions towards me	1	2	3	4	5
4. Someone was friendly towards me	1	2	3	4	5
5. Someone was trying to make me distressed	1	2	3	4	5
6. I felt very safe in their company	1	2	3	4	5
7. Someone stared at me in order to upset me	1	2	3	4	5
8. Everyone was trustworthy	1	2	3	4	5
9. Someone wanted me to feel threatened	1	2	3	4	5
10. I wasn't really noticed by anybody	1	2	3	4	5
11. Someone had kind intentions toward me	1	2	3	4	5
12. Someone would have harmed me in some way if they could	1	2	3	4	5
13. Someone had it in for me	1	2	3	4	5
14. Everyone was neutral towards me	1	2	3	4	5
15. Someone was trying to intimidate me	1	2	3	4	5
16. Everyone was pleasant	1	2	3	4	5
17. Someone was trying to isolate me	1	2	3	4	5
18. No-one had any intentions towards me	1	2	3	4	5
19. Everyone seemed unconcerned by my presence	1	2	3	4	5
20. Someone was trying to irritate me	1	2	3	4	5

Appendix C Patient Health Questionnaire

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Appendix D Primary Care PTSD Screen

Instructions:

In your life, have you ever had any experience that was so frightening, horrible, or upsetting that, in the past month, you:

1. Have had nightmares about it or thought about it when you did not want to? YES / NO

2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it? YES / NO

3. Were constantly on guard, watchful, or easily startled? YES / NO

4. Felt numb or detached from others, activities, or your surroundings? YES / NO

Appendix E PTSD Checklist for DSM-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	**Not at all**	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being “superalert” or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Appendix F Depression and Anxiety Scale

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

Appendix G Positive and Negative Affect Scale

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate number next to that word. Indicate to what extent you feel this way right now. Use the following scale to record your answers:

1 = very slightly or not at all
2 = a little
3 = moderately
4 = quite a bit
5 = extremely

1. Interested	1	2	3	4	5
2. Disinterested	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

Appendix H Rosenberg Self Esteem Scale

Below is a list of statements dealing with your general feelings about yourself.
If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1. On the whole, I am satisfied with myself	SA	A	D	SD
2. At times, I think I am no good at all	SA	A	D	SD
3. I feel that I have a number of good qualities	SA	A	D	SD
4. I am able to do things as well as most people	SA	A	D	SD
5. I feel I do not have much to be proud of	SA	A	D	SD
6. I certainly feel useless at times	SA	A	D	SD
7. I feel that I'm a person of worth, at least on an equal plane with others	SA	A	D	SD
8. I wish I could have more respect for myself	SA	A	D	SD
9. All in all, I am inclined to feel that I am a failure	SA	A	D	SD
10. I take a positive attitude towards myself	SA	A	D	SD

Appendix I State Self Esteem Scale

For each of the items, please circle the number on the scale that best represents how you feel right now.

1. Pride

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

2. Inadequate

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

3. Competent

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

4. Confident

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

5. Incompetent

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

6. Stupid

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

7. Worthless

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

8. Smart

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

9. Resourceful

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

10. Effective

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

11. Ashamed

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

12. Efficient

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely

Appendix J State Self Concept Clarity Scale

For each of the following statements, please indicate the extent to which the statement applies to you RIGHT NOW. Use the scale provided.

1. **My beliefs about myself often conflict with one another.**

   1----------2----------3----------4----------5
   Strongly Disagree — Strongly Agree

2. **My beliefs about myself seem to change very frequently.**

   1----------2----------3----------4----------5
   Strongly Disagree — Strongly Agree

3. **If I were asked to describe my personality, my description might end up being different from one day to another day.**

   1----------2----------3----------4----------5
   Strongly Disagree — Strongly Agree

4. **Sometimes I feel that I am not really the person that I appear to be.**

   1----------2----------3----------4----------5
   Strongly Disagree — Strongly Agree

Appendix K Brief Core Schema Scale

This questionnaire lists beliefs that people can hold about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1 - 4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response to each belief is often the most accurate.

				Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
MYSELF							
I am unloved	NO	YES	→	1	2	3	4
I am worthless	NO	YES	→	1	2	3	4
I am weak	NO	YES	→	1	2	3	4
I am vulnerable	NO	YES	→	1	2	3	4
I am bad	NO	YES	→	1	2	3	4
I am a failure	NO	YES	→	1	2	3	4
I am respected	NO	YES	→	1	2	3	4
I am valuable	NO	YES	→	1	2	3	4
I am talented	NO	YES	→	1	2	3	4
I am successful	NO	YES	→	1	2	3	4
I am good	NO	YES	→	1	2	3	4
I am interesting	NO	YES	→	1	2	3	4
OTHER PEOPLE							
Other people are hostile	NO	YES	→	1	2	3	4
Other people are harsh	NO	YES	→	1	2	3	4
Other people are unforgiving	NO	YES	→	1	2	3	4
Other people are bad	NO	YES	→	1	2	3	4
Other people are devious	NO	YES	→	1	2	3	4
Other people are nasty	NO	YES	→	1	2	3	4
Other people are fair	NO	YES	→	1	2	3	4
Other people are good	NO	YES	→	1	2	3	4
Other people are trustworthy	NO	YES	→	1	2	3	4
Other people are accepting	NO	YES	→	1	2	3	4
Other people are supportive	NO	YES	→	1	2	3	4
Other people are truthful	NO	YES	→	1	2	3	4

Appendix L Intrusions Subscale of the Impact of Events Scale-Revised

Below is a list of difficulties people sometimes have after stressful life events. Please read each item and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to your memory, how much you were distressed or bothered by these difficulties? Please circle your response.

1. Any reminder brought back feelings about it

0	1	2	3	4
Not at all				Extremely

2. I had trouble staying asleep

0	1	2	3	4
Not at all				Extremely

3. Other things kept making me think about it

0	1	2	3	4
Not at all				Extremely

4. I thought about it when I didn't mean to

0	1	2	3	4
Not at all				Extremely

5. Pictures about it popped into my mind

0	1	2	3	4
Not at all				Extremely

6. I found myself acting or feeling like I was back at that time

0	1	2	3	4
Not at all				Extremely

7. I had waves of strong feelings about it

0	1	2	3	4
Not at all				Extremely

8. I had dreams about it

0	1	2	3	4
Not at all				Extremely

Appendix M Semi-structured Interview Schedule

Part One:
When you responded to the study advert, you were asked if you were troubled by a difficult memory. That's the memory that we're going to be working on during this study and I'd like to ask to ask you some questions about it now. Is that ok?

Can you briefly tell me about the memory?

Prompts:
What were you doing?
Where were you?
How many other people were involved?
What were other people doing?
If I were watching it on a TV what would I see?
How long ago did [this event] occur?
What age were you then?

Now, if you feel comfortable to do so, I'd like you to close your eyes and re-create that memory as vividly as possible…

Do you have a clear picture of it in your mind?

Part Two:
On a scale of zero to ten, where zero is not at all vivid and ten is extremely vivid, (i.e. clear, intense) how vivid is the memory right now?

