

Human Givens Rewind Treatment
for PTSD and Sub-threshold Trauma

Thesis submitted for the degree of

Doctor of Psychology (PsyD)

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by

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Declaration

I confirm that the literature review and research contained within this thesis are my own and have not been submitted for any other degree or to any other institution.

Human Givens Rewind Treatment

for PTSD and Sub-threshold Trauma

By Shona Adams

Thesis Abstract

Rewind is a trauma-focussed imaginal exposure technique for posttraumatic stress disorder and sub-threshold trauma that is incorporated into Human Givens (HG) therapy. It has been claimed that multiple traumas can be treated in a single Rewind session and that trauma details do not need to be discussed during treatment. This dissertation intended to evaluate Rewind within the context of HG therapy.

A systematic review and meta-analysis evaluated all known studies on the efficacy of Rewind and HG therapy, including grey literature. There were 24 studies that met inclusion criteria for the systematic review. The quality of studies was mixed. While there was a lack of usable controls, all 13 studies in the meta-analysis had high data capture rates and low attrition rates. The effect size was equivalent to CBT benchmarks. The review considered issues in presenting data using effect size, 'recovery' rates, and 'reliable improvement'. Results suggested that Rewind was a promising treatment and that practice-based studies could produce reliable, high quality data.

The empirical study, completed prior to the meta-analysis, investigated the efficacy and acceptability of a single Rewind treatment session and assessed the efficacy of HG therapy against benchmarks. The Rewind treatment session was more effective than control treatment sessions in reducing symptoms and improving satisfaction with life. Severe, chronic and multiple traumas were effectively treated in a single session but many participants required further treatment. The Rewind session was rated as acceptable as other treatment sessions. Outcomes of HG therapy were comparable to CBT benchmarks, however, as there was no randomisation no conclusions should be drawn in comparing treatments.

A pilot single session Rewind Clinic was assessed in the service evaluation. Service user pathways and qualitative data were collected. Most service users found the treatment helpful and acceptable, with 37% not requiring further treatment. Preliminary evidence suggested Rewind might have made treatment more accessible for shame-based traumas. More research is necessary.

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Literature Review

‘Rewind’ technique for treating trauma and posttraumatic stress disorder symptoms: A systematic review and meta-analysis

By Shona Adams

Target Journal: British Journal of Clinical Psychology

‘Rewind’ technique for treating trauma and posttraumatic stress disorder symptoms: A systematic review and meta-analysis

Abstract

Objectives

Rewind is an imaginal exposure-based treatment for trauma and posttraumatic stress disorder (PTSD). This systematic review and meta-analysis assessed the evidence of the effectiveness of Rewind for trauma and PTSD treatment.

Method

Relevant databases were searched. An extensive search of the grey literature was also undertaken. Quality was assessed using a practice-based tool. Pre- and post-treatment results were analysed using a random effects model. Clinical cut-offs were used to calculate recovery rates and Reliable Change Indexes (RCIs) were used to calculate ‘reliable improvement’ and ‘reliable deterioration’.

Results

There were 24 studies that met inclusion criteria for this review with a total of 4,995 participants; five studies were rated as *poor* and 18 were rated as *good*, with 12 of these rated *very good*. The mean number of treatment sessions ranged from 1-6.5. Weaknesses included limited long-term follow-up and no randomised control groups. Of the 13 studies that met the criteria for the meta-analysis, all had data capture rates of 80% or higher and nine reported drop-out rates of 0%, the highest drop-out rate being 12%. All studies in the meta-analysis used consecutive sampling and had no exclusion criteria. The effect size ($g=2.25$) was above the benchmark equivalent for ‘exposure and CBT’ ($g=1.65$) and waiting list controls ($g=0.35$). Recovery rates were not a robust measure. Weighted mean ‘reliable improvement’ was 94.5% and ‘reliable deterioration’ was 0.4%.

Conclusions

Results suggested Rewind is a promising treatment for trauma but randomised studies are now needed. Findings also indicated that practice-based studies could produce reliable, high quality data.

‘Rewind’ technique for treating trauma and posttraumatic stress disorder symptoms: A systematic review and meta-analysis

1. Introduction

Trauma-focused exposure therapy is widely recommended for treating posttraumatic stress disorder (PTSD; Cusack *et al.*, 2016). Rewind is a trauma-focused exposure technique that is used predominantly in the UK but also in other European countries, Australia, and the USA. It has been relatively under researched. Rewind differs from conventional trauma-focused treatments in that multiple traumas may be addressed in one session and details of the trauma do not need to be discussed as part of the treatment. These characteristics could make treatment potentially more cost effective and more accessible for shame-based traumas (Adams, Allan, Bristow, & Adams, submitted for publication). Therefore it is important to explore the current status of research on the efficacy of Rewind.

Rewind uses graduated imaginal exposure and was developed from a neuro-linguistic programming (NLP) technique called visual kinaesthetic dissociation (VKD) for the treatment of phobias (Bandler & Grinder, 1979, cited in Koziey & McLeod, 1987). It was initially adapted as a treatment for PTSD by Muss (1991a,b), and later developed by Griffin and Tyrell (2004) for Human Givens (HG) therapy.

This paper aimed to review the evidence for Rewind in treating trauma and PTSD. First, previous systematic reviews of PTSD treatments and relevant methodological issues are considered. Then previous reviews specifically of Rewind and HG therapy, which may include Rewind, are examined. Finally, a systematic review and meta-analysis of the evidence for the efficacy of Rewind in treating trauma and PTSD are presented.

1.1 Brief description of the Human Givens and Muss Rewind techniques

The Muss and HG Rewind protocols are both trauma-focussed imaginal exposure protocols that are similar in that they both involve graduated imaginal exposure using graded levels of dissociation during the exposure. During both the HG and Muss Rewind techniques people are encouraged to recall the trauma from before the trauma started to when it was over and they felt relatively safe. This may facilitate the

contextualisation of the memory during exposure. In both protocols dissociation is utilised, in which people imagine watching a film or video of themselves in the trauma. When that step is completed, they are guided to ‘experience’ the trauma video in the first person very quickly backwards from when the trauma is over to the point before the trauma happened. Both protocols stress the importance of activating the trauma memory and imaginal exposure to all sensory facets of the memory. The traumas do not need to be discussed in detail because the trauma in the exposure is imagined or remembered. HG Rewind is one of many techniques that are part of a larger HG therapeutic approach that is similar to CBT but has different underlying theoretical principles (Griffin & Tyrell, 2004; Yates & Atkinson, 2011) whereas the Muss protocol is a stand-alone technique. See Box 1 for a more detailed description of the differences between the Muss and the HG Rewind protocols.

Box 1. Differences between Muss and Human Givens Rewind protocols.

Similarities and differences between Muss and Human Givens Rewind protocols.

These protocols differ in that the Muss version (Muss, 2002) has explicit instructions for explaining the technique and monitoring it using the Impact of Events Scale (IES), a questionnaire measuring PTSD symptoms. According to the Muss protocol, Rewind should only be undertaken if IES scores are 25 or above. There is a strict two week follow-up in which specific questions are asked and the IES re-administered, with the protocol being repeated if needed. The Muss protocol can be repeated for different traumas in the same session.

The HG protocol (see Adams *et al.*, submitted for publication) has a less formal structure than the Muss protocol and emphasises the importance of reducing arousal during the imaginal exposure. Several stages are added to the protocol to facilitate reduced arousal during exposure. First, people are guided to relax before exposure begins and create a safe ‘grounding place’ in their mind to which they can be directed if needed. The video starts and ends with a pleasant memory that also helps to reduce arousal. First, in the double dissociation stage people repeatedly observe themselves watching the trauma video until they feel calm and relaxed. Then in the single dissociation stage, they directly view themselves in the imaginary trauma video until they are no longer anxious. Finally, they are guided to imagine being ‘in’ the trauma video and experiencing all the sensations very quickly backwards. An optional addition to the HG protocol can include mentally rehearsing a different response to triggers and anxiety-provoking situations. In the HG version there can be more than one trauma in the imaginary video either through repeating the above procedure for each trauma or by including multiple traumas in the ‘video’, each one starting before the trauma and finishing when the trauma is over. Exposure to the imaginary trauma video can be repeated several times in the session until anxiety has subsided.

1.2 The absence of Rewind in previous systematic reviews of PTSD treatments

Rewind has not been evaluated in previous systematic reviews of psychological treatments for PTSD (e.g. Bisson, Roberts, Andrew, Cooper, & Lewis, 2013; Cusack *et al.*, 2016; Ehrling *et al.*, 2014). This may have been because Rewind studies thus far have been practice-based and have not met the principle inclusion criteria for all of the previous reviews, namely randomised controlled trials (RCTs) or a PTSD diagnosis. A more inclusive systematic review of emerging PTSD interventions was conducted by Metcalf *et al.* (2016) who searched for peer reviewed articles on PTSD or acute stress disorder. Again, no Rewind studies were eligible for inclusion. It was unclear from this review how many Rewind studies were identified and which exclusion criteria were applied to those studies; Rewind studies may have been excluded due to not having quantitative outcome data using PTSD measures (e.g. Muss, 1991; Slater, 2015), including participants under 18 years old (Yates & Atkinson, 2011), or having had the protocol modified in some way, such as a study in which the intervention was translated from English and administered in a group setting (Utuza, Joseph, & Muss, 2012). Other Rewind studies may not have been identified in the search because they were not published in peer reviewed journals.

1.3 Methodological issues with RCTs for PTSD treatments

A number of systematic reviews of RCTs for PTSD treatment have highlighted limitations of studies that may be important to consider in future reviews. They suggested high or unclear risk of bias due to limited recording of attrition rates, exclusion criteria, handling of missing data, small sample sizes, limited follow-up, lack of reporting on adverse events (Bisson *et al.*, 2013; Cusack *et al.*, 2016) and large heterogeneity in effect sizes (Ehrling *et al.*, 2014). Borenstein, Hedges, Higgins, and Rothstein (2009) noted that it “should not be the design of the studies but the extent to which the studies are able to yield an unbiased estimate of the effect size” (p. 360) that is important. Any systematic review of PTSD or trauma treatments should therefore specifically assess these factors that could lead to this risk of bias.

There is also uncertainty about the generalisability of PTSD treatment results from RCTs to clinical settings. Although Ehrling *et al.* (2014) found results from uncontrolled studies paralleled the results from RCTs in adult survivors of child

sexual abuse, Cahill, Barkham and Stiles (2010) found that effect sizes for practice-based CBT were lower than those found in RCTs. Najavits (2015) reported 10% of US war veterans completed CBT for PTSD in clinical practice. Bradley, Greene, Russ, Dutra and Westen (2005) found PTSD studies excluded suicide risk (46%), drug or alcohol abuse (62%) and co-morbidity (62%), potentially limiting generalisability. Thus, it also would also be useful to determine if PTSD treatments, such as Rewind, were effective in clinical practice settings.

1.4 Methodological advances in practice-based studies

In 2010, Cahill, Barkham, and Stiles found practice-based evidence had a high risk of selection bias due to sampling methods and high rates of attrition, producing non-representative samples and possibly skewing results. However, recent advances in practice-based evidence have meant that higher data capture rates with better recording of attrition were possible using session-by-session data collection (e.g. Andrews, Twigg, Minami, & Johnson, 2011; Clarke *et al.*, 2009). To date, no systematic reviews have investigated whether these methodological advances have produced a lower risk of bias. Thus far, this review has summarised methodological limitations identified in previous reviews of both RCTs and practice-based studies that will need to be considered in future reviews, and the next section will specifically examine reviews of Rewind and HG therapy.

1.5 Previous reviews of Rewind and HG therapy

In 2003, Guy and Guy performed an extensive literature search for Rewind studies and only found one study that used the Muss protocol (Muss, 1991). A systematic literature review of the efficacy of HG therapy by Corp, Tsaroucha and Kingston (2008) found predominantly expert opinion in grey literature comprising of brief case studies or anecdotal evidence, and two descriptive studies which focused on HG Rewind. These two studies were practice-based using qualitative methods and did not differentiate between those participants with a PTSD diagnosis and those with sub-threshold trauma (which does not meet all the criteria for PTSD). Corp *et al.* (2008) concluded that evidence for HG therapy at that time was weak. However, more recently there have been a number of small scale studies and three large published

practice-based studies using HG therapy (Andrews *et al.*, 2011; Andrews, Wislocki, Short, Chow, & Minami, 2013; Tsaroucha, Kingston, Stewart, Walton, & Corp, 2012) and so a more up-to-date review of Rewind might be warranted.

1.6 Summary and rationale

In summary, Rewind is potentially clinically useful because multiple traumas can be addressed in one session and the trauma does not need to be discussed in detail. While there is strong evidence for the efficacy of exposure treatment for PTSD, previous reviews have found only weak evidence for Rewind. Given that there may be better quality studies that have been published recently, a more up-to-date review is required.

Previous systematic reviews have highlighted a risk of bias due to methodological issues in some PTSD studies, but it is unknown whether recent methodological advances such as session-by-session data collection combined with consecutive sampling in practice-based studies might produce reliable data. To avoid excluding relevant studies, this systematic review and meta-analysis therefore looked at the efficacy of Rewind for trauma and PTSD in clinical settings, including the grey literature.