On a scale of zero to ten, where zero is not at all distressing and ten is extremely distressing, how distressing is it to think of that memory right now?

What emotion do you feel while you are imagining that event right now?
On a scale of zero to ten, where zero is not at all [emotion] and ten is extremely [emotion], how [emotion] do you feel right now?

And when you think about that memory now, what does it mean to you or say about you, the world or others?

On a scale of <u>zero to one hundred</u>, where zero is you do not believe [belief] and one hundred is you totally believe [belief], how much do you believe [beliefs about the self, world and others] right <u>now</u>?

On a scale of <u>zero to ten</u>, where zero is not at all and ten is several times a day, how frequently do you find yourself thinking about this memory?

Appendix N Rescripting Protocol

We are going to do some work on the memory that you described in our first session, I've got some notes here about it.

Go through the memory briefly and confirm what emotions and beliefs are associated with the memory.

Today we're going to explore that memory in some detail and talk about in several different ways. For some people, this can be helpful in coming to terms with a difficult and upsetting memory like the one you have described.

In a couple of minutes, I'm going to ask you to close your eyes, if you feel comfortable to do so, and to go through the memory again, but this time, rather than just telling me about it as you did last week, I want you to tell it to me as if it was happening right now (e.g. "I am …....."). I know that this might be quite painful for you, but while we cannot change what actually happened to you, we're going to try and change what it means to you by looking at it from different perspectives. Does that sound ok?

If you want to stop at any time, just let me know but it would be better if we can keep going through the memory with your eyes closed if you can. Would you like to ask any questions before we start?

Now I will ask you to close your eyes and picture the memory in your mind, in as much detail as possible.
Do you have a clear picture of it in your mind?

On a scale of zero to ten, where zero is not at all vivid and ten is extremely vivid, (i.e. clear, intense) how vivid is the memory right now?

On a scale of zero to ten, where zero is not at all distressing and ten is extremely distressing, how distressing is it to think of that memory right now?

What emotion do you feel while you are imagining this event right now? (On a scale of zero to ten, where zero is not at all [emotion] and ten is extremely [emotion], how [emotion] do you feel right now?

And when you think about that memory now, on a scale of zero to one hundred, how much do you believe [participants belief from interview schedule] right now?

Let yourself experience the feelings that you felt at the time and when you are ready, begin to talk me through the memory from the beginning as though it were happening right now. So for example I am…

Use prompts:
Roughly how old are you?
What can you see?
What can you hear?

Do you have any sensations (on your skin, in your body)?
What sort of day is it?
What are you wearing?

Now, keeping your eyes closed, I would like you to rewind back to the beginning of the memory and we're going to go through it again, but this time, we're going to go through it from the perspective of your adult self, who you are now sitting in this room. So you're going to go into the memory with your younger self (little NAME) and when you're there you can decide what you want to do to help (NAME) in that really difficult situation.

So, when you're ready, tell me the memory again, this time from the perspective of your adult self…
(What is happening now, what is NAME doing now)

Now, keeping your eyes closed, we're going to rewind to the beginning once more and this time we're going to go through the memory again, but this time from the perspective of little [name], but you're going to be there as an adult and [name] might ask you to help [him/her] with the situation in any way that [he/she] feels like [he/she] needs help. So you're both still in the memory but this time you're telling it to me from [little name's] perspective.

Prompt: so bigger [name] is there with you, is there anything you'd like [him/her] to do?

How do you feel now?

Hold that feeling for a couple of moments and then I'll ask you to open your eyes.

When you're ready, just open your eyes.
How do you feel now?

On a scale of zero to ten, where zero is not at all vivid and ten is extremely vivid, (i.e. clear, intense) how vivid is the memory right now?

On a scale of zero to ten, where zero is not at all distressing and ten is extremely distressing, how distressing is it to think of that memory right now?

What emotion do you feel while you are imagining this event right now? (On a scale of zero to ten, where zero is not at all [emotion] and ten is extremely [emotion], how [emotion] do you feel right now?

And when you think about that memory now, on a scale of zero to one hundred, how much do you believe [participants belief from interview schedule] right now?

Clinical Debrief
How are you feeling now?
What was that like? Were you able to concentrate throughout the exercise or did

your attention wander? *If yes*: What was that like? (*Check for dissociation*.)
Did anything surprise you?
Did any emotions come up during any parts of the exercise that were unexpected, or troubling in any way? (*Explore if necessary*.)

Happy Task

Now we just have one more thing left to do and I would like you to think of a happy event for me and write about it as vividly as possible

And finally I would like to ask you rate your current mood on a scale of one to five, where one is not at all happy and five is extremely happy.

Appendix O Ethical Approval

Research Governance Feedback on your Ethics Submission

Submission Number 14007:
Submission Title: The impact of imagery rescripting on non-clinical paranoia: coping with difficult memories:

The Research Governance Office has reviewed and approved your submission

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment) or external ethics review (e.g. NRES). The following comments have been made:

This is to confirm that the work detailed in your protocol and Ethics Application will be covered by the University of Southampton insurance programme. As Chief or Principal Investigator, you are responsible for the conduct of the study and you are expected to:

1. Ensure the study is conducted as described in the protocol/study outline approved by this office
2. Advise this office of any amendment/change to the protocol, methodology, study documents, research team, participant numbers or start/end date of the study
3. Report to this office as soon as possible any concern, complaint or adverse event arising from the study

Failure to do any of the above may invalidate your ethics approval and therefore the insurance agreement, affect funding and/or sponsorship of your study; your study may need to be suspended and disciplinary proceedings may ensue.
On receipt of this letter you may commence your research but please be aware other approvals may be required by the host organisation if your research takes place outside the University. It is your responsibility to check with the host organisation and obtain the appropriate approvals before recruitment is underway in that location.

May I take this opportunity to wish you every success for your research

Submission ID : 14007
Submission Name: The impact of imagery rescripting on non-clinical paranoia: coping with difficult memories

Date : 12 Aug 2015
Created by : Pamela McSherry

Appendix P Study Advertisement

Are you troubled by a difficult memory?

(Version 2 07.10.15)

ERGO Study ID number: 14007
(recruiting 17/08/15 – 29/02/16)

You could earn up to 37 participation credits or £20 for taking part in this research

We are interested in studying memories and how they may affect us over time.

We are looking for participants who have a recurrent memory of a **distressing event** that happened at least **6 months ago**. We are looking for people who have a memory in which **other people** were involved, and that you now find yourself **thinking about**, whether you want to or not. The memory can be upsetting, but it should not be so disturbing that you have sought psychological treatment for it.

Does this describe you?

If so, and you would like to participate in our study, we invite you to complete some online questionnaires to see if you are eligible for the second part of the study. The second part will involve meeting with a member of the research team for approx. 1 hour a week, over 3 weeks, to discuss your memory in more detail. You will also be asked to complete some more questionnaires.

Interested?