1.7 Objectives of current study

The first objective was to identify and summarise studies that included Rewind (including Muss Rewind, HG Rewind and HG therapy that may have included Rewind). Given that most Rewind studies appeared to be practice-based, it was also important to establish if the findings of practice-based studies could be reliable. Thus, the second objective was to assess the quality of the studies. The third objective was to assess the outcomes of those who were treated with Rewind. Therefore, in summary, a systematic review identified and assessed the quality of studies and a meta-analysis was used to investigate the effectiveness of outcomes of those treated with Rewind.

2. Method

2.1 Inclusion and exclusion criteria

Inclusion criteria for the systematic review included all research on the efficacy of Rewind, including HG therapy and the Muss and HG version of Rewind. Studies were not limited by co-morbidity or PTSD diagnosis. Qualitative and quantitative studies and peer reviewed case studies were included. Exclusion criteria for the systematic review included book reviews, commentaries and articles on theory or practice.

The inclusion criteria for the meta-analysis were studies that a) focused specifically on Rewind, b) used quantitative methodology, and c) were not case studies with a sample size of less than 10 as these were likely to have been specially selected and less likely to be representative. Each data set could only be used once. No studies were excluded from the meta-analysis due to quality criteria.

2.2 Data sources and searches

A scoping exercise was undertaken in which a manual search was initially conducted using the key words “Human Givens”, “HG” and “Rewind” to identify all relevant studies. Different combinations of words were then tried in order to reduce the number of unrelated studies. The final key words were checked to ensure that all the relevant studies that had been identified were included. A final search of the Cochrane Library, Medline (OVID ALL), Networked Digital Library of Theses and Dissertations, PsychINFO, PILOTS database, PubMed, Scopus and the Web of Science, all from inception to March 12, 2016 was made. Databases were searched using the following key words: “Human Givens” OR “rewind technique”. The search was conducted on March 12, 2016 (see Appendix A for details of database search).

The grey literature was searched by hand searching the Human Givens journal for relevant articles, examining the Human Givens and David Muss’ websites, relevant conferences, and through personal communication with researchers and practitioners who had undertaken work in this area. Information was sought from study authors when necessary with requests for data and further information

when necessary.

After the initial searches, duplicate studies were removed. Records were then screened for unrelated studies and abstracts or the full version of the articles reviewed according to the inclusion and exclusion criteria. In the case of university dissertations, the dissertation was used for the purpose of the systematic review, but both the dissertation and the related published article were referenced. Where unpublished data was provided, a subsequent report of the data was used. For the meta-analysis, careful checks were conducted to ensure that each data set was only used once.

2.3 Data extraction

Data from 24 studies were extracted and entered onto spreadsheets (see Appendix B for the Data Extraction Form). Information was extracted regarding the study characteristics, study design, inclusion and exclusion criteria, sample sizes, outcome measures, follow-up, participants' characteristics, details of the trauma, chronicity, symptom severity, and number of treatment sessions. Outcome data such as data capture and drop-out rates, effect size, 'recovery rate', 'reliable improvement rate' and 'reliable deterioration rate' were also extracted or calculated from raw data. Where studies used multiple questionnaires, the primary questionnaire identified in the study was used. Intention-to-treat data and outcome data for those who completed treatment were reported.

2.4 Quality assessment

Quality of the studies was assessed using Downs and Black's (1998) checklist for appraising both randomised and non-randomised studies that was adapted by Cahill *et al.* (2010) to make it more applicable for practice-based research (see Appendix C). It provided an overall score for the quality, as well as the following subscale scores: (1) 'study quality' (reporting) was an 11 item subscale that examined to what extent the information provided in the article was sufficient to allow the reader to make an unbiased assessment of the study findings; (2) 'external validity' (generalisability) was an 11 item subscale that assessed whether the findings from the study could be generalised to the wider population; (3) 'internal reliability' (study

bias) consisted of 5 items that considered biases in the measurement of the treatment and outcome; and (4) ‘internal validity’ (selection bias) had 5 items that assessed issues relating to confounding factors and selection bias. Any difficulties in scoring were discussed in supervision and scores were agreed with the academic supervisor. Kennelly’s (2011) rating categories for the revised Down’s and Black’s checklist were used with scores of 14 or less being *poor*, 15-19 being *fair*, and 20 and above being considered *good*. We added a category of 25 and above being *very good*. The maximum score was 32.

2.5 Meta-analytical procedure

Ideally, the standardised mean difference would be used in this meta-analysis because it would control for the effect of factors like pre-treatment severity and standard deviation that can affect effect size. However, this was not possible because the studies did not have appropriate control groups. Therefore the traditional method of comparing pre- and post-treatment effect sizes of different therapeutic techniques was selected (e.g. Bradley *et.al.*, 2005). In contrast to these between-group analyses, more recently practice-based literature has reported within-subject results like recovery rates and reliable change using the Reliable Change Index (RCI). However, these analyses have only been reported in individual studies (e.g. Clark *et al.*, 2009) and systematic reviews (e.g. Cahill *et al.* 2010) but have not been used in meta-analyses. Meta-analysis statistics were applied to recovery rates and reliable change as a preliminary investigation into whether these within-subject results could be utilised in a meta-analysis.

Meta-analytic statistical calculations used Open Meta-Analyst software (Byron *et al.*, 2012). As the true effect sizes were expected to vary due to the heterogeneity of the samples, the DerSimonian-Laird random effects method (DerSimonian & Laird, 1986) was used. To be comparable with other studies the meta-analysis for effect size used data for those who completed Rewind. Confidence intervals of 95% were used for all analyses.

To assess for potential moderator effects, the potential moderator variables were compared. Subgroups were based on the use of different questionnaires, and included the Muss Rewind and war veterans as separate subgroups to provide more homogeneous samples. The minimum number of studies required for a random effects

model is five (Hedges & Vevea, 1998) and with the assumption that the subgroups were homogeneous a fixed effects model was used.

2.5.1 Heterogeneity

To assess heterogeneity of studies, the Q -statistic was used, where a significant Q -value rejects a null hypothesis of homogeneity. The level of significance was set to 5%, with a value of $p < .05$ indicating heterogeneity was present (Borenstein *et al.*, 2009). If all studies shared the same effect size, the expected value of Q would be equal to the degrees of freedom (the number of studies minus 1). In addition, between-study heterogeneity was assessed using I^2 , which represents the proportion of the observed variance that reflect differences in true effect sizes rather than sampling error. Increasing values of the I^2 indicate increasing heterogeneity, with values of 0% showing no heterogeneity, 50% indicating moderate heterogeneity, and 75% indicating high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). Moderate to high heterogeneity means caution should be taken in interpreting the results, and possible moderators that might contribute to heterogeneity should be assessed (Borenstein *et al.*, 2009).

2.5.2 Sensitivity analysis

A sensitivity analysis was performed to investigate the validity and robustness of the meta-analysis using the leave-one-out cross validation method (Kohavi, 1995). The meta-analysis is repeated without each study in turn. If the results of the leave-one-out method are consistent, then there is confidence that the overall meta-analysis is robust.

2.5.3 Reporting biases

A funnel plot was used to assess potential reporting biases. In the absence of bias, small studies will scatter more widely towards the bottom of the plot, while the spread will be narrower towards the top. Publication bias and other types of bias will be discernable in the form of asymmetric funnel plots (Sterne & Harbord, 2004).

2.6 Hedge's *g* effect size

Hedges' *g* effect size was used because it corrects for biases due to small sample sizes (Hedges & Olkin, 1985). These pre-post treatment effect sizes were then compared to benchmarks for treatment and waiting list controls (see Table 1) using a 10% effect size margin as the criterion for clinical equivalence (Minami, Wampold *et al.*, 2008). From Table 1, the higher effect size of 0.35 was used for the waiting list control, and the higher effect size of 1.65 for 'exposure and CBT' was used as the treatment benchmark.

2.7 Recovery rates

The rates of those below the clinical cut-off after treatment have been referred to as 'recovery rates' (Clarke *et al.*, 2009) or 'clinically significant change' (Cahill *et al.*, 2010), and are reported as indicators of treatment efficacy in practice-based studies. Where there were more than one clinical cut-off for a questionnaire both clinical cut-offs were used. In the subgroup analysis, in order to be able to compare the recovery rates for each questionnaire with recovery rates in other studies that only reported on those who completed treatment, the results of those who completed treatment will be reported in addition to intention-to-treat (ITT) results. ITT included all those who started treatment. This analysis assumed that missing data was not below the clinical cut-off after treatment. The benchmark for this analysis was the CBT recovery rate target of 50% set by the UK government for Improved Access to Psychological Therapies (IAPT, 2012).

2.8 Reliable change

Reliable Change Index is the amount of pre- to post-treatment change in a questionnaire that would not be due to chance or measurement error (Jacobson & Truax, 1991). *Reliable improvement*, *no reliable change* and *reliable deterioration* were calculated using the Reliable Change Index from original data for 12 studies. Both ITT and completed treatment rates were produced. *Reliable deterioration* was determined if the post-treatment scores were statistically significantly worse and this

was used as a measure of possible adverse effects of treatment. The benchmarks are shown in Table 2. The current CBT reliable improvement rate of 64% for IAPT services (IAPT, 2016) was used.

Table 1. The current meta-analysis compared to benchmarks for pre-post treatment effect size.

Source (date)	ES	<i>k</i>	Nature of benchmarking study	Questionnaire
Randomised controlled trials				
Bradley <i>et al.</i> (2005)	1.44** 1.57** 1.65** 0.35**	(<i>k</i> =43) (<i>k</i> =13) (<i>k</i>=9) (<i>k</i> =15)	Meta-analysis for PTSD for treatment completers All treatments Exposure only Exposure and CBT Waiting list control	variety [†] variety [†] variety[†] variety [†]
Ehring <i>et al.</i> (2014)	1.24* 1.34* 0.94* 0.38*	(<i>k</i> =22) (<i>k</i> =10) (<i>k</i> =9) (<i>k</i> =15)	Meta-analysis of all treatments for PTSD in CSA All treatments Trauma-focussed CBT Trauma-focussed CBT Waiting list control	variety PTSD [†] variety PTSD [†] variety anxiety and depression [†] variety PTSD [†]
Clinical settings				
Ehring <i>et al.</i> (2014)	1.00* 0.30*	(<i>k</i> =42) (<i>k</i> =22)	Meta-analysis, non-randomised treatments for PTSD in CSA All treatments Above, waiting list control	variety [†] variety [†]
Richards & Suckling (2009)	1.41**	(<i>k</i> =1)	CBT in routine clinical setting (IAPT), large single study	anxiety, GAD-7
Cahill <i>et al.</i> (2010)	1.29	(<i>k</i> =1)	Meta-analysis of treatment in routine clinical settings	variety [†] (mostly CORE-OM)
Van Ingen <i>et al.</i> (2009)	1.35**	(<i>k</i> =11)	Meta-analysis for anxiety (incl. PTSD) in clinical settings	variety [†]
Current meta-analysis	2.25***	(<i>k</i> =13)	Meta-analysis for Rewind in clinical settings	variety

ES=effect size; *k*=number of studies; [†]=aggregated scores *= Hedge's *g* effect size, weighted for smaller samples; **=Cohen's *d* (pre-treatment SD); ***= Hedge's *g* effect size, 2.06 IES-E; 2.16 CORE; 2.67 GAD-7; 2.93 IES. *Note.* The benchmarks used in this review are highlighted in bold.

Table 2. Benchmark and current results for demographics, treatment characteristics, and recovery, reliable improvement and reliable deterioration rates for those who completed treatment.

	Current meta-analysis	Cahill <i>et al.</i> (2010) [†]	Van Ingen <i>et al.</i> (2009) ^{††}	IAPT (2016) ^{†††}
Questionnaires	Mixed	CORE (Primary care)	Mixed (Secondary care)	Mixed
% Referrals treated	100%	-	-	GAD-7 and PHQ-9
Started treatment	<i>n</i> =573	<i>n</i> =20,522	<i>n</i> =1500	71% (66.7 - 71.9%)
% Attrition	1.5% (0-12%)	-	-	<i>n</i> =84,913 (<i>n</i> =468,263)
% Female	8-80%	71% (69-72%)	65% (62-68%)	59.7% 64.9% (64.6-65%)
Average age	41 (36-45 years)	39 (36-41 years)	42 (35-49 years)	-
Co-morbidity	40%-86%	-	-	-
Treatment length	3.2 (1-24 sessions)	6-8 sessions (1 study)	13 sessions (1 study)	20.9hrs (8-52hrs)
Recovery rate	60-91%*	56% (45-64%)	35% (32-39%)	47.9% (45.7 - 71.9%)
Reliable improvement	94.5%	73% (66-80%)	51% (46-52%)	64% (61.4 - 64%)
Reliable deterioration	0.4% (0-5%)	1-3%	2-6%	-

[†]=Meta-analysis for practice-based evidence in the UK; ^{††}=Meta-analysis of non RCTs for CBT treatment of anxiety (incl. PTSD);

^{†††}=practice-based evidence for CBT in the UK, Jan 2016 quarterly results (range Aug-Jan 2016);

*Lower clinical cut-off, 91% IES; 82% GAD-7; 61% IES-E; 60% CORE. *Note.* The benchmarks used in this review are highlighted in bold.