If you are interested in taking part in this study, please tick the box below to indicate that you consent to take part and then complete the screening questionnaires presented to you. A member of the research team will then contact you to advise whether you are eligible for the second part of the study and invite you to participate.

If you have any questions about this study please contact Pamela McSherry at pm4g13@soton.ac.uk

Thank-you.

Appendix Q Brief Participant Information Sheet

Initial Screen Participant Information Sheet (Version 2 02.10.15)

Study Title: Coping with Difficult Memories

Researcher: Pamela McSherry, Trainee Clinical Psychologist

ERGO Study ID number: 14007

Please read this information carefully before deciding to take part in this research.

What is the research about?
I am a Trainee Clinical Psychologist studying at the University of Southampton. As part of my training I am conducting research examining upsetting and troubling memories by exploring how they affect people who are **not** suffering from a psychological disorder. By understanding how people come to terms with difficult memories we aim to eventually use this information to contribute to the psychological treatment of clinical problems.

What will happen to me if I take part?
You will be asked to complete three screening questionnaires on the next page. If you meet the criteria for the study following this screening a member of the research team will contact you to invite you to participate in the second part of the study. In the second part of the study you will be asked to attend three sessions with a member of the research team, approximately 1 week apart, to discuss your memory in more detail.

Are there any benefits in my taking part?
If you choose to participate you will be granted either participation credits (up to 37 credits) or money (up to £20).

Appendix R Comprehensive Participant Information Sheet

Participant Information Sheet (Version 1 23.07.15)

Study Title: Coping with Difficult Memories

Researcher: Pamela McSherry, Trainee Clinical Psychologist

ERGO Study ID number: 14007

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?
I am a Trainee Clinical Psychologist studying at the University of Southampton. As part of my training I am conducting research examining upsetting and troubling memories by exploring how they affect people who are **not** suffering from a psychological disorder. By understanding how people come to terms with difficult memories we aim to eventually use this information to contribute to the psychological treatment of clinical problems.

Why have I been chosen?
You have completed some online screening questionnaires and met the criteria for the study.

What will happen to me if I take part?
You will be asked to attend three sessions with a member of the research team approximately one week apart. During the first session you will be asked to talk about a distressing memory that you find yourself thinking about a lot. During the second session you will be asked to take part in an exercise, during which you will be asked to describe your memory in some detail and talk about it with a member of the research team. At the final session you will be asked to talk briefly about the memory once again. You will also be asked to complete a number of questionnaires at each session. Each session will take, up to, approximately one hour.

Are there any benefits in my taking part?
Some people find it helpful to look at a distressing memory in a detailed and structured way, although this may also create some transient distress while you are examining it. We hope that your participation will contribute towards increasing knowledge in this area of psychology. You will also be granted either participation credits or money for your participation.

Are there any risks involved?
You may experience some transient negative thoughts and feelings and these can be discussed with a member of the research team. Once the study has finished, the research will be fully explained to you and you will be given the opportunity to ask questions.

Will my participation be confidential?
All information will remain confidential. Data will be stored on a password protected computer and only the research team will have access to the study data.
What happens if I change my mind?
Your participation in the study is voluntary and you have the right to withdraw from the study at any time without any adverse consequences. If you are a student, withdrawal from the study will not have any effect on your grades.

What happens if something goes wrong?
If you have any questions or concerns about your rights as a participant in the study, or feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856. Email: fshs-rso@soton.ac.uk

Where can I get more information?
If you would like more information on the study please contact Pamela McSherry at pm4g13@soton.ac.uk

Appendix S Consent Form

UNIVERSITY OF Southampton

CONSENT FORM (Version 1, 23.07.15)

Study title: Coping with Difficult Memories

Researcher name: Pamela McSherry
ERGO Study ID number: 14007

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (23.07.15/version 1) and have had the opportunity to ask questions about the study ☐

I agree to take part in this research project and agree for my data to be used for the purpose of this study ☐

I agree to both the audio and video recording of interviews for the purpose of this study ☐

I understand my participation is voluntary and I may withdraw at any time ☐

I understand my collected data will be treated confidentially and that published results of this research will also retain my confidentiality ☐

Name of participant (print name)…….

Signature of participant…….

Date……

Appendix T Imagery Rescripting Coding Framework

Imagery rescripting coding framework and manual

Caroline Salter

Royal Holloway University of London, UK

Eleanor Parker

Royal Holloway University of London, UK

Gary Brown

Royal Holloway University of London, UK

Sharif El Leithy

Post Traumatic Stress Clinic, Springfield Hospital, UK

Jonathan Wheatley

Maudsley Hospital, UK

Theme	Sub-theme	Response	Example
1. Pre-imagery			
1.1. ImRs preparation	1.1.1 The ImRs has been previously rehearsed	1.Yes (verbally) 2. Yes (in an earlier re-script) 3. No(re-script develops spontaneously) 4. Unclear / unknown 5. Other (specify)	
	1.1.2. Who the ImRs is prepared by	1.ImRs solely developed by client 2.ImRs mostly developed by client 3.ImRs developed equally by client and therapist 4.ImRs mostly developed by therapist 5.ImRs solely developed by therapist 6.N/a, there is no pre ImRs preparation	
	1.1.3. Agreed aim of the re-script	1.Safety 2.Comfort / compassion 3.Revenge 4.Assertiveness 5.Control 6.Other (specify) 7.N/a, there is no pre-agreed aim	
	1.1.4. Memory aids used in the session	1.Memory aids e.g., flashcards or recordings are used (please specify) 2. Memory aids not used	
1.2. Attitude towards the re-script process	1.2.1. Client understanding	1.Understands rationale 2. Does not understand rationale 3. Unclear / unknown	
	1.2.2. Client motivation	1. Motivated 2. Unsure but willing to try 3. Does not believe it will work 4. Fearful 5. Unclear / unknown 6. Other (specify)	

2. Whole process			
2.1. Client's ability to follow ImRs	2.1.1. Amount of guidance given by the therapist	1.Client is able to guide themselves through the re-script with no prompting from therapist 2.Client is able to guide themselves through the re-script with little prompting from therapist 3.Client and therapist guide the re-script equally 4.ImRs is mostly guided by the therapist 5.ImRs is completely guided by the therapist 6. Unclear / unknown	
	2.1.2. Client's ability to stay with the image	1.Client stays with image throughout 2.Client stays with image mostly 3.Client struggles to stay with image 4.Client cannot stay with image at all 5.Client dissociates 6. Unclear / unknown	
	2.1.3. The re-scripting process follows a coherent narrative	1.Yes 2. Yes, with prompts 3. In part 4. No, hard to follow 5. Unclear / unknown	
	2.1.4. Speed of the image	1.Real time 2.Slowed down 3.Fast forward 4.Unclear / unknown	
2.2. Activation of the image	2.2.1. Described in first person	1.Yes 2.No (specify which) 3.Mixed (specify which)	
	2.2.2. Tense used	1.Past 2.Present 3.Future 4.Mixed (specify which) 5.Other	