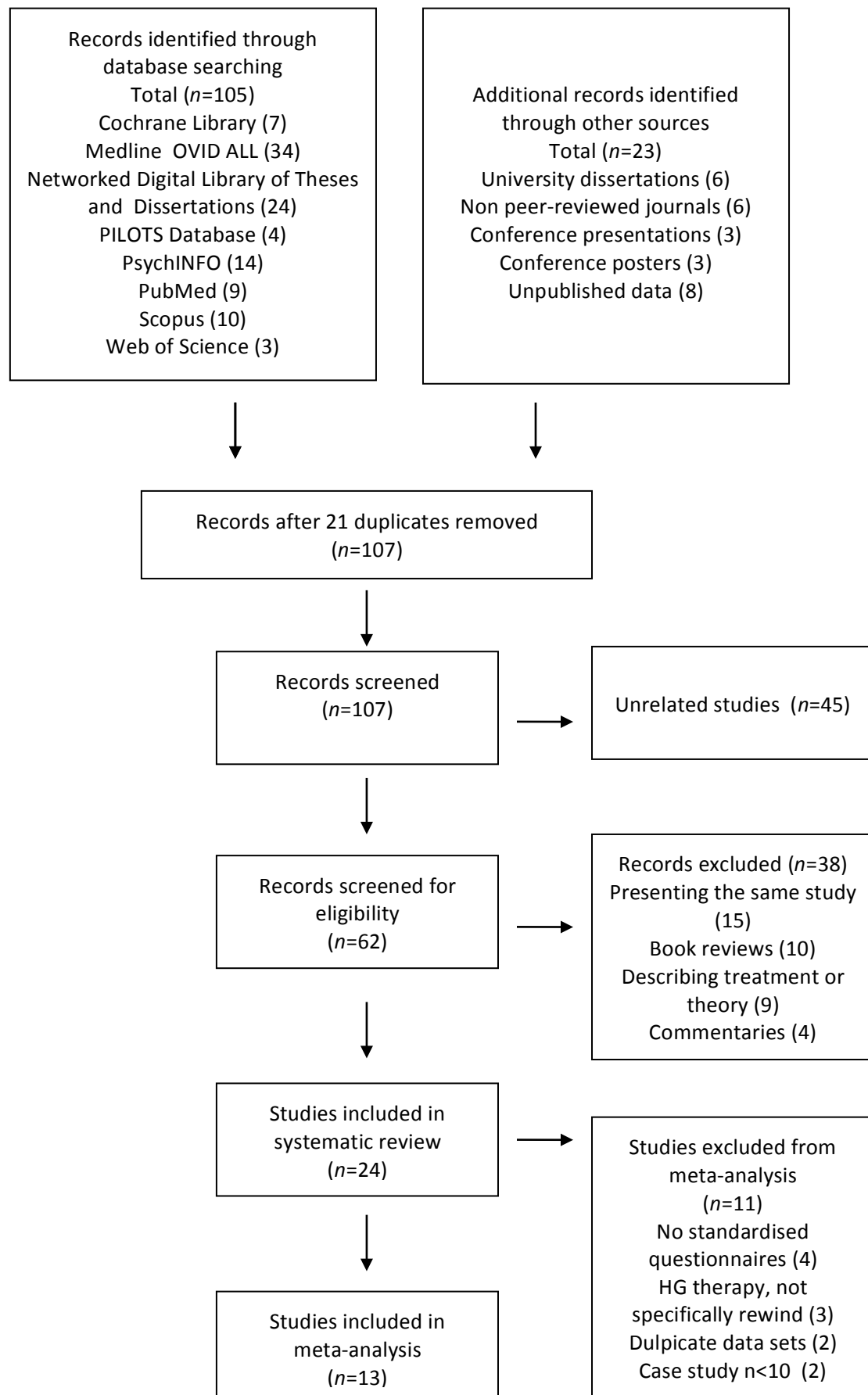
3. Results

3.1 Selection of studies

The results of the search and selection process are shown in Figure 1. It can be seen that the initial search revealed 107 records after duplicates were excluded, with 45 of these being unrelated to the current search topic (e.g. articles about videos, horses, philosophy, and law). Of the remaining 62 records that were screened for eligibility, 38 were excluded. There were 24 studies that met the inclusion criteria for the systematic review, with 18 relating to Human Givens treatment and 6 to the Muss' treatment protocol.

Of those 24 studies, four were excluded from the meta-analysis because they did not use standardised questionnaires, three large studies did not specify how many of the participants specifically used Rewind, and two studies were case studies with fewer than ten participants. Two additional studies were excluded because they used the same data set as two larger studies.

Figure 1. Selection of studies for inclusion in the systematic review and meta-analysis.



3.2 Characteristics of the studies

A summary of the methodology and study characteristics is shown in Table 3. A total of 4,995 people were included in these studies. One study was very large ($N=3,885$), five were large studies ($N=90+$), four were moderately large studies ($N=50-80$), six studies were a moderate size ($N=30-49$), five studies had a small sample size ($N=10-29$), and three studies were case studies ($N<10$).

Design. All studies were practice-based studies; four studies were qualitative, two were case studies, and the remaining 19 were observational studies with pre- and post-treatment standardised self-report measures. One of these (Utuza, Joseph & Muss, 2012) was a translated group treatment session. There were nine studies with comparison groups; one was a cluster control group based on GP surgeries (Tsaroucha *et al.*, 2012), two compared those with and without PTSD diagnosis (Muss, 2015; Timmens, 2015), two compared those who completed HG treatment with those who did not complete treatment (Andrews, 2013; 2015), two compared HG treatments with and without Rewind (Barr, 2015a, b), and one compared severe and mild trauma (Guy & Guy, 2009). One study compared Rewind treatment sessions with control treatment sessions using both within and between-subject designs (Adams *et al.*, 2015). These comparison groups were not suitable for use as control groups in this meta-analysis as only one study used non-HG treatment (Tsaroucha *et al.*, 2012). There were no RCTs.

Settings. Nine of the studies were with private trauma clinics, five were within the UK National Health Service (NHS), one was in a police service, one in a school, one with victim support organisation, four with a war veterans' charity, two with other trauma charities, and one large study involving NHS, private clinics and charities. One study was in Northern Ireland, one in Rwanda, and the rest in the UK.

Publication. Only seven of the 24 studies were published in peer review journals, indicating that much of the research has not been available to the wider scientific community. Seven were university dissertations.

Therapists. There were at least 6 Muss therapists and 70 HG therapists represented in the studies. Four of the studies were aggregate studies with multiple therapists at multiple locations; with 69, 51, and 43 therapists, and one study with the number of therapists not recorded. Four studies had multiple therapists in one

location; one with five therapists, two studies with three therapists, and one study with two therapists. The other studies only had one therapist.

Measures. Regarding the HG protocol, three of the 18 HG studies did not use quantitative methods and eight studies used more than one standardised questionnaire, including Clinical Outcomes in Routine Evaluation (CORE-OM and CORE-10), Outcome Rating Scale (ORS), and Session Rating Scale (SRS). Only eight of the 18 HG studies used a standardised questionnaire designed to specifically measure PTSD symptoms, either the Impact of Events-extended version (IES-E) or the Impact of Events-revised version (IES-R). Two of the six Muss protocol studies did not use quantitative methods and four studies used the same standardised measure of PTSD symptoms, the Impact of Events (IES).

Number of sessions. Only two studies did not report the number of treatment sessions. The mean number of treatment sessions in the studies ranged from 1- 6.5 sessions, with the range within studies being between 1-24 sessions, and the majority of people being treated in 6 treatment sessions or less. Eleven studies reported results of a single Rewind session being effective, but with some participants requiring more than one session.

Generalisability. Sampling methods, inclusion and exclusion criteria were used to assess generalisability of results. With regard to sampling method, 17 studies used consecutive sampling, two case studies had ad hoc sampling, one study used selective sampling, and four studies did not report their sampling method. Inclusion criteria for the studies included being treated with Rewind, being above the clinical cut-off before treatment, being a war veteran, severe flashbacks or nightmares, having a PTSD diagnosis, and two case studies were disorder specific. With regards to exclusion criteria, 18 of the 24 studies reported offering treatment to all those who were referred. One study only treated English speaking people with moderate depression (Tsaroucha *et al.*, 2012).

Reliability. To assess the reliability of the data, data capture rates and attrition rates were extracted. Data capture rates reflected the difference between the number who started treatment and the number who have complete data. Data capture rates were not available for five of the 24 studies. The mean data capture rate was 85%, with 16 studies having a data capture rate of 80% or more, and seven studies having a data capture rate of 98% or more. Drop-out rates reflected the number of people who

did not complete treatment. Drop-out rates were not reported in eight studies, with 13 studies reporting drop-out rates of 0%, indicating that no one dropped out of treatment. Three studies reported drop-out rates above 0% with the highest drop-out rate being 27%. Nine studies reported intention-to-treat results.

Follow-up. Fifteen of the 24 studies had no follow-up. Of the HG studies that had follow-up, three of these were qualitative only, two were both qualitative and had standardised measures at 3 months, and 3 months-2 years, and one had standardised questionnaires at 4, 8, and 12 months. One Muss study had a 3m-2year follow-up. Follow-ups generally found the treatment gains to be maintained or continued improvement after treatment had ended.

Reliability of studies in meta-analysis. Apart from one study that did not report a data capture rate, all of the studies in the meta-analysis had data capture rates of 80% or more. Nine of the 13 studies in the meta-analysis reported attrition rates of 0%, including all the Muss protocol studies. Two of the three war veteran studies did not record attrition rates, and the third study reported 12% not completing treatment. All of the studies in the meta-analysis used consecutive sampling and had no exclusion criteria for treatment.

Table 3. Summary of methodology and reasons for exclusion from meta-analysis.

Source (date)	Design	Setting (country) sample size (N; subgroups)	Inclusion and exclusion criteria for study	% drop-out rate (DR) sessions (S) (range) follow-up (FU)	% data capture (DC) exclusion from meta-analysis	Reason for exclusion from meta-analysis
Human Givens Rewind						
Adams <i>et al.</i> (2013)	Qualitative	NHS Tertiary care (UK) N=27; T=1; SM=consecutive; qualitative & % discharged	All referred to tertiary mental health service with severe flashbacks or nightmares. All had care coordinator.	DC=100%; DR=0% single session; S=1 FU=qualitative, 33%		no SQ
Adams <i>et al.</i> (2015)*	Pre-post, Within-subject control group	Private Clinic (UK) N=44 (20/14); T=1; SM=consecutive; CORE-10 , ORS, SRS	All referrals treated with Rewind, above CORE-10's CCO. No exclusion criteria for treatment	DC=80%; DR=NR S=NR; FU=NR		included
Andrews (2013)*	Pre-post, aggregate completers and non-completers	War veterans (UK) N=150; T=51; SM=consecutive IES-E , CORE-10, ORS, CORE-OM	All referrals to charity (war veteran self-referral) who attended an assessment session and were above the CORE-10 CCO. No exclusion criteria. FU=see Dale (2013)	DC=81%; DR=NR ITT; S=5.6 (1-13) FU=see Dale (2013)		included
Andrews (2015)*	Pre-post, aggregate Completers and non-completers	War veterans (UK) N=106; T=43; SM=consecutive; IES-E , CORE-10	All referrals to charity (war veteran self-referral) who attended an assessment session and were above the CCO. No exclusion criteria.	DC=82%; DR=12% ITT; S=5.1 (SD=2.3; 1-12) FU=NR		included
Andrews <i>et al.</i> (2011)	Pre-post	NHS Secondary care (UK) N=124; T=3; SM=consecutive; CORE-10, CORE-OM	All referrals from GPs or practice nurses for counseling who attended treatment session after assessment. No exclusion criteria for treatment	DC=99%; DR=15% ITT; S=NR; FU=NR		HG therapy, use of Rewind unspecified
Andrews <i>et al.</i> (2013)	Pre-post, aggregate N=3,885; T=69;	NHS, voluntary, private (UK) SM= consecutive; CORE-10; CORE-OM	All who attended one or more treatment sessions after assessment above CCO. No exclusion criteria for treatment	DC=71% [†] ; DR=27% ITT; S=4.7 (SD=3.74) FU=NR		HG therapy, use of Rewind unspecified
Barr (2015a)*	Pre-post, HG therapy with and without rewind	Private Clinic (UK) N=54; T=1; SM=consecutive; CORE-10	All referrals to clinic who started treatment, > 16 years old and were above the CCO. No exclusion criteria for treatment	DC=85%; DR=0% ITT; S=5.3 (SD=3.9; 2-21) FU=NR		included

* included in the meta-analysis; [†] questionnaires in bold were used in meta-analysis; NR=not reported; CCO=clinical cut-off; ITT=intention to treat results reported (results of all who started treatment); SQ=standardised questionnaire, CS=case study; [†] =data capture rate for all those referred instead of all those treated, including those who did not attend an assessment session.

Table 3. Summary of methodology and reasons for exclusion from meta-analysis (cont.).

Barr (2015b)*	Pre-post, HG therapy with and without rewind	Private Clinic (UK) N=50; T=1; SM=consecutive; GAD-7 ; PHQ-9	All referrals to clinic who started treatment, > 16 years old and were above the CCO. No exclusion criteria for treatment	DC=92%; DR=0% ITT; S=6.4 (SD=5.3; 1-24) FU=NR	included
Bishop <i>et al.</i> (2012)*	Pre-post, aggregate	War veterans (UK) N=34; T=NR; SP=consecutive; IES-E	All referrals to war veteran charity who started treatment. No exclusion criteria	DC=NR; DR=NR S=3.1 (1-8); FU=NR	included
Dale (2012)	Pre-post, aggregate Qualitative	War veterans (UK) N=43 pre-post and N=11 qualitative; T=1; SM=consecutive; IES-E	All referrals to war veteran charity, who had completed treatment and not involved with charity. No exclusion criteria.	DC=26%; DR=NR S=6 (NR); FU=3m-2yr	duplicate data Andrews (2013)
Gofton (2011)	Pre-post and qualitative	Private trauma clinic (UK) N=6; T=1; SM=ad hoc; IES-E , semi-structured interview	Referred to trauma clinic. No exclusion criteria	DC=NR; DR=0% S=6 (NR) FU=interview (NR)	duplicate data Guy & Guy (2015)
Guy & Guy (2003)	Qualitative	Private trauma clinic (UK) N=30; T=1; SM=NR; qualitative	Referred for counselling No exclusion criteria mentioned	DC=NR; DR=NR; S=1 ^{††} FU=3-6m	no SQ
Guy & Guy (2009)*	Pre-post, Severe and mild symptoms	Private trauma clinic (UK) N=97; T=1; SM=consecutive; IES-E	All referrals to clinic. No exclusion criteria for treatment	DC=98%; DR=0%; S=1 ^{††} FU=NR	included
Guy & Guy (2015)*	Pre-post	Private trauma clinic (UK) N=77; T=1; SM=consecutive; IES-E	All referrals to the clinic were included No exclusion criteria for treatment	DC=100%; DR=0%; S=1 ^{††} FU=NR; S=6.5 (SD=1.7; 3-12)	included
Murphy (2007)	Qualitative	Trauma charity (Northern Ireland) N=47; T=5; SM=consecutive; %DSM-IV PTSD symptoms	All referrals to the charity that were treated with HG Rewind. No exclusion criteria	DC=100%; DR=0% N=27 had 1 session FU=NR	no SQ
Timmens (2015)*	Pre-post, PTSD diagnosis and sub-threshold trauma	Police (UK) N=52; T=1; SM=consecutive; CORE-OM , IES-R	All referrals to OH were included No exclusion criteria for treatment	DC=80%; DR=0% S=5.1 (SD=4.3; 1-20) FU=NR	included

* included in the meta-analysis;

NR=not reported; CCO= clinical cut-off; ITT= intention to treat results reported (results of all who started treatment); SQ = standardised questionnaire, CS = case study

[†] = data capture rate for all those referred instead of all those treated, and would include those who did not attend an assessment session

^{††}=data was taken before and after the single rewind session, but this was part of HG therapy that had an average of 6 sessions in total.

Table 3. Summary of methodology and reasons for exclusion from meta-analysis (cont.).

Tsaroucha <i>et al.</i> (2012)	Quasi-experimental, cluster control group	NHS secondary care (UK) N=106; SM=consecutive T=2; CORE-OM, SWLS, ENA	Inclusion: adults, both genders, English speaking, moderate depression	DC=59%; DR=NR median S=2 FU=4m, 8m, 12m	HG therapy, use of Rewind unspecified
Yates & Atkinson (2011)	Case study	Adolescents (UK) N=3; T=1; SM=NR; BYI-II, semi-structured interview	Identified by teacher responsible for inclusion and had low self-esteem, anxiety, or depression on BYI-II. No exclusion criteria	DC=89%; DR=0% S=6; FU=3m	CS
<u>Muss Rewind</u>					
Muss (1991)	Qualitative	Private clinic (UK) N=19; T=1; SM=NR; Descriptive	Police officers with a PTSD diagnosis No exclusion criteria	DC=NR; DR=NR S=2; FU=3m-2yrs	no SQ
Muss (2015)*	Pre-post PTSD diagnosis and no diagnosis	Private trauma clinic (UK) N=30 T=1; SM=consecutive; IES	All referrals to service who were treated with Rewind and scored 25 or above on the IES. No exclusion criteria for treatment	DC=90%; DR=0% ITT; S=1; FU=NR	included
Norris (2015)*	Pre-post	NHS secondary care (UK) N=16; T=1; SM=consecutive; IES	All referrals to service who were treated with Rewind and scored 25 or above on the IES. No exclusion criteria for treatment	DC=100%; DR=0% ITT; S=1; FU=NR	included
Slater (2015)	Case study	NHS obstetric dept (UK) N=2; T=1; SM=ad hoc; managed birth anxiety	Identified in antenatal anaesthetic clinic with anxiety related to previous birth trauma No exclusion criteria stated.	DC=NR; DR=NR 4 sessions and 1 session FU=few weeks	no SQ
Utzuza <i>et al.</i> (2012)*	Pre-post Group treatment	Voluntary organisation (Rwanda) N=24; T=1 and translator; SM=selective; IES	After training session, all attendants wanted to be treated and consented to participate. All had PTSD symptoms. No exclusion criteria	DC=88%; DR=0% S=1; FU=NR	included
Williams (2015)*	Pre-post	Victim support charity (UK) N=18; T=3; SM=NR; IES	All referrals to charity scoring 25 or above on the IES. No exclusion criteria for treatment	DC=100%; DR=0% ITT; S=1; FU=NR	included

* included in the meta-analysis; SWLA=Satisfaction with Life Scale; ENA=Emotional Needs Audit

NR=not reported; CCO= clinical cut-off; ITT= intention to treat results reported (results of all who started treatment); SQ = standardised questionnaire; CS = case study

† = data capture rate for all those referred instead of all those treated, and would include those who did not attend an assessment session

††=data was taken before and after the single rewind session, but this was part of HG therapy that had an average of 6 sessions in total.

3.3 *Participants and traumas*

Table 4 presents the characteristics of the participants and traumas treated.

Participants. Ages of those treated ranged from 8-85 years, with the average mean age being 41 years, and over 30 participants being under 18 years. Regarding gender, fourteen studies were predominantly female but three war veteran studies were over 90% male. Five studies did not report on gender. Only eight studies reported ethnicity: seven of these were primarily white British and one study was 100% Rwandan. Ten studies reported on co-morbidity, indicating high levels of anxiety and depression. In one war veteran sample 64% indicated also having a problem with alcohol prior to treatment. Only six studies reported medication use, four studies reported employment status, and three studies reported relationship status.

Trauma. With regard to the trauma, the mean scores were in the severe range for the IES-E, IES and GAD-7 and in the moderately severe range for the CORE. Regarding chronicity, although twelve studies did not report chronicity, there was considerable heterogeneity across the studies, with $n=129$ being ‘chronic’ (trauma being over 5 years prior to treatment), $n=72$ had treatment 6 months -5 years after the trauma, and $n=54$ were treated less than 12 months after the trauma, and $n=16$ were treated less than 6 months after the trauma. Of the ten studies that reported the number of traumas treated, nine studies reported treating multiple traumas. Nine studies did not report the type of traumas treated. Traumas ranged from war atrocities to rape, child sexual abuse, assaults, bombs, fires, armed robberies, road traffic accidents, traumatic births, dog attacks, threats, panic attacks and shame. However the outcomes of specific traumas were not reported.

Table 4. Summary of participant and trauma characteristics.

Source (date)	Sample size mean age (range) % female ethnicity	Co-morbidity	Medication (M) employment (E) relationship status (R)	Questionnaire, pre-treatment mean (SD), severity, % multiple trauma (mult)	Chronicity	Type of trauma
<u>Human Givens Rewind</u>						
Adams <i>et al.</i> (2013)	N=27 38.8 (20-65) years 13 (48%) female ethnicity=NR	96% co-morbidity 24 (89%) depression, 19 (70%) anxiety 2 (7%) drugs or alcohol	M=NR; E=NR; R=NR;	IES-E severe 69.33 (NR) 3 (11%) < 50 21 (78%) severe mult=19 (70%)	18 (67%) +5yr 2 (7%) 2-5yr 4 (15%) 6m-2yr 2 (7%) <6m	9 assaults; 9 CSA; 6 RTA; 6 WD; 6 AD; 4 rapes; 4 DV; 3 fires; 3 traumatic divorces; 2 bombs
Adams <i>et al.</i> (2015)*	N=44 37 (SD=11.9) years 29 (66%) female 39 (89%) WB, 4 (9%) E, 1 (2%) SA	38 (86%) depression (89%) anxiety 5 (11%) PTSD diagnosis 11 (25%) physical problems	21 (44%) medication E=NR; 22 (50%) married, 15 (34%) single; 29 (66%) had dependents	CORE-10 21 (6.4) severe mult=39 (89%) only childhood=5 (11%)	21 (48%) +5yr 9 (20%) 2-5yr 8 (18%) 6m-2yr 1 (2%) <6m	NR
Andrews (2013)*	N=150 43 (23-85) years 4 (3%) female ethnicity=NR	NR	M=NR; E=NR; R=NR;	CORE-10 23 (NR) IES-E severe 54 (NR); mult=NR	NR	150 war
Andrews (2015)*	N=106 40.4 (20-67) years 9 (8%) female ethnicity=NR	NR	M=NR; E=NR; R=NR;	CORE-10 severe 25.3 (5.8) IES-E severe 56 (11.6) mult=NR	N=33 (DC=31%) 8 (24%) >10yr, 5 (15%) 5-10yr, 12 (36%) 1-5yr 3 (9%) 3-12m 5 (15%) <3m	106 war

* included in the meta-analysis; SD=standard deviation; NR= not reported; WB= white British; E= European; SA= South African; FT work= full-time work; mult=multiple traumas; SA= sexual assault; CSA= child sexual assault; RTA= road traffic accident, DV= domestic violence; WD= witnessed traumatic deaths (not listed previously); AD=almost died (not listed previously). *Note:* Eight studies had an average mean IES-E score of 63.9 (>50=severe); eight studies had an average mean CORE score of 22.4 (20-25=moderately severe); four studies had an average mean IES score of 47.8 (>35=severe); CORE-10; one study had a mean GAD-7 score of 16.3 (>15=severe).

Table 4. Summary of participant and trauma characteristics (cont.).

Andrews <i>et al.</i> (2011)	N=124 42.8 (17-81) years 88 (71%) female 107 (86%) WB, 2 Asian, 1 Irish, 1 black, 1 E	92 (74%) depression 99 (80%) anxiety	66 (53%) medication E=NR; R=NR;	CORE-10 moderate 19.41 (7.1) mult=NR	depression (N=92) NR 47 recurring, 12 >12m, 18<6m anxiety (N=99) % recurring, 15 >12m, 13<6m NR
Andrews <i>et al.</i> (2013)	N=3,885 40.4 (SD=12.6) years 2,922 (75%) female 2,922 (75%) WB, 67 (1.7%) Asian, 34 (0.9%) Black 31 (0.8%) other	1,898 (49%) depression 2,566 (66%) anxiety 822 (21%) trauma/abuse 527 (14%) bereavement 431 (11%) physical problems	1,574 (40%) medication E=NR; R=NR;	CORE-10 19.27 (7.1) moderate mult=NR	NR
Barr (2015a)*	N=54 44.6 (SD=18.9) years 34 (74%) female ethnicity=NR	NR	M=NR; E=NR; R=NR;	CORE-10 severe 25.2 (5.8) mult.=NR	NR
Barr (2015b)*	N=50 45.9 (SD=15.9) years 34 (69%) female ethnicity=NR	NR	M=NR; E=NR; R=NR;	GAD-7 severe 16.3 (4.5) mult=NR	NR
Bishop <i>et al.</i> (2012)*	N=34 age=NR gender=NR ethnicity=NR	NR	M=NR; 49% unemployed 12% FT employed; 24% married/cohabit, 52% single/divorced	IES-E severe 67.2 (NR) mult=24 (71%)	32 (94%) +5yr 2 (6%) 2-5yr 34 war
Dale (2012)	N=43 (N=11 qualitative) 43.2 (23-63) years 0% female 100% WB	4 (36%) depression 2 (18%) medication 7 (64%) alcohol 1 (9%) registered disabled	IES-E severe 11 (100%) employed 10 (91%) own home 1 (9%) live with parent	NR 65.65 (13.36) mult=NR	11 war

* included in the meta-analysis; NR= not reported; WB= white British; E= European; SA = South African; FT work= full-time work; mult=multiple traumas; SA = sexual assault; CSA= child sexual assault; RTA= road traffic accident, DV= domestic violence; WD= witnessed traumatic deaths (not listed previously); AD=almost died (not listed previously).
Note: Eight studies had an average mean IES-E score of 63.9 (>50=severe); eight studies had an average mean CORE score of 22.4 (20-25=moderately severe); four studies had an average mean IES score of 47.8 (>35=severe) ; CORE-10; one study had a mean GAD-7 score of 16.3 (>15=severe).

Table 4. Summary of participant and trauma characteristics (cont.).