	2.2.3. Visualised (can the re-script be seen in the mind?)	1.Yes (“I can see it easily”) 2.Sometimes (“It's hard to keep the image”) 3. No (“I can't see anything clearly”) 4. Unclear/unknown	
	2.2.4. Eyes open	1.Eyes open 2.Eyes closed 3.Unclear / unknown	
	2.2.5. Senses involved	1.Touch 2. Taste 3. Sight 4. Sound 5. Smell	
	2.2.6. Perspective taken	1. Field 2. Observer 3. Mixed	
	2.2.7. Vividness of the re-script (how clear, intense or strong is the re-script)	1. Very vivid (“I can see/ hear/ smell/ feel/ taste it very clearly”) 2. Vivid (“I can see/ hear/ smell/ feel/ taste it clearly”) 3. Some parts are vivid (“Mostly all the detail is there”) 4. Not vivid (“everything is a bit blurred”) 5. Unclear / unknown	
3. Reliving			
3.1. Activation of original internal processes	3.1.1. Presence of trauma-related emotions during the re-scripting session	1. Most or all trauma-related emotions are present in the session 2. Some trauma-related emotions are present during the session 3. Trauma-related emotions are absent in the re-scripting session 4. Unclear / unknown	
	3.1.2. Type of trauma-related emotions during the re-scripting session	1. All positive 2. Mainly positive 3. Mixed 4. Mainly negative 5. All negative 6. Specify all emotions present in the re-script that were present during the original traumatic image	

	3.1.3. Intensity of trauma-related emotions present during the re-scripting session	1.Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	
	3.1.4. Presence of trauma-related physiological sensations during the re- scripting session	1.Most or all trauma-related physiological sensations are present in the re-scripting session 2. Some trauma-related physiological sensations are present during the session 3. Trauma-related physiological sensations are absent in the re-scripting session 4. Unclear / unknown 5. Specify all physiological sensations present in the re-script that were present during the original traumatic image	
	3.1.5. Intensity of the trauma-related physiological responses present during the re-scripting session	1.Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	
	3.1.6. Presence of trauma-related cognitions present during the re-scripting session	1.Most or all trauma-related cognitions are present in the re-scripting session 2. Some trauma-related cognitions are present during the session 3. Trauma-related cognitions are absent in the re-scripting session 4. Unclear / unknown 5. Specify all cognitions present in the re-script that were present during the original traumatic image	
	3.1.7. Intensity of trauma-related cognitions present during the re-scripting session	1. Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	

4. Re-script			
4.1 Departure from the original image	4.1.1. Setting	1. The whole of the image takes place in the original setting 2. Image begins in the original setting, but then moves to a new setting 3. The whole of the image takes place in a different setting 4. Unclear / unknown	
	4.1.2. When the rescript occurs	1. A while before the traumatic image (please specify) 2. Immediately before the traumatic image 3. During the traumatic image 4. Immediately after the traumatic image 5. A while after the traumatic image (please specify)	
	4.1.3. Amount of new image	1.All new (e.g., safe place imagery) 2. Mostly new image, some old 3. Half original image, half new re-script 4. Mostly old image, some new 5. No change from original (e.g., reliving only)	
4.2.Others in the re- script	4.2.1. Individuals present in the re-script	1. Perpetrator 2. Client as they were at the time of the image 3. Strangers 4. Family 5. Therapist 6. Client as adult / current self 7. Friends 8. Fictional character e.g., an angel 9. Other (please specify)	
	4.2.2. Individuals present in rescript were present during the original intrusive image	1. Yes 2. No 3. Unknown	
	4.2.3. The emotional reactions of the individuals present	Specify emotions	

	4.2.4. Actions of the individuals present	1. Protect client 2. Take client to safety 3. Attack / seek revenge on perpetrator 4. Comfort / Care for client 5. Speak on behalf of / stand up for client 6. Berates the perpetrator	
	4.2.5. Presence of physical contact	1. Yes 2. No	
	4.2.6. Anything said by each individuals	1. Yes (please specify main messages) 2. No	
	4.2.7. Individual in the image responsible for the change	1. Perpetrator 2. Client as they were at the time of the image 3. Strangers 4. Family 5. Therapist 6. Client as adult / current self 7. Friends	
4.3. Believability	4.3.1. The client experienced something similar in real life	1.Yes (exactly the same) 2. Yes (similar) 3. No	
	4.3.2. It feels believable to the client, regardless of whether it is physically possible	1.Yes (feels as though it could have happened) 2. No (feels very alien, can't connect) 3. Unclear / unknown	
	4.3.3. The re-script is an event that is physically possible given constraints of space and time	1. Yes (e.g., my mum protected me) 2. No (e.g., an angel saved me) 3. Unclear / unknown	
	4.3.4. Part of the re-script can be used as practice for a potential future real world situation	1.Yes 2.No 3.Unclear / unknown	

4.4. Activation of internal processes during the re-script	4.4.1. Emotions are present during the re-script	1. Yes 2. No 3. Unclear/unknown	
	4.4.2. Type of emotions present during the re-script	1. All positive 2. Mainly positive 3. Mixed 4. Mainly negative 5. All negative 6. Unclear/unknown	
	4.4.3. Intensity of the emotional response during the re-script	1. Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	
	4.4.4. Emotions have shifted from those present in the original image	1. Yes 2. No 3. Unclear/unknown 4. Specify (from x to y)	
	4.4.5. Humour used	1. Yes 2. No 3. Unclear / unknown	
	4.4.6. Physiological sensations are present during the re-script	1.Yes 2.No 3. Unclear / unknown 4. Specify all physiological sensations present during the re-script	
	4.4.7. Intensity of the physiological response during the re-script	1.Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	

	4.4.8. Physiological sensations have shifted from those present in the original image	1. Yes 2. No 3. Unclear/unknown 4. Specify (from x to y)	
	4.4.9. Cognitions are present during the re-script	1. Yes 2. No 3. Unclear / unknown 4. Specify all cognitions present during the re-script	
	4.4.10. Intensity of the cognitions present during the re-script	1. Very intense 2. Intense 3. Present, but not very intense 4. Little or no intensity 5. Unclear / unknown	
	4.4.11. Cognitions have shifted from those present in the original image	1.Yes (please specify) 2. No 3. Unclear / unknown	
5. Outcome			
5.1. Definition of the outcome	5.1.1. The final outcome	1. Protect client 2. Take client to safety 3. Attack / seek revenge on perpetrator 4. Comfort / Care for client 5. Speak on behalf of / stand up for client 6. Berates the perpetrator 7. Other (specify)	
	5.1.2. Is the outcome as it was intended at the beginning	1. Yes 2. No 3. In part 4. Unclear / unknown 5. Not applicable	
	5.1.3. The outcome meets a previously unmet need	1.Yes (please specify) 2. Some are, not all 3. No 4. Unclear / unknown	

5.2. Attitude towards outcome	5.2.1. The final message taken from the re-script	1. Positive 2. Negative 3. Neutral 4. Unclear / unknown 5. Specify	
	5.2.2. The original meaning associated with the traumatic image has changed	1.Yes 2. No 3. In part 4.Unclear / unknown	
	5.2.3. Is the final emotion positive	1. Yes 2. No 3. Unclear / unknown	
	5.2.4. Expectedness of the outcome	1. Client is surprised at the outcome 2. Client expected the outcome 3. Unclear / unknown 4. Other (please specify)	

Coding Scheme Handbook

This scoring guide has been designed to aid scoring and interpretation of the coding scheme. However, given the complex nature of ImRs sessions, it should be used as a framework to capture the details of ImRs sessions, rather than a definitive list of all components that must be present during an ImRs session. It is likely that multiple responses within codes will be applicable to a client's ImRs session. When this is the case, tick all that apply. When an ImRs factor does not fit neatly into one of the responses, select other and summarise the factor in a way that best captures that particular factor during that session.