Gofon (2011)	N=6 43.5 (36-52) years 2 (33%) female ethnicity=NR	NR	M=NR; E=NR; R=NR	IES-E severe 66.3 (8.7) mult=NR	mean=12.5yrs range(1-37yr)	2 WD (child); 2 fires; 1 DV; 1 RTA;
Guy & Guy (2003)	N=30 42 (25-62) years 26 (87%) female ethnicity=NR	4 (13%) PTSD diagnosis	11 (37%) medication E=NR; R=NR	NR mult=13 (43%)	range(<3m-46yr)	various: assaults, rape SA, RTA, WD, war
Guy & Guy (2009)*	N=97; age=NR gender=NR ethnicity=NR	NR	M=NR; E=NR; R=NR	IES-E severe 68 (NR) mult=NR	NR	NR
Guy & Guy (2015)*	N=77 39 (17-60) years 51 (66%) female ethnicity=NR	NR	M=NR; E=NR; R=NR	IES-E severe 65.7 (12.8) mult= 5 (6%)	NR	17 SA (3 CSA); 13 WD; 12 assaults (6 DV); 10 medical (3 traumatic births); 9 accidents (2 fires); 8 RTA; 4 verbal assaults; 1 war, 1 panic attack
Murphy (2007)	N=47; age (8-70) years 25<18yrs, 22>18yrs 29 (62%) female ethnicity=NR	NR	M=NR; E=NR; R=NR	qualitative mult=17 (36%)	10 (21%) +5yr 11 (23%) 1-5yr 26 (55%) <1yr	15 assaults, 9 shootings 9 armed robberies, 8 home attacks, 6 bombs
Timmens (2015)*	N=52 age=NR gender=NR ethnicity=NR	17 (33%) PTSD diagnosis	M=NR; E=NR; R=NR	CORE-OM 23.6 (5.8) severe mult= 14 (27%)	NR	NR
Tsaroucha <i>et al.</i> (2012)	N=106 median age=39 years 73 (69%) female 89 (84%) WB	106 (100%) depression	82 (77%) medication 33 (31%) unemployed, 33 (31%) FT work, moderately severe 20 (19%) off sick; R=NR	CORE-OM 23.3 (8.2-33.8) moderately severe mult=NR	51 (48%) hist. of depression	NR

* included in the meta-analysis; NR= not reported; WB= white British; E= European; SA= South African; FT work= full-time work; mult=multiple traumas; SA= sexual assault; CSA= child sexual assault; RTA= road traffic accident, DV= domestic violence; WD= witnessed traumatic deaths (not listed previously); AD=almost died (not listed previously).
Note: Eight studies had an average mean IES-E score of 63.9 (>50=severe); eight studies had an average mean CORE score of 22.4 (20-25=moderately severe); four studies had an average mean IES score of 47.8 (>35=severe) ; CORE-10; one study had a mean GAD-7 score of 16.3 (>15=severe).

Table 4. Summary of participant and trauma characteristics (cont.).

Yates & Atkinson (2011)	N=3; ages 14,16,16 years 2 female 3 WB	3 low self-concept 2 anxiety, 1 depression 1 alcohol	0 medication, 3 in education 3 single	BYI-II qualitative mult=0	1 witnessed DV, 1 assault, 1 vomiting,
<u>Muss Rewind</u>					
Muss (1991)	N=19; age=NR gender=NR; ethnicity=NR	NR	M=NR; E=NR; R=NR	qualitative	NR
Muss (2015)*	N=30; age (5-66) years, 3 <18yrs 21 (70%) female ethnicity=NR	22 (73%) PTSD diagnosis 4 (13%) anxiety 2 (7%) sub-threshold trauma	M=NR; E=NR; R=NR	IES severe 44.2 (15.2) mult=2 (7%)	22 RTA, 2 explosions, 1 DV, 1 WD, 1 SA, 1 drowning, 1 fall, 1 train crash, 1 dog attack, 1 fairground accident, 1 near miss
Norris (2015)*	N=16 average age=36 years 12 (80%) female 12 (80%) WB, 1 Asian	R=NR 6 (40%) depressed, 12 (80%) anxiety 5 (33%) flashbacks 4 (27%) nightmares	M=NR; E=NR; R=NR	IES severe 52.5 (8.4) mult=1 (7%)	3 assaults, 2 rapes, 2 CSA, 2 threatened, 2 shame, 2 RTA, 1 witnessed heart attack, 1 near miss in car, 1 dog attack
Slater (2015)	N=2; age=NR 2 female; ethnicity=NR	NR	M=NR; E=NR; R=NR	qualitative	1 caesarean stillbirth, 1 1 ineffective anaesthetic, 1 postpartum psychosis
Utuza <i>et al.</i> (2012)*	N=24 Age (25-35) years 13 (54%) female 24 Rwandan	NR	M=NR; E=NR; R=NR	IES severe 38.1 (12.1) mult=NR	24 (100%) +14yr 24 war in Rwanda
Williams (2015)*	N=18; age (16-50) years gender=NR; ethnicity=NR	NR	M=NR; E=NR; R=NR	IES severe 56.4 (7.2) mult=NR	3 (17%) +5yr 7 (39%) 6-24m 8 (44%) <6m 6 rapes, 5 assaults, 5 SA, 2 robberies, 2 child abuse

* included in the meta-analysis; NR= not reported; WB= white British; E= European; SA= South African; FT work= full-time work; mult= multiple traumas; SA= sexual assault; CSA= child sexual assault; RTA= road traffic accident, DV= domestic violence; WD= witnessed traumatic deaths (not listed previously); AD= almost died (not listed previously).
Note: Eight studies had an average mean IES-E score of 63.9 (>50=severe); eight studies had an average mean CORE score of 22.4 (20-25=moderately severe); four studies had an average mean IES score of 47.8 (>35=severe); CORE-10; one study had a mean GAD-7 score of 16.3 (>15=severe).

3.4 *Quality assessment*

The results of the quality assessment are presented in Table 5. Using Kennelly's (2011) rating scale, five of the studies in the systematic review were *poor*, two were *fair*, and eighteen were rated as *good*, with twelve of these being *very good*. Of the thirteen studies included in the meta-analysis, two were rated as *poor*, one was *fair*, and ten were rated as *good*, with eight were *very good*.

Regarding the quality assessment subscales, there was a wide discrepancy in studies for the quality of the 'reporting' subscale, the majority were *good* and only four were *poor*. The majority of the studies had *very good* 'external validity' and 'internal reliability' scores. However, 'internal validity' scores were generally lower, reflecting the lack of control groups in many studies, with only one power analysis performed.

Table 5. Quality assessment for practice-based studies.

Source (date)	Overall score (max 32)	Study quality (reporting) (max 11)	External validity (generalisability) (max 11)	Internal reliability (study bias) (max 5)	Internal validity (selection bias) (max 5)	Overall rating
<u>Human Givens Rewind</u>						
Adams <i>et al.</i> (2013)	22	7	10	3	2	good
Adams <i>et al.</i> (2015)*	27	8	11	5	3	very good
Andrews <i>et al.</i> (2011)	28	11	11	4	2	very good
Andrews <i>et al.</i> (2013)	25	9	11	4	1	very good
Andrews (2013)*	14	2	9	2	1	poor
Andrews (2015) *	29	10	11	4	4	very good
Barr (2015a)*	27	9	10	4	4	very good
Barr (2015b)*	27	9	10	4	4	very good
Bishop <i>et al.</i> (2012)*	20	6	10	3	1	good
Dale (2012)	22	10	7	4	1	good
Gofton (2011)	22	10	8	3	1	good

* included in the meta-analysis
<14=poor; 15-19=fair; 20-24=good; 25+=very good

Table 5. Quality assessment for practice-based studies (cont.).

Source (date)	Overall score (max 32)	Study quality (reporting) (max 11)	External validity (generalisability) (max 11)	Internal reliability (study bias) (max 5)	Internal validity (selection bias) (max 5)	Overall rating
Guy & Guy (2003)	19	7	9	1	2	fair
Guy & Guy (2009)*	12	3	5	3	1	poor
Guy& Guy (2015)*	25	9	10	4	2	very good
Murphy (2007)	27	10	11	4	2	very good
Timmens (2015)*	25	8	9	4	4	very good
Tsaroucha <i>et al.</i> (2012)	25	9	7	5	4	very good
Yates (2011)	12	8	2	2	0	poor
Muss Rewind						
Muss (1991)	12	4	6	1	1	poor
Muss (2015)*	29	10	10	5	4	very good
Norris (2015)*	27	11	6	4	2	very good
Slater (2015)	9	2	6	1	2	poor
Utuza <i>et al.</i> (2012)*	18	9	4	4	0	fair
Williams (2015)*	24	11	7	4	2	good

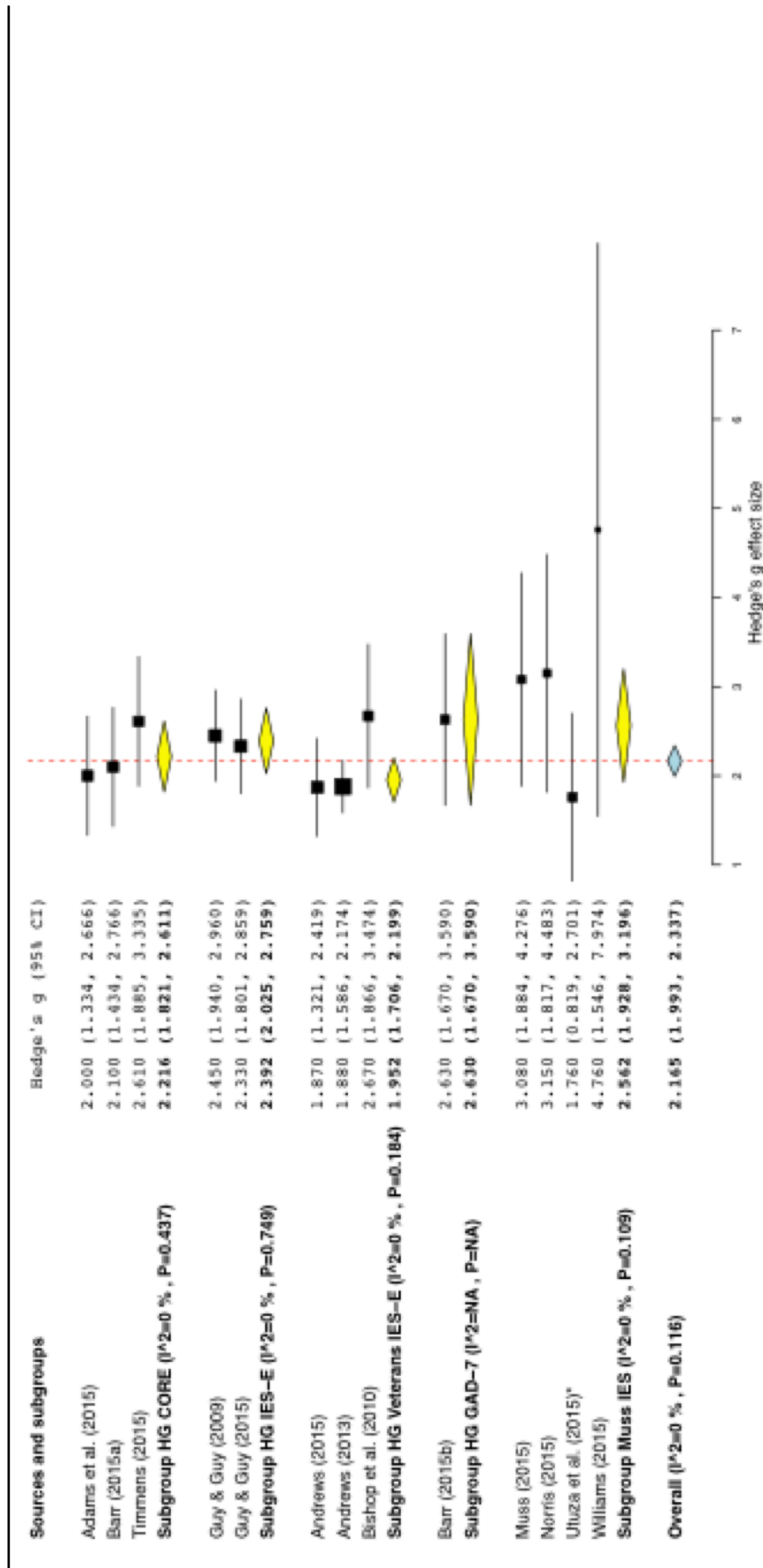
* included in the meta-analysis
<14=poor; 15-19=fair; 20-24=good; 25+=very good.

3.5 Hedge's g pre and post-treatment effect size

The overall analyses identified a large pre-post treatment effect size ($g=2.25$, 95% CI [2.02-2.49], $p<.001$) for Rewind. The overall effect size was above the benchmark effect size of $g=1.65$ (see Table 1). Tests for heterogeneity found $Q(12)=18$, $p=.120$, $I^2=33\%$, $k=13$, with the I^2 indicating a low level of variance between studies. The leave-one-out cross validation sensitivity analysis (Appendix D) supported the main conclusions. The funnel plot (Appendix E) showed one outlier (Williams, 2015). This was further investigated in a post hoc analysis.

The forest plot for the subgroup analysis is shown in Figure 2. The Muss protocol showed considerable variance. The group treatment had the lowest effect size. Studies that were similar had similar effect sizes (Andrews, 2013, 2015; Guy & Guy, 2009, 2015). Tests for heterogeneity in mean effect size between war veterans and non-war veterans who received HG treatment indicated significant heterogeneity, as one would expect for different populations. There was no significant heterogeneity in mean effect sizes between the different questionnaires and the different protocols (see Figure 2), suggesting that the variation in mean effect sizes of the larger number of studies was less likely to be due to chance.

Figure 2. Hedge's g effect size for different questionnaires, different populations, and different protocols using a fixed effects model.