1. Pre-imagery themes. The themes in this section refer to discussions conducted during the session *before* ImRs takes place.

1.1 ImRs preparation.

1.1.1. The ImRs has been previously rehearse.

1. Yes (verbally): the client and therapist discuss and agree upon the content of ImRs before beginning any imagery work
2. Yes (in an earlier re-script): the client and therapist agree to repeat or modify a re-script that has been worked on in an earlier session
3. N (re-script develops spontaneously): the client and therapist begin the re-script without an agreement about the direction of the re-script
4. Unclear / unknown
5. Other

1.1.2 Who the ImRs is prepared by.

1. ImRs solely developed by client: the client requires no help from the therapist to decide the direction that they want the ImRs to take
2. ImRs mostly developed by client: client knows which direction they want the ImRs to take, but requires some support from the therapist in thinking how to bring in those changes *or* the client requires help from the therapist to think about what could change, but is then able to decide how to instigate this change alone
3. ImRs developed equally by client and therapist: client and therapist share responsibility to coming up with an agreed change in the image and how to instigate this change
4. ImRs mostly developed by therapist: client requires the therapist to suggest possible changes to the image and requires therapist input to think about how to bring about those changes
5. ImRs solely developed by therapist: therapist is solely responsible for deciding upon the direction of change in the ImRs
6. N/a, there is no pre ImRs preparation: client and therapist begin ImRs with no pre-agreed aim

1.1.3. Agreed aim of the re-script.

1. Safety: it is agreed that the client will feel protected by the end of the image or taken to a place of safety

2. Comfort / compassion: it is agreed that the client will feel comforted by the end of the image, for example, by being spoken kindly towards, or by being hugged
3. Revenge: it is agreed that the client will seek revenge on the perpetrator, either through their own actions, or the actions of someone else, for example by assaulting them
4. Assertiveness: it is agreed that the client will express their needs and stand up for themselves, or have someone else do this for them
5. Control: it is agreed that the client will take control of the situation by the end of the image
6. Other (specify)
7. N/a, there is no pre-agreed aim

1.1.4. Memory aids are used in the session. This theme refers to any memory aides that are used in the session. It does not include any memory aides that client choses to take home with them but does not use during the session e.g., recordings of the session.

1. Memory aids e.g., flashcards or recordings are used in the session to help guide the client through the ImRs
2. Memory aids not used in the session

1.2. Attitude towards the ImRs process.

1.2.1. Client understanding.

1. Understands rationale: client has had the process of ImRs explained to them and understands why this method is being used in the session
2. Does not understand rationale: client has had the process of ImRs explained to them, but is not clear why this method is being used in the session
3. Unclear / unknown

1.2.2. Client motivation.

1. Motivated: client is willing and eager to try ImRs
2. Unsure but willing to try: client is hesitant about trying ImRs, but agrees to try it
3. Does not believe it will work: client does not think ImRs will have any impact on their symptoms and is against trying it
4. Fearful: client is afraid of using ImRs e.g., because it means accessing the original image
5. Unclear / unknown
6. Other

2. Whole process themes. Themes in this section refer to the whole of the work with the image itself. This includes work with any or the entire original image and work with the image following the point of change.

2.1 Client's ability to follow ImRs.

2.1.1. Amount of guidance given by the therapist.

1. Client is able to guide themselves through the re-script with no prompting from therapist: client is able to bring to mind and vividly describe the re-scripted image with no input from the therapist
2. Client is able to guide themselves through the re-script with little prompting from therapist: client is able to bring to mind and vividly describe most of the re-scripted image, but requires an occasional prompt, e.g., to capture more detail or to bring in additional changes
3. Client and therapist guide the re-script equally: client is able to follow therapist prompts in order to bring to mind and vividly describe the re-scripted image. Without these prompts, it is likely that the client would leave out details or become stuck trying to instigate change.
4. ImRs is mostly guided by the therapist: the client finds it difficult to describe the image and to introduce change. Therapist prompts do not facilitate the process. As a result, the therapist has to become actively involved in the description of the event.
5. ImRs is completely guided by the therapist: the client is solely reliant on the therapist for guiding the re-script. They are not able to guide any of the image themselves
6. Unclear/unknown

2.1.2. Client's ability to stay with the image. This should be coded regardless of how much guidance the therapist gives. For example, if the ImRs is completely guided by the therapist, but the client can easily follow the ImRs when the therapist takes the lead, this should be coded as point 1.

1. Client stays with image throughout: client is able to bring to mind and stay with the image throughout the whole of the ImRs session
2. Client stays with image mostly: client is able to bring to mind and stay with the image for most of ImRs session, but may come out of image at times e.g., if it gets too distressing, if they require clarification or if they start to talk about the memory or event more generally
3. Client struggles to stay with image: client is able to stay with the image at times, but frequently comes back to the therapy room
4. Client cannot stay with image at all: client is unable to bring the image to mind e.g., because it is too distressing
5. Client dissociates: client loses awareness of surroundings
6. Unclear/unknown

2.1.3. The re-scripting process follows a coherent narrative.

1. Yes: it is easy for the listener to understand what is happening in the image, the narrative runs like a coherent film script. The client is able to develop this narrative with no prompting from the therapist.
2. Yes, with prompts: it is easy for the listener to understand what is happening in the image and the narrative runs like a coherent film script. The client requires prompts from the therapist to aid with the narrative. Without these prompts, it is likely that details would be missing
3. In part: it is easy for the listener to understand what is happening in parts of the image. However, the narrative tends to jump from section to section
4. No, hard to follow: there is no coherent narrative, making it difficult for the listener to understand the plot of the image
5. Unclear/unknown

2.1.4 Speed of the image

1. Real time: all or part of the image is viewed at the speed at which it would have actually happened
2. Slowed down: all or part of the image is viewed in slow motion
3. Fast forward: all or part of the image is sped up, as if having hit a fast-forward button
4. Unclear / unknown

2.2. Activation of the image.

2.2.1. Described in first person.

1. Yes: the image is mostly described using the first person.
2. No: the image is not described in the first person. Other tenses e.g., the third person is used.
3. Mixed: both the third and first person tense is used.