*=group treatment. *Note.* The dotted red line represents the summary effect size for all the studies. A comparison of the mean effect sizes for the different questionnaires ($Q(3)=3.01$, $p=.390$) found no significant heterogeneity. A separate subgroup analysis compared the HG protocol ($g=2.13$, 95% CI [1.96-2.31], $Q(8)=10.32$, $p=.244$), with the Muss protocol ($g=2.56$, 95% CI [1.93-3.20], $Q(3)=6.06$, $p=.109$). Tests for heterogeneity between the effect sizes of the protocols ($Q(1)=1.63$, $p=.202$) found no significant heterogeneity. A separate subgroup analysis compared the effect size of veterans ($g=1.95$, 95% CI [1.71-2.20], $Q(2)=3.38$, $p=.184$), with non-veterans who had HG Rewind ($g=2.33$, 95% CI [2.08-2.59], $Q(5)=2.56$, $p=.768$). Tests for heterogeneity between the means were significant $Q(1)=4.29$, $p=.038$, suggesting that the true effect is not the same in all studies

3.5.1 Post hoc analysis

In other studies, pre-treatment symptom severity has been found to be prognostic of higher PTSD treatment effect sizes (e.g. Dickstein, Walter, Schumm, & Chard, 2013; Moser, Cahill, & Foa, 2010; Van Minnen, Arntz, & Keijsers, 2002). Minami, Serlin *et al.* (2008) also reported that smaller samples with more severe symptoms produced larger effect sizes. To test whether the large effect size in Williams (2015) could be due to the combination of a small sample and severe initial symptoms with small standard deviations that responded well to treatment, the most severe 18 scores were selected from the two largest studies (Guy & Guy, 2009, 2015). The same questionnaire (IES) used in the Williams study could be extracted from the original IES-E data. The Hedge's g for Williams (2015) was $g=4.76$ (95% CI [1.55 – 7.97]), for the most severe 18 scores in Guy & Guy (2009) the effect size was $g=4.78$ (95% CI [3.51 – 6.05]) and for the most severe 18 scores in Guy & Guy (2015) the effect size was $g=2.58$ (95% CI [1.70 – 3.46]). The high effect size in the Guy and Guy (2009) subsample would appear to confirm the plausibility of this explanation.

3.6 Recovery rate

The rates of those below the lower and higher clinical cut-offs for ITT and those who completed treatment are presented in Table 6. Different cut-off points produced different recovery rates for each study. The overall weighted mean ITT recovery rate was 66% for the lower cut-off and 83% for the higher cut-off, and was 70% and 91% respectively for those who completed treatment. Interestingly, the difference between those below the cut-off in the ITT results and those who completed treatment (Andrews, 2015) indicated that some participants who did not complete treatment were below the clinical cut-off. Nonetheless, regardless of the clinical cut-off used or whether ITT or those who completed treatment was considered, a large number of people were below the clinical cut-off after treatment.

The Q statistic and I^2 indicated significant heterogeneity and that moderator variables should be considered. Moderator analyses are presented in Table 7. Embedded IES scores were calculated from the raw IES-E scores for two combined samples (Guy & Guy, 2009; 2015). Using the results from the same dataset, there were wide variations in the mean recovery rates, ranging from 58%-97% depending on the clinical cut-off used, with higher

rates on the IES than on the IES-E. These results suggested that recovery rates from different questionnaires or using different clinical cut-off points should not be compared.

Table 6. Percentage below the higher and lower clinical cut-offs for those who completed treatment with complete data and ITT and the weighted mean.

Source	Questionnaire (lower/higher cut-off)	% below lower clinical cut-off %complete	%ITT	% below higher clinical cut-off %complete	%ITT
Adams <i>et al.</i> (2015)	CORE-10 (11,13)	53% (<i>n</i> =21/40)	53% (<i>n</i> =21/40)	68% (<i>n</i> =27/40)	68% (<i>n</i> =27/40)
Andrews (2013)	IES-E (30,50)	not recorded		84% (<i>n</i> =66/79)	75% (<i>n</i> =66/88)
Andrews (2015)	IES-E (30,50)	52% (<i>n</i> =24/46)	32% (<i>n</i> =25/79)	89% (<i>n</i> =41/46)	57% (<i>n</i> =45/79)
Barr (2015a)	CORE-10 (11,13)	57% (<i>n</i> =20/35)	56% (<i>n</i> =20/36)	80% (<i>n</i> =28/35)	78% (<i>n</i> =28/36)
Barr (2015b)	GAD-7 (8)	not applicable		82% (<i>n</i> =28/34)	74% (<i>n</i> =28/38)
Bishop <i>et al.</i> (2010)	IES-E (30,50)	71% (<i>n</i> =24/34)	not recorded	91% (<i>n</i> =31/34)	not recorded
Guy & Guy (2009)	IES-E (30,50)	68% (<i>n</i> =64/94)	66% (<i>n</i> =64/97)	91% (<i>n</i> =86/94)	89% (<i>n</i> =86/97)
Guy & Guy (2015)	IES-E (30,50)	45% (<i>n</i> =35/77)	45% (<i>n</i> =35/77)	86% (<i>n</i> =66/77)	86% (<i>n</i> =66/77)
Timmens (2015)	CORE-OM (10)	67% (<i>n</i> =35/52)	54% (<i>n</i> =35/65)	not applicable	
Muss (2015)	IES (27,35)	100% (<i>n</i> =27/27)	90% (<i>n</i> =27/30)	100% (<i>n</i> =27/27)	90% (<i>n</i> =27/30)
Norris (2015)	IES (27,35)	81% (<i>n</i> =13/16)	81% (<i>n</i> =13/16)	100% (<i>n</i> =16/16)	100% (<i>n</i> =16/16)
Utzuza <i>et al.</i> (2011)	IES (27,35)	95% (<i>n</i> =20/21)	83% (<i>n</i> =20/24)	100% (<i>n</i> =21/21)	88% (<i>n</i> =21/24)
Williams (2015)	IES (27,35)	89% (<i>n</i> =16/18)	89% (<i>n</i> =16/18)	89% (<i>n</i> =16/18)	89% (<i>n</i> =16/18)
Weighted mean		71% (<i>n</i> =299/460)	65% (<i>n</i> =276/482)	89% (<i>n</i> =543/521)	81% (<i>n</i> =426/543)

Note. For studies that had both the higher and lower clinical cut-off, the weighted mean for studies with complete data the lower cut-off was 70% (95% CI [(56-84%], $p<.001$, $Q=141$, $p<.001$, $I^2=94\%$, $k=10$) and the higher cut-off was 91% (95% CI [(86-95%], $p<.001$, $Q=28$, $p<.001$, $I^2=68\%$, $k=10$). The ITT for studies that had both the higher and lower cut-off, the weighted mean for the lower cut-off was 66% (95% CI [(51-81%], $p<.001$, $Q=96$, $p<.001$, $I^2=92\%$, $k=9$), and for the higher cut-off was 83% (95% CI [(75-91%], $p<.001$, $Q=43$, $p<.001$, $I^2=81\%$, $k=9$).

Table 7. Moderator effects for the higher and lower clinical cut-off for those who completed treatment and ITT.

Approach/ population	Questionnaire (lower/higher cut-off)	% below lower clinical cut-off (95% CI) weighted mean	% below higher clinical cut-off (95% CI) weighted mean
Completed treatment			
HG Veterans	IES-E (30,50)	61% (50-71%) Q=2.94, p=.086, k=2	87% (82-93) Q=1.60, p=.450, k=3
HG Clinical population	CORE-10/OM (10/11, 13)	60% (52-69%) Q=2.28, p=.320, k=3	74% (65-84%) Q=1.55, p=.213, k=2
HG Clinical population	GAD-7 (8)	N/A	82% (70-95) N/A, k=1
HG Clinical population*	IES-E (30,50)	58% (51-65%) Q=8.35, p=.004, k=2	89% (84-93%) Q=0.88, p=.347, k=2
HG Clinical population*	IES (27,35)	74% (67-80%) Q=5.52, p=.019, k=2	92% (87-96%) Q=2.81, p=.094, k=2
Muss Clinical population	IES (27,35)	96% (92-100%) Q=4.01, p=.260, k=4	97% (94-100) Q=1.44, p=.695, k=4
Intention-to-treat			
HG Veterans	IES-E (30,50)	32% (21-42%) N/A, k=1	68% (61-75%), Q=6.22, p=.013, k=2
HG Clinical population	CORE-10/OM (10/11, 13)	54% (46-62%) Q=0.07, p=.965, k=3	73% (63-83) Q=1.03, p=.311, k=2
HG Clinical population	GAD-7 (8)	N/A	74% (N/A) N/A, k=1
HG Clinical population*	IES-E (30,50)	57% (50-65%) Q=7.61, p=.006, k=2	87% (82-92%) Q=0.14, p=.713, k=2
HG Clinical population*	IES (27,35)	72% (66-79%) Q=3.89, p=.049, k=2	89% (84-94%) Q=1.02, p=.313, k=2
Muss Clinical population	IES (27,35)	87% (80-94%) Q=0.94, p=.815, k=4	93% (87-98%) Q=2.23, p=.526, k=4

N/A= not applicable. * The same samples using the embedded IES from the raw IES-E scores (Guy & Guy, 2009; 2015).

Note. The recovery rates highlighted in bold were from the same participants using different questionnaires and different clinical cut-offs for those questionnaires.

3.7 Reliable improvement and adverse events

The percentage of participants with *reliable improvement*, *no reliable change*, or *reliable deterioration* for completed treatment and intention-to-treat is presented in Table 8. The weighted rate of *reliable improvement* for those who completed treatment across the studies was 94.5% (95% CI [91.9-97%], $p < .001$, $Q(12) = 17.41$, $p = .096$, $I^2 = 37\%$, $k = 12$), making the weighted proportion of those who showed *no reliable improvement* to be 5.5% (range 0-18%). In twelve studies, only two out of 494 (0.4%) people treated showed *reliable deterioration*. The leave-one-out cross validation sensitivity analysis (Appendix F) suggested confidence in the results. The funnel plot for precision did not indicate systematic biases in reporting (Appendix G).

See Table 2 for comparisons to benchmarks. The *reliable improvement rate* (94.5%) was higher than other practice-based benchmarks, including Cahill *et al.* (2010; 73%), IAPT (2016; 64%), or Van Ingen, Freiheit and Vye (2009; 51%). The *reliable deterioration rate* (0.4%; range 0-5%) was similar to benchmarks, including Cahill *et al.* (2010; 1-3%) and Van Ingen *et al.* (2009; 2-6%).

Table 8. Percentage with reliable improvement, no reliable change and reliable deterioration for those who completed Rewind treatment.

Source	Questionnaire (reliable change index)	% reliable improvement %complete	%ITT	% no reliable change %complete	%ITT*	% reliable deterioration %complete	%ITT
Adams <i>et al.</i> (2015)	CORE-10 (6+)	83% (33/40)	65% (33/51)	18% (7/40)	35% (18/51)*	0% (0/40)	0% (0/51)
Andrews (2013)	IES-E (9+)	NR	NR	NR	NR	NR	NR
Andrews (2015)	IES-E (9+)	89% (41/46)	57% (45/79)	11% (5/46)	38% (30/79)*	0% (0/46)	0% (4/79)
Barr (2015a)	CORE-10 (6+)	91% (32/35)	89% (32/36)	9% (3/35)	11% (4/36)*	0% (0/34)	0% (0/36)
Barr (2015b)	GAD-7 (4+)	88% (30/34)	79% (30/38)	12% (4/34)	21% (8/38)*	0% (0/34)	0% (0/38)
Bishop <i>et al.</i> (2010)	IES-E (6+)	94% (32/34)	NR	6% (2/34)	NR	0% (0/34)	NR
Guy & Guy (2009)	IES-E (9+)	98% (92/94)	95% (92/97)	1% (1/94)	4% (4/97)*	1% (1/92)	1% (1/97)
Guy & Guy (2015)	IES-E (9+)	92% (71/77)	92% (71/77)	8% (6/77)	8% (6/77)	0% (0/77)	0% (0/77)
Timmens (2015)	CORE-OM (5+)	96% (50/52)	77% (50/65)	4% (2/52)	23% (15/65)*	0% (0/52)	0% (0/65)
Muss (2015)	IES (7+)	100% (27/27)	90% (27/30)	0% (0/27)	10% (3/30)*	0% (0/27)	0% (0/30)
Norris (2015)	IES (7+)	100% (16/16)	100% (16/16)	0% (0/16)	0% (0/16)	0% (0/16)	0% (0/16)
Utzuza <i>et al.</i> (2015)	IES (7+)	81% (17/21)	71% (17/24)	14% (3/21)	25% (6/24)*	5% (1/21)	4% (1/24)
Williams (2015)	IES (7+)	100% (18/18)	NR	0% (0/18)	NR	0% (0/18)	NR
Total		426/494	413/513	26/494	206/494	2/494	

*= missing data included in 'no reliable change' category; NR=not reported.

4. Discussion

The first objective was to identify and summarise studies relating to Rewind. This systematic review found 24 studies, including 4,995 and over 76 therapists. All were practice-based studies and nine had comparison groups, although these were not suitable for use in the meta-analysis. A wide range of trauma was treated, and most of those treated were chronic (over 5 years since the trauma), and /or had severe symptoms. Nine studies reported treating multiple traumas. The mean number of treatment sessions ranged from 1-6.5 (range 1-24 sessions). Eleven studies reported results of a single Rewind session.

The second objective was to investigate the quality of practice-based studies. Overall, the quality of studies was mixed. High quality studies had high data capture rates, low attrition rates, and no exclusion criteria. The characteristics of the samples were generalisable and reflected clinical populations. The quality of the studies is discussed in more detail below.

Regarding the third objective, the effect sizes of those who completed Rewind ($g=2.25$) were at least equivalent to the RCT benchmark effect size ($g=1.65$) and were greater than waiting list controls ($g=0.35$). This suggests that those who completed Rewind were likely to have outcomes as good as proven clinical trials and that outcomes were better than natural recovery. Recovery and reliable improvement rates were also favourable compared to practice-based benchmarks, but variations due to different clinical cut-offs made it difficult to draw conclusions about specific recovery rates. The very low rates of reliable deterioration (0.4%) were similar to other benchmarks.

4.1 Moderator variables

With respect to moderator variables, the effect sizes behaved as expected in relation to each other. The subgroup analysis found significant heterogeneity between the mean effect sizes of different populations, i.e. war veterans versus non-war veterans. Studies with similar methodology and participants from the same populations produced similar effect sizes (Andrews, 2013, 2015; Guy & Guy, 2009, 2015). The results of this current meta-analysis were in line with findings from other meta-analyses: group treatment had a lower effect size (Ehring *et al.*, 2014); high comorbidity had a lower

effect size (Cahill *et al.*, 2010); high attrition rates produced higher effect sizes (Bradley *et al.*, 2005; Minami, Serlin *et al.*, 2008). As noted earlier, studies with smaller samples and more severe pre-treatment symptoms had higher effect sizes (Minami, Serlin *et al.*, 2008). Given that the effect sizes in this present meta-analysis had features that were similar to effect sizes found in other meta-analyses, there can be more confidence in the underlying effect size for Rewind treatment (Borenstein *et al.*, 2009). However, in meta-analyses that included both randomised and non-randomised studies the non-randomised studies tended to show large effects (Ioannidis *et al.*, 2001) and caution should therefore be taken when comparing these effect sizes to other effect sizes from randomised studies.

4.2 Quality assessment

Overall, there was a wide range in the quality of the studies, from *poor* ($k=5$) to *very good* ($k=12$). The majority of the studies had *very good* external validity scores, indicating good generalisability to clinical populations, and *good* internal reliability, indicating low risk of selection and attrition biases. Internal validity scores were generally much lower, which reflected the lack of control groups in many studies. Overall, there was a low risk of bias in the meta-analytic studies.

4.3 Limitations of Rewind studies

Weaknesses identified in this review included the lack of RCTs and that most studies did not have any follow-up. While there was a wide age range, there was insufficient evidence to draw firm conclusions about children or older adults. There was generally poor reporting on ethnicity, employment, marital status, and medication use. No studies stated the outcomes for specific traumas. There was no clear distinction between those with and without a PTSD diagnosis. None of the studies used therapist-rated PTSD scales.

4.4 Recommendations for future research

A RCT is now required to investigate the efficacy of Rewind for those with a PTSD diagnosis. Future research should include therapist PTSD ratings, demographic

and socio-economic information, and follow-up. Information regarding those who do not complete treatment or have ‘no reliable improvement’ should be analysed to better understand characteristics of those who may not benefit from treatment.

With regard to wider methodological issues, despite practice-based studies traditionally having poor data capture rates (Cahill *et al.*, 2010) the present results demonstrated that use of session-by-session data collection, in which data is collected in every session, combined with consecutive sampling and lack of exclusion criteria can produce high quality practice-based studies. Session-by-session methodology should be used routinely in future RCTs and practice-based studies to produce more reliable data collection.

4.5 Clinical and theoretical implications

Overall, the meta-analysis suggested that Rewind may be effective in reducing symptoms, however, given that there were no RCTs, no firm conclusion could be drawn. Despite heterogeneity across effect sizes found in other PTSD meta-analyses (e.g. Bisson *et al.*, 2013; Ehring *et al.*, 2014), the mean effect sizes were consistent across the different questionnaires in this current meta-analysis. When effect sizes are consistent in this way, then they can be considered robust (Borenstein *et al.*, 2009). In addition, improvements in chronic traumas after treatment may suggest that improvement is unlikely to be due to natural recovery. Methodological variance with multiple therapists at multiple sites combined with the results being equivalent to effective treatment results in RCTs also indicate that the improvements are likely to have been due to some aspect of the treatment rather than an extraneous variable. Furthermore, the favorable effect sizes and rates of recovery, and the low ‘no reliable change’ rates after completing treatment would suggest that Rewind can be used effectively in clinical practice. The results of this meta-analysis were also consistent with findings of recent reviews that found a high strength of evidence for exposure therapy being effective in reducing PTSD symptoms (Cusack *et al.*, 2016).

Clinically, the low drop-out rates and shorter number of treatment sessions compared to benchmarks are noteworthy. Low attrition rates could be partly due to shorter number of sessions (e.g. Imel, Laska, Jakupcak & Simpson, 2013) or to the acceptability of treatment. This may be particularly important for war veterans who have

high attrition rates in clinical settings compared to clinical trials (Najavits, 2015). Attrition rates in this current meta-analysis were less than 20% for war veterans, providing preliminary evidence that Rewind could be used to treat war veterans. While Cusack *et al.* (2016) noted that his selection of RCTs did not consider participants' tolerance of PTSD treatments, the low attrition rates found in this meta-analysis are in line with preliminary evidence suggesting that HG Rewind was acceptable (Adams *et al.*, 2013; Adams *et al.* 2015; Dale, 2012), although more research on treatment acceptability is needed.

4.6 Limitations of current review

There were a number of limitations to the current review. Firstly, there was a large amount of unpublished evidence. While this could be considered a strength in terms of mitigating publication bias those studies were not subjected to the peer review process, although several were subject to university dissertation standards. There was not a clear differentiation made between PTSD diagnosis and those with sub-threshold trauma (i.e. no PTSD diagnosis). The severity ratings of the PTSD measures, the nature of traumas, and the diagnoses in some studies would imply that Rewind might be effective in treating PTSD, but definitive conclusions cannot be drawn from these data. All of the studies used self-report measures, and none had therapist-rated measures. Finally, none of the results had randomised control groups, which may result in a higher effect size than meta-analyses based on RCTs, and caution should be taken in attributing these results to effects of the treatment.

4.7 Conclusion

Conclusions regarding the efficacy of Rewind should be tentative due to the lack of RCTs. However, this current review indicated that Rewind is a promising treatment for trauma, with those who completed Rewind in clinical settings having effect sizes that are as good as those in RCTs and better than RCT waiting list controls. These results also demonstrated that practice-based studies can produce reliable, high quality studies. RCTs are now needed to test the efficacy of Rewind.

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Empirical Study

**The Efficacy of HG Rewind Treatment
for PTSD and Sub-threshold Trauma**

By Shona Adams

Target Journal: British Journal of Clinical Psychology

The Efficacy of HG Rewind Treatment for PTSD and Sub-threshold Trauma

Abstract

Rewind is a trauma-focussed exposure technique that is part of Human Givens (HG) therapy. Traumas do not need to be discussed in detail and multiple traumas may be treated in one session. To date, there have been no controlled studies examining the efficacy of Rewind, and no systematic studies investigating the acceptability of treatment. A study comparing HG therapy with CBT benchmarks has yet to be replicated.

Objective:

Objectives of this study were to empirically investigate the efficacy and acceptability of a single Rewind session and assess the efficacy of HG therapy against benchmarks.

Design:

Rewind was compared to treatment controls, with the CORE-10 measuring symptoms and the ORS measuring satisfaction with life. The Session Rating Scale (SRS) was used to compare participants' ratings of the first, Rewind and last sessions. Finally, a within-subject pre-post treatment design was used to evaluate the overall HG therapy. Cohen's d effect size and CORE-10 'recovery' rates and 'reliable improvement' rates were calculated and compared to benchmarks.

Results:

All those eligible for the study ($N=44$) participated. Rewind was more effective than control treatment sessions on CORE-10 and the ORS, with 40% recovered and 57% having reliably improved or recovered on CORE-10 after the single session. The Rewind session was rated as acceptable as other sessions. For HG therapy, the effect size was $d=1.72$ for CORE-10 and $d=1.27$ for the ORS, which was above the CBT benchmark of 1.22. The CORE-10 recovery rate for treatment completers was 63%, with 91% recovered or reliably improved and was equivalent to the top quartile of services. Results should be interpreted with caution as there was no randomisation and treatment was conducted by the main researcher in a private clinic.

Conclusion:

Rewind may be an effective and acceptable treatment and HG therapy appears effective compared to benchmarks. Randomised controlled trials are now needed.

The Efficacy of HG Rewind Treatment for PTSD and Sub-threshold Trauma

1. Introduction

Human Givens (HG) Rewind (Griffin & Tyrell, 2004) is a relatively under-researched treatment for posttraumatic stress disorder (PTSD) and trauma. Rewind is a trauma-focussed imaginal exposure technique. In contrast to other trauma-focused CBT treatments, the aim during Rewind is to keep arousal levels low while the trauma(s) is recalled through visualising rather than verbalising or writing down the details of the trauma. As a predominantly non-verbal technique that does not require details of the trauma, it has been suggested that Rewind may be a more accessible treatment for highly avoidant clients or those with shame-based traumas (Adams, Allan & Adams, submitted for publication). Multiple traumas may also be treated in a single session making Rewind potentially cost-effective (Adams & Allan, submitted for publication). However, uncertainty exists about the efficacy of Rewind.

Rewind is one of many techniques used in HG therapy. The HG therapeutic approach is a biopsychosocial set of organising ideas for therapy that was established by Joe Griffin and Ivan Tyrell (Griffin & Tyrell, 2004) and can be seen as distinct from but similar to CBT (see Adams & Allan, submitted for publication for a more detailed discussion). For example like in CBT, HG therapy uses graded exposure, reframing, challenging thoughts, goal setting, problem solving, and collaboratively setting an agenda, but in a less formal manner, and like narrative therapy the use of language and metaphors is important in HG therapy. While HG therapy integrates effective components from other therapies, it has a different theoretical framework. Key theoretical principles include the role of REM state, the use of imagination, the role of emotional arousal and how to regulate it, helping people to meet their innate emotional needs using their natural resources, and the assumption that the fight-flight response is fundamentally adaptive.

Rewind is an HG trauma treatment technique that evolved from the Visual Kinaesthetic Dissociation (VKD) technique in Neuro Linguistic Programing (Bandler & Grinder, 1979). This in turn was influenced by the work of Milton Erickson and Erich Fromm in shaping VKD (Koziey & McLeod, 1987; Rossi, 1985). While Rewind is very similar to VKD, Griffin and Tyrell (2001) manualised the VKD technique, emphasising

those aspects that they felt were important and gave it a theoretical framework with both physiological and psychological components. HG Rewind bears similarities to David Muss' version of Rewind that was independently developed from VKD in the UK as a PTSD treatment technique (Adams & Allan, submitted for publication; Muss, 1991; Utuza, Joseph, & Muss, 2012). HG Rewind is described in more detail in the Method section of this paper.

Some Rewind studies are part of the wider HG approach while others specifically focus on Rewind. In the first section, this paper reviews studies on the HG approach. The subsequent sections review studies specifically on Rewind and studies exploring Rewind's acceptability. As Rewind studies may include those without a PTSD diagnosis, similarities between symptoms and treatment of both PTSD and sub-threshold trauma are explored.

1.1 HG therapy studies

Three studies investigating HG therapy have been published in peer reviewed journals (Andrews, Twigg, Minami & Johnson, 2011; Andrews, Wislocki, Short, Chow & Minami, 2013; Tsaroucha, Kingston, Stewart, Walton & Corp, 2012). All these studies used Clinical Outcomes in Routine Evaluation (CORE-OM; Evans *et al.*, 2000) and the first two also used CORE-10 (Connell *et al.*, 2007). Both studies reported that intention-to-treat mean CORE-10 scores reduced from *moderate* range to the *normal* range, with Andrews *et al.* (2013) reporting a mean number of 3.6 treatment sessions (excluding the assessment session). While one study ($N=124$) had a 100% data capture rate (Andrews *et al.*, 2011) and another study ($N=3,885$) was a multi-site study with 69 therapists (Andrews *et al.*, 2013), these only had a simple pre-post treatment design with no randomised control group and caution should therefore be taken about attributing treatment gains to the HG therapeutic approach. In the third study with moderately depressed patients (Tsaroucha *et al.*, 2012), 106 people receiving HG therapy were compared to 70 receiving standard counseling. While again there was no randomisation, they found a significant pre-post treatment improvement for both groups but no significant difference between the treatment conditions apart from the average number of treatment sessions, with HG treatment being completed in an average of two treatment sessions and standard treatment being completed in an average of four sessions. However, these studies did not specifically measure PTSD symptoms or specify how many

participants received the Rewind treatment, and therefore these results should not be considered in the context of trauma treatment. The next section will consider HG studies that specifically include Rewind.