2.2.2. Tense used

1. Past: the image is mostly or entirely described in the past tense
2. Present: the image is mostly or entirely described in the present tense
3. Future: the image is mostly or entirely described in the future tense
4. Mixed (specify which): there is no predominantly used tense
5. Other

2.2.3. Visualised.

1. Yes: the client can see the image easily in the mind’s eye
2. Sometimes: parts of the image can be seen easily in the mind’s eye
3. No: very little or none of the image can be seen clearly (I can't see anything clearly)
4. Unclear/unknown

2.2.4. Eyes open.

1. Eyes open: client has their eyes open through most or all of the ImRs session
2. Eyes closed: client has their eyes closed through most or all of the ImRs session
3. Unclear / unknown

2.2.5. Senses involved.

1. Touch: the client describes sensations of touch during the image e.g., pain, being hugged, etc.
2. Taste: the client describes what they can taste during the image
3. Sight: the client describes what they can see during the image
4. Sound: the client describes what they can hear during the image
5. Smell: the client describes what they can smell during the image

2.2.6. Perspective taken.

1. Field: the client describes the image as if they are in the image, regardless of whether this is as their past- or current-self
2. Observer: the client describes the image as if watching events unfold from a distance or from above
3. Mixed: both an observer and a field perspective are used at different points of the session

2.2.7. Vividness.

1. Very vivid: the client creates an image that is very clear and intense throughout the entirety of the session. All aspects of the image are experienced and described in great detail
2. Vivid: the client creates an image that is clear and intense throughout the majority of the session. Most aspects of the image are experienced and described in great detail
3. Some parts are vivid: the client creates an image where parts are clear and intense, while other parts are lacking in clarity
4. Not vivid: the client is not able to bring to mind an image that is clear
5. Unclear / unknown

3. Re-living. Themes in this section refer to all parts of the session that involve working with the original intrusive image, regardless of whether the original image is re-lived in full or not. As a general rule, these themes refer to any work with the image up to the point where change is introduced. However, as some clients will have elements of their original image present following change, these themes may also apply following the point of change.

3.1. Activation of original internal processes. This theme refers to the activation of any of the emotions, cognitions and physical sensations during the ImRs session that were present during the original event, or during activation of the original image.

3.1.1. Presence of trauma-related emotions during the re-scripting session.

1. Most or all trauma-related emotions are present in the session: the client accesses exactly how they felt emotionally at the time of the original event and/or how they feel when accessing the original intrusive image
2. Some trauma-related emotions are present during the session: the client accesses some of the emotions they felt at the time of the original event and/or how they feel when accessing the original intrusive image.
3. Trauma-related emotions are absent in the re-scripting session: the client does not access the emotions experienced at the time of the original event and/or how they feel when accessing the original intrusive image
4. Unclear / unknown

3.1.2. Type of trauma-related emotions during the re-scripting session.

1. All positive: all original emotions experienced during the session are positive
2. Mainly positive: most original emotions experienced during the session are positive
3. Mixed: original emotions experienced during the session are both positive and negative
4. Mainly negative: original emotions experienced during the session are mainly negative
5. All negative: all original emotions experienced during the session are negative
6. Specify: specify all emotions present in the re-script that were present during the original traumatic image. For example, if the person reported feeling scared at the time of the event/when experiencing the image and feels scared during ImRs, note down 'scared'

3.1.3. Intensity of trauma-related emotions during the re-scripting session.

1. Very intense: trauma-related emotions are experienced very intensely. Only select this option if it is clear that the client is experiencing these emotions very intensely, either through self-report, for example 80-100% intensity, or because the client is audibly distressed
2. Intense: trauma-related emotions are experienced intensely. Select this option if it is clear that the client is experiencing these emotions but they appear controllable in the session (e.g., 50-80% when the client is asked to rate the intensity).
3. Present, but not very intense: trauma-related emotions are present in the description of how the client feels, but are present at a low level (e.g., less than 50% when the client is asked to rate).
4. Little or no intensity: the client does not access trauma-related emotions during the session. It may be that the client does not express these emotions, or that they report how they felt at the time but do not feel that way now in the therapy room

5. Unclear / unknown

3.1.4. Presence of trauma-related physiological sensations during the re-scripting session.

1. Most or all trauma-related physiological sensations are present in the re-scripting session: the client is able to access exactly how they felt physically at the time of the original event and/or how they feel when accessing the original intrusive image
2. Some trauma-related physiological sensations are present during the session: the client accesses some, but not all, of the physiological sensations they felt at the time of the original event and/or how they feel when accessing the original intrusive image
3. Trauma-related physiological sensations are absent in the re-scripting session: the client does not access the physiological sensations experienced at the time of the original event and/or how they feel when accessing the original intrusive image
4. Unclear / unknown
5. Specify: specify all physiological sensations present in the session that were present during the original traumatic image. For example, if the person reported feeling pain at the time of the event/when experiencing the image and feels pain during ImRs, note down 'pain'

3.1.5. Intensity of the trauma-related physiological response during the re-scripting session.

1. Very intense: trauma-related physiological sensations are experienced very intensely. Only select this option if it is clear that the client is experiencing these sensations very intensely through self-report, for example 80-100% intensity
2. Intense: trauma-related physiological sensations are experienced intensely. Select this option if the client reports experiencing these sensations but they appear controllable in the session (e.g., 50-80% when the client is asked to rate the intensity).
3. Present, but not very intense: trauma-related physiological sensations are present in the description of how the client feels, but are experienced at a low level (e.g., less than 50% when the client is asked to rate).
4. Little or no intensity: the client does not access trauma-related physiological sensations during the session. It may be that the client does not express these sensations, or that they report how they felt at the time but do not feel that way now in the therapy room
5. Unclear / unknown

3.1.6. Presence of trauma-related cognitions during the re-scripting session.

1. Most or all trauma-related cognitions are present in the re-scripting session: the client is able to access exactly what they thought at the time of the original event and/or what they think when accessing the original intrusive image
2. Some trauma-related cognitions are present during the session: the client accesses some, but not all, of the cognitions they had at the

time of the original event and/or how they think when accessing the original intrusive image

3. Trauma-related cognitions are absent in the re-scripting session: the client does not access the cognitions experienced at the time of the original event and/or how they think when accessing the original intrusive image
4. Unclear / unknown
5. Specify: specify all cognitions present in the session that were present during the original traumatic image. For example, if the person reported feeling 'it's my fault' at the time of the event/when experiencing the image and reports thinking this during ImRs, note down 'it's my fault'

3.1.7. Intensity of trauma-related cognitions present during the re-scripting session.

1. Very intense: trauma-related cognitions are experienced very intensely. Only select this option if it is clear that the client is experiencing these cognitions very intensely through self-report, for example 80-100% intensity
2. Intense: trauma-related cognitions are experienced intensely. Select this option if the client reports experiencing these cognitions but they appear controllable in the session (e.g., 50-80% when the client is asked to rate the intensity).
3. Present, but not very intense: trauma-related cognitions are present in the description of how the client feels, but are experienced at a low level (e.g., less than 50% when the client is asked to rate).
4. Little or no intensity: the client does not access trauma-related cognitions during the session. It may be that the client does not express these cognitions, or that they report what they thought at the time but do not think that way now in the therapy room
5. Unclear / unknown

4. Re-scripting themes. Themes in this section refer to all parts of the session that involve working with new parts of the image. As a general rule, these themes refer to any work with the image following the point where change is introduced.

4.1. Departure from the original image.

4.1.1. Setting.

1. The whole of the image takes place in the original setting
2. Image begins in the original setting, but then moves to a new setting
3. The whole of the image takes place in a different setting
4. Unclear / unknown

4.1.2. When the re-script occurs.

1. A while before the intrusive image (please specify): a new image is created that, if real, would have occurred well before the original intrusive image. The original intrusive image is thus not part of the new image. For example, rather than going home and being assaulted, the client goes to visit a friend in the image, thus avoiding the assault
2. Immediately before the traumatic image: a new image is created that immediately precedes the original intrusive image. For example, the client brings people home with them to protect them from an impending assault
3. During the traumatic image: change in the image is introduced part way through the original intrusive image. For example, someone steps in at the moment where the client is about to be assaulted
4. Immediately after the traumatic image: change in the image is introduced immediately after the events in the original traumatic image. For example, an assault is included in the image, but the client is comforted afterwards
5. A while after the traumatic event (please specify): change in the image is introduced once the whole of the original traumatic image has been completed. For example, the client imagines going to the police days after the assault.

4.1.3. Amount of new image.

1. All new (e.g., safe place imagery): none of the original image is included in the re- script
2. Mostly new image, some old: only a small amount of the original intrusive image is incorporated into the re-script
3. Half original image, half new re-script: half of the new image incorporates old image, the remaining half involves new image
4. Mostly old image, some new: the majority of the image is taken up with the old intrusive image
5. No change from original (e.g., reliving only): there is no new image

4.2. Others in the re-script. 'Others' refers to any key people / figures who are present in the re- script, regardless of whether they are present during the original intrusive image or not. They do not have to be people. For example, if a pet plays a prominent role, include them in this section.

4.2.1. Individuals present in the re-script. Mark 'yes' by all that apply.

1. Perpetrator
2. Client as they were at the time of the image
3. Strangers
4. Family
5. Therapist
6. Client as adult / future self

7. Friends
8. Fictional character e.g., an angel
9. Other (please specify)

4.2.2. Individuals present in the re-script were present during the original intrusive image.

1. Yes: list all individuals who were present in the original intrusive image *and* are present in the re-script
2. No: list all individuals who were present in the original intrusive image *but* are present in the re-script
3. Unclear / unknown

4.2.3. Emotional reactions of each individual.

1. Specify: specify the key emotions expressed by each individual in the re-script

4.2.4. Actions of the individuals present. For each individual specify whether they do any of the following.

2. Protect client / take client to safety: does anyone physically protect the client? If so, who?
3. Attack / seek revenge: does anyone attack the perpetrator or seek revenge? If so, who?
4. Comfort / care for: does anyone emotionally comfort the client? If so, who?
5. Speak on behalf of / stand up for client: does anyone speak on behalf of the client or act as their ambassador? If so, who?
6. Berates the perpetrator: perpetrator is told what they did wrong, that they should be ashamed, etc.
7. Other (specify)

4.2.5. Presence of physical contact.

1. Yes: physical contact is present, for example in the form of physical comfort
2. No: there is no physical contact

4.2.6. Anything said by the individuals.

1. Yes: specify the key messages said by each individual. This can be a direct quote, or a summary of the main message the individual brings
2. No

4.2.7. Individual in the image who is responsible for change. Specify who of the following individuals is involved in bringing about change in the image. Include all who are relevant.

1. Perpetrator
2. Client as they were at the time of the image
3. Strangers
4. Family
5. Therapist

6. Client as adult / current self
7. Friends
8. Fictional character e.g., an angel
9. Other

4.3. Believability

4.3.1. The client has experienced something similar in real life.

1. Yes (exactly the same): the re-script is a repetition of a real even that happened in the client's past
2. Yes (similar): the re-script is related to an event from the client's past
3. No: the client has not experienced anything similar in their past
4. Unclear / unknown

4.3.2. The re-script feels believable to the client, regardless of whether it is physically possible.

1. Yes (feels as though it could have happened): the client describes the new outcome as feeling believable and as something that could have happened
2. No (feels very alien, can't connect): the client does not feel the new outcome is believable
3. Unclear / unknown

4.3.3. The re-script is an event that is physically possible given constraints of space and time.

1. Yes: the re-script is an event that could have happened given the constraints of space and time. For example, a neighbour heard the assault and called the police
2. No: the event is not possible given the constraints of space and time. For example, the client travels back in time to protect their past-self
3. Unclear / unknown

4.3.4. Part of the re-script can be used as practice for a potential future real world situation.

1. Yes: a part of the re-script can be used as practice for a future event. For example, the client is able to practice being assertive
2. No: no part of the image could be used in a real world situation
3. Unclear / unknown

4.4. Activation of internal processes during the re-script. These codes refer to emotions, physiological sensations and cognitions associated with the change in the image.

4.4.1. Emotions are present during the re-script.

1. Yes: the client accesses emotions during the re-scripted part of the image
2. No: the client does not access emotions during the re-scripted part of the image
3. Unclear / unknown

4.4.2. Type of emotions present during the re-script.

1. All positive: all original emotions experienced during the session are positive
2. Mainly positive: most original emotions experienced during the session are positive
3. Mixed: original emotions experienced during the session are both positive and negative
4. Mainly negative: original emotions experienced during the session are mainly negative
5. All negative: all original emotions experienced during the session are negative
6. Unclear/unknown
7. Specify which emotions are present during the re-scripted part of the image

4.4.3. Intensity of the emotional response during the re-script.

1. Very intense: emotions are experienced very intensely. Only select this option if it is clear that the client is experiencing these emotions very intensely through self-report, for example if they report 80-100% intensity
2. Intense: emotions are experienced intensely. Select this option if the client reports experiencing these emotions but they appear controllable in the session, for example if they report 50-80% intensity.
3. Present, but not very intense: emotions are present in the description of how the client feels, but are experienced at a low level, for example, client reports less than 50% intensity
4. Little or no intensity: the client does not access emotions during the session. It may be that the client does not express these emotions, or that they report what they thought at the time but do not feel that way now in the therapy room
5. Unclear / unknown

4.4.4. Emotions have shifted from those present in the original image.

1. Yes (specify):there has been a change from the emotion that was initially activated when the intrusive image was brought to mind
2. No: there has been no change in emotion from that associated with the original intrusive image
3. Unclear / unknown

4.4.5. Humour is used.

1. Yes: the client finds the change humorous
2. No: the client does not find the change humorous
3. Unclear / unknown

4.4.6. Physiological sensations are present during the re-script.

1. Yes: the client accesses physiological sensations during the re-scripted part of the image
2. No: the client does not access physiological sensations during the re-scripted part of the image
3. Unclear / unknown
4. Specify all physiological sensations present during the re-script

4.4.7. Intensity of the physiological response during the re-script.

1. Very intense: physiological sensations are experienced very intensely. Only select this option if it is clear that the client is experiencing these physiological sensations very intensely through self-report, for example if they report 80-100% intensity
2. Intense: physiological sensations are experienced intensely. Select this option if the client reports experiencing these physiological sensations but they appear controllable in the session, for example if they report 50-80% intensity.
3. Present, but not very intense: physiological sensations are present in the description of how the client feels, but are experienced at a low level, for example, client reports less than 50% intensity
4. Little or no intensity: the client does not access physiological sensations during the session. It may be that the client does not express these physiological sensations, or that they report what they thought at the time but do not feel that way now in the therapy room
5. Unclear / unknown

4.4.8. Physiological sensations have shifted from those present in the original image.

1. Yes (specify):there has been a change from the physiological sensation that was initially activated when the intrusive image was brought to mind
2. No: there has been no change in physiological sensation from that associated with the original intrusive image
3. Unclear / unknown

4.4.9. Cognitions are present during the re-script.

1. Yes: the client accesses cognitions during the re-scripted part of the image
2. No: the client does not access cognitions during the re-scripted part of the image

3. Unclear / unknown
4. Specify all cognitions present during the re-script

4.4.10. Intensity of the cognitions present during the re-script.

1. Very intense: cognitions are experienced very intensely. Only select this option if it is clear that the client is experiencing these cognitions very intensely through self-report, for example if they report 80-100% intensity
2. Intense: cognitions are experienced intensely. Select this option if the client reports experiencing these cognitions but they appear controllable in the session, for example if they report 50-80% intensity.
3. Present, but not very intense: cognitions are present in the description of how the client feels, but are experienced at a low level, for example, client reports less than 50% intensity
4. Little or no intensity: the client does not access cognitions during the session. It may be that the client does not express these cognitions, or that they report what they thought at the time but do not think that way now in the therapy room
5. Unclear / unknown

4.4.11. Cognitions have shifted from those present in the original image

1. Yes (please specify): there has been a change from the cognition that was initially activated when the intrusive image was brought to mind
2. No: there has been no change in cognition from that associated with the original intrusive image
3. Unclear / unknown

5. Outcome. Themes in this section refer to the very end of the ImRs session.

5.1. Definition of the outcome.

5.1.1. The final outcome. This code refers to the overall outcome of the re-script. It is likely that a number of changes will have occurred during the image. This theme should capture the broad outcome themes, rather than identifying every change that is introduced into the image.

1. Protect client: client is protected at the original scene
2. Take client to safety: client is taken away from the scene
3. Attack / seek revenge: perpetrator is attacked or revenge is sought
4. Comfort / care for: client is comforted or looked after
5. Speak on behalf of / stand up for client: someone speaks on behalf of the client and stands up for their rights or beliefs
6. Berates the perpetrator: perpetrator is told what they did wrong, that they should be ashamed, etc.
7. Other (specify)

5.1.2. The outcome is as it was intended at the beginning.

1. Yes: the outcome is exactly as was intended in the pre-imagery phase of the session
2. No: the outcome is not the same as was intended in the pre-imagery phase of the session
3. In part: part of the outcome was as was intended in the pre-imagery phase of the session, part was different
4. Unclear / unknown
5. Not applicable: there was no pre-agreed aim

5.1.3. The outcome meets a previously unmet need.

1. Yes (please specify): the client feels that they have had their needs met
2. Some are, not all: the client feels that some of their needs have been met, but additional needs still need meeting
3. No: no needs have been met

5.2. Attitude towards the outcome.

5.2.1. The final message taken from the re-script.

1. Positive: the client feels positively towards the new image
2. Negative: the client feels negatively towards the new image
3. Neutral: the client does not feel positively or negatively towards the new image
4. Unclear / unknown
5. Specify: summarise the client's attitude towards the new image, for example, 'I know see it wasn't my fault'

5.2.2. The original meaning associated with the traumatic image has changed.

1. Yes: the client now feels differently towards the original image
2. No: the client feels the same towards the image now as they did at the beginning of the image
3. In part: there has been some change in the client's attitude towards the original image
4. Unclear / unknown

5.2.3. The final emotion is positive.

1. Yes: the client feels good following ImRs
2. No: the client does not feel good following ImRs
3. Unclear / unknown

5.2.4. Expectedness of the outcome

1. Client is surprised at the outcome: the client did not expect some part of the change. For example, they did not think change would be possible, or they did not think they would feel differently
2. Client expected the outcome: the client was not surprised by any part of the re-scripting process
3. Unclear / unknown
4. Other (please specify)

Appendix U Study Debrief

Coping with Difficult Memories

Debriefing Statement (Version 1 23.07.15)

Judging whether or not we can trust people is a central feature of our everyday social interactions. Sometimes, we may fear that other people intend to cause us harm. For example, if you are walking home alone, late at night and you think someone might be following you, you may become suspicious of them and change your path in order for you to feel safer. Paranoid thinking, or suspiciousness, is very common and is estimated to occur in up to 30% of the general population i.e. in those people who **do not** have a severe mental illness. This level of paranoia **is not** a sign of mental health difficulties and is often referred to as non-clinical paranoia as it **does not** indicate a clinical problem. Examining non-clinical paranoia can not only increase our understanding of this experience in the general population, but also help inform the understanding of paranoia in clinical populations.

The overall aim of this research was to explore (1) the impact of a technique called Imagery Rescripting for people with high levels of non-clinical paranoia and (2) the mechanisms underlying the effectiveness of Imagery Rescripting. Previous research into anxiety has identified imagery as one of the key processes in the maintenance of anxiety disorders. Targeting distressing images, for example through Imagery Rescripting, has been shown to effectively reduce distress in people with anxiety. In addition, it has been suggested that because paranoia and anxiety are both related to the concept of threat, then the maintaining processes might also be similar in both, however little research has yet explored this.

During this study, you completed several questionnaires and were randomly assigned to either an experimental or control condition. During the experimental condition participants completed a single session imagery intervention during which they talked about and modified a distressing memory. During the control condition, participants also talked about a distressing memory but no attempts were made to modify it. We expected that Imagery Rescripting would reduce both distress linked to a distressing memory and the belief that others intend us harm, more than exposure to the memory alone. The questionnaires that you completed measured changes in these areas.

If you would like a copy of the research findings once the study is completed, please let a member of the research team know.

If you have any further questions please contact Pamela McSherry at pm4g13@soton.ac.uk, Dr Lusia Stopa at L.Stopa@soton.ac.uk or Dr Katherine Newman Taylor at K.Newman-Taylor@soton.ac.uk.

You may have experienced some negative emotions as a result of talking about your distressing memory during this study. If you feel like you would like further support with this you can seek advice from your General Practitioner, or

the University First Support Team on 023 8059 7488 or 023 8059 2811.

If you have any questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, School of Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856. Email: fshs-rso@soton.ac.uk

Thank you very much for your participation in this research.