1. 2 Rewind studies

All studies that have investigated HG therapy treatment for war veterans used the Impact of Events-extended version (IES-E; Tehrani, Cox & Cox, 2002) that specifically measures PTSD symptoms (Bishop & O’Callaghan, 2010; Dale, 2012; Andrews, 2013). Mean IES-E scores reduced from the *severe* range to the *normal* range after an average of 3.1 treatment sessions ($N=34$), with 94% treated for chronic symptoms and 76% treated for multiple traumas (Bishop & O’Callaghan, 2010). Similarly, Dale (2012) reported mean scores on the IES-E reducing from the *severe* range to the *mild* range after treatment ($N=43$). While follow-up took place between 6 months and 3 years after treatment ($N=15$), indicating a non-significant increase in the IES-E mean score from the end of treatment to follow-up, the follow-up sample was not representative and therefore no conclusions should be drawn from this result. Dale (2012) also conducted semi-structured interviews to explore the subjective experiences of treatment ($N=11$), which again were a self-selected sample and possibly non-representative. Finally, Andrews (2013) reported on 150 war veterans with mean IES-E scores reducing from the *severe* range to the *normal* range after treatment. Of those 111 who also completed the CORE-10, mean pre-treatment scores reduced from *moderately-severe* to the *normal* range. However, as none of these studies had a control group or randomisation, caution should be taken in attributing improvements to HG treatment rather than other extraneous variables.

There were two studies that presented case reports on HG therapy that included Rewind. Gofton (2011) used pre- and post-treatment IES-E scores as well as a semi-structured interview to investigate the experience of HG therapy with six consecutive participants who had participated in the Guy and Guy (2009) study. The other study described HG therapy for three adolescents who were treated with HG therapy including Rewind (Yates & Atkinson, 2011) using the Second Edition of the Beck Youth Inventory (BYI-II; Beck, Beck, & Jolly, 2001) and was the only case study to report follow-up results, in which they found treatment gains were maintained. However, none of these

case studies used a repeated measures baseline that could have indicated that treatment gains on the standardised questionnaires were not due to chance.

Only three studies investigated the efficacy of a single Rewind session (Guy & Guy, 2003, 2009; Murphy, 2007). While participants in one study ($N=30$) reported improvements in symptoms, relationships, and quality of life after the Rewind treatment, no standardised questionnaires were used (Guy & Guy, 2003). In a sample of 97 people with a PTSD diagnosis, after a single Rewind session mean scores on the Impact of Events-extended version (IES-E) reduced from the *severe* range to the *normal* range (Guy & Guy, 2009). However, caution should be taken in interpreting these results because there was no control group and as one therapist undertook all the treatment the results may be influenced by a 'therapist effect' rather than the treatment itself. Finally, a qualitative study with all those treated with the Rewind technique at a trauma treatment centre ($N=47$) compared the number of DSM IV PTSD symptoms reported before and after treatment (Murphy, 2007). Participants reported their symptoms in detailed pre-treatment and post-treatment interviews that were recorded in their notes and were categorised using IPA methodology. Using a within-sample t-test he found a significant PTSD symptom reduction for all participants with none of them meeting the criteria for PTSD after treatment. While some participants in this study had other therapeutic interventions after Rewind, 57% only had a single Rewind treatment session with 37% of these treated for multiple traumas in that single session. While these results for a single Rewind session appear promising, there have been no controlled studies to date.

It is unclear from existing research whether severe, chronic, or multiple traumas can be treated in a single Rewind session. In studies in which the mean pre-treatment IES-E scores were in the *severe* range prior to treatment (Bishop & O'Callaghan, 2010; Dale, 2012; Andrews, 2013), it was unclear whether the improvement included those in the *severe* range or whether this was masked by more significant improvement in milder cases. Only one study examined a subsample of participants who were in the *severe* range on the IES-E before treatment ($n=76$) and were in the *normal* range after the session (Guy & Guy, 2009). Similarly, two studies indicated chronic traumas and multiple traumas could be treated using Rewind (Bishop & O'Callaghan, 2010; Murphy, 2007) but only one specifically reported that this could be completed in a single treatment session (Murphy, 2007). One study specified that all participants had a formal PTSD diagnosis (Guy & Guy, 2009) but none of the other studies differentiated between those with or

without a PTSD diagnosis. All the quantitative Rewind studies only used a simple pre and post-treatment design with no control groups. Therefore it is important to further investigate the efficacy of a single Rewind session using a control group, measuring severity, chronicity, the number of traumas treated, and PTSD diagnosis.

1.3 Acceptability of Rewind

Given that Rewind is a relatively new treatment, there have been very few studies that have considered the acceptability of Rewind. Qualitative studies have reported that Rewind improved symptoms (Dale, 2012; Gofton, 2011; Murphy, 2007), but only two briefly reported on acceptability (Dale, 2012; Murphy, 2007). In a small sample of 11 war veterans, Dale (2012) found that all those interviewed reported that HG therapy improved their ability to cope. Nine fully engaged with treatment and were no longer troubled by the traumas, one found it partially helpful and one found Rewind ‘too strange’ to engage with but found other aspects of HG therapy helpful. In a qualitative study in Northern Ireland, Murphy (2007) found that of the 47 people who received Rewind only three said that they found Rewind difficult and were anxious prior to treatment. Subsequently two of these said that they were glad to have undertaken the treatment, but the third person reported difficulty in following the instructions and visualising. However, Murphy (2007) did not specifically ask the whole sample about the acceptability of Rewind and Dale (2012) used a small non-representative sample of those treated with Rewind. Thus, in these samples Rewind seems to be generally acceptable, although a small number of participants reported the treatment was difficult to utilise. However, neither study used standardised questionnaires or systematically investigated the acceptability of Rewind for all who were treated.

While the efficacy of PTSD treatments has been evaluated, there have been fewer studies comparing the acceptability of PTSD treatments. In a meta-analysis of trauma treatments Bisson *et al.* (2005) used reported adverse effects and treatment drop-out rates as indicators of the treatment tolerability. They found that most studies did not report adverse effects and that there was no significant difference between drop-out rates for different treatments. Rewind was not included in this analysis. However, treatment tolerability is a slightly different construct to treatment acceptability and these are crude measures of tolerability as participants may find a treatment less tolerable but not report

an adverse event, or may not continue with treatment for other reasons. Another method for evaluating the acceptability of trauma treatments is to describe a variety of treatments and ask participants to rate the acceptability and preferences for treatments using scales such as the Treatment Acceptability and Preferences (TAP) measure (Sidani, Epstein, & Miranda, 2006). Tarrier, Liversidge and Gregg (2006) investigated the acceptability and preference for psychological treatments for PTSD and found the most preferred treatments involved cognitive therapy, exposure or psycho-education. However, these participants rated the treatments without having experienced them. Thus, using participants who have not experienced a treatment to rate its acceptability or using adverse events or drop out rates as measures of acceptability of treatment are crude and potentially inaccurate measures of treatment acceptability.

In summary, acceptability of different PTSD treatments have been rated using standardised measures by participants who have not experienced those treatments, and acceptability is rarely measured in studies examining the efficacy of PTSD treatments. Apart from qualitative studies that specifically investigate the acceptability of a treatment, methodology for measuring the acceptability of treatments is poorly developed. With regard to Rewind, qualitative studies have described participants' experience of Rewind, but these studies were not systematic and did not use standardised measures. New methods of measuring acceptability of treatments in efficacy studies need to be utilised.

1.4 PTSD and sub-threshold trauma

Most of the HG and Rewind research did not differentiate between PTSD, sub-threshold trauma, and sub-threshold PTSD. For example, Yates and Atkinson (2011) did not treat traumas that fulfilled PTSD criteria and reported improvements in anxiety, depression and self-esteem. A 'sub-threshold trauma' does not meet the DSM IV criteria for a traumatic event in which "an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others and the person's response involved intense fear, helplessness, or horror" (American Psychiatric Association; APA 1994).. 'Sub-threshold PTSD' may have some PTSD symptoms but does not meet the full symptom criteria for a DSM IV PTSD diagnosis (APA, 1994). For

the purposes of this study, ‘sub-threshold trauma’ will include both categories that do not meet the DSM IV criteria for PTSD.

Events that do not meet the DSM IV criteria of PTSD (i.e. sub-threshold traumas) can generate PTSD-like symptoms (Mol *et al.*, 2005). Pfaltz, Michael, Meyer, and Wilhelm (2013) found that patients with panic disorder with agoraphobia commonly experienced trauma-like symptoms. Similar to patients with PTSD, they reported dissociation and reliving their trauma or panic attack. They also reported bodily reactions and distress associated with the memories as well as avoidance of reminders. Other studies have found that sub-threshold traumas could be the content of intrusive images (Brewin, Hunter, Carroll, & Tata, 1996; Brewin, Gregory, Lipton, & Burgess, 2010; Day, Holmes, & Hackmann, 2004; Holmes, Creswell, & O’Connor, 2007). Thus, sub-threshold traumas can produce PTSD-like symptoms of dissociation, reliving distressing memories, intrusive images, distress from memories, and avoidance of reminders.

Similarly, traumatic events may not produce symptoms that meet the full DSM IV criteria of PTSD. This is also referred to as partial, subsyndromal, or sub-threshold PTSD, although there is no consistent diagnosis for sub-threshold PTSD (McLaughlin *et al.*, 2015). There is evidence that survivors of significant traumas who do not meet all the DSM IV criteria for PTSD can suffer clinically significant impairment (e.g. Cukor, Wyka, Jayasinghe, & Difede, 2010; Handley, Salkovskis, Scragg, & Ehlers, 2009; Jakupcak *et al.*, 2007; Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009; Shelby, Golden-Kreutz, & Andersen, 2008; Zlotnick, Franklin, & Zimmerman, 2002). Traumatic events can result in PTSD, but also depression, anxiety disorders, and substance misuse disorder (Brady, Killeen, Brewerton, & Lucerini, 2000; Bryant, Creamer, O’Donnell, McFarlane, & Silove, 2014; Schmidt, 2015).

Those with sub-threshold trauma appear to respond well to PTSD treatment. In a series of case studies, Handley, Salkovskis, and Ehlers, (2009) found that those with sub-threshold trauma symptoms (i.e. travel phobia) after the London bombings responded well to trauma-focused CBT when they identified sub-threshold PTSD symptoms in the assessment and formulation. Dickstein, Walter, Schumm and Chard (2013) compared the effectiveness of Cognitive Processing Therapy for war veterans for both sub-threshold PTSD and those with a diagnosis of PTSD and found that there was no difference in their response to treatment when pre-treatment symptoms were controlled for. Thus, those who

have experienced a traumatic event but only have sub-threshold PTSD appear to respond well to PTSD treatment.

Schmidt (2015) has argued for symptom-based rather than diagnosis-based research to better reflect neurobiology of trauma and sub-threshold PTSD. As Pfaltz *et al.* (2013) suggested, if there is a link in aetiology between panic and PTSD, techniques that are used to treat PTSD may be used to treat other neurotic disorders if the symptoms warrant it. Brewin (2011) proposed that the criteria for a qualifying traumatic event should be removed, supporting the notion that non-qualifying events can be experienced as traumatic and may produce PTSD symptoms that respond well to PTSD treatments. However, more evidence is needed to confirm whether PTSD treatments and can be effective in treating sub-threshold trauma, and in particular, whether Rewind is effective in treating sub-threshold trauma.

1.5 Rationale for present study

In summary, one of the claims of Rewind that differentiates it from other trauma-focussed CBT treatments is that Rewind can be effective in treating multiple traumas in a single treatment session. However, to date there have been no controlled studies evaluating Rewind. This current study aimed to address this gap by comparing the efficacy of a Rewind session with treatment-as-usual therapeutic sessions.

While there is limited evidence that Rewind could be effective in treating severe symptoms, chronic trauma or multiple traumas (Andrews, 2013; Bishop and O'Callaghan, 2010; Dale, 2012; Guy & Guy, 2009) generally there was no differentiation made between the single Rewind session and a course of HG therapy. Only one study specifically reported that a single Rewind session could be effective in treating severe symptoms (Guy & Guy, 2009). Similarly, only one study suggested that multiple traumas could be treated in a single Rewind session (Murphy, 2007) but it was unclear whether chronic traumas were treated in the single session in the Murphy (2007) study. No studies have compared the efficacy of Rewind for PTSD and sub-threshold traumas. This present study therefore aimed to address these gaps in the literature and evaluate whether a single Rewind session was effective in treating severe symptoms, chronic trauma, and multiple traumas, as well as evaluating the efficacy of Rewind in treating PTSD and sub-threshold trauma.

In addition, the present study aimed to explore the acceptability of Rewind as this has not been systematically explored to date. Finally, only one study has compared HG therapy to CBT practice-based benchmarks (Andrews *et al.*, 2013), and their results have yet to be replicated. Thus, this current study also aimed to evaluate the efficacy of HG therapy used in this study and compare these results to practice-based CBT benchmarks.

1.5 Aims and objectives

The overall objectives of this present study were to empirically investigate the efficacy and acceptability of a single Rewind session and assess the efficacy of HG therapy used in this study. Thus, the specific aims of this study were as follows:

- The first aim was to use a ‘control’ treatment session to evaluate the efficacy of a single Rewind treatment session.
- A secondary aspect of this aim was to assess whether the single Rewind session could treat severe symptoms, chronic symptoms, and multiple traumas.
- The second aim was to compare the efficacy of Rewind for those with a PTSD diagnosis and those with sub-threshold trauma.
- A third aim was to systematically assess the acceptability of Rewind
- The fourth aim was to assess the efficacy of the HG therapy in this study and compare these results to practice-based benchmarks.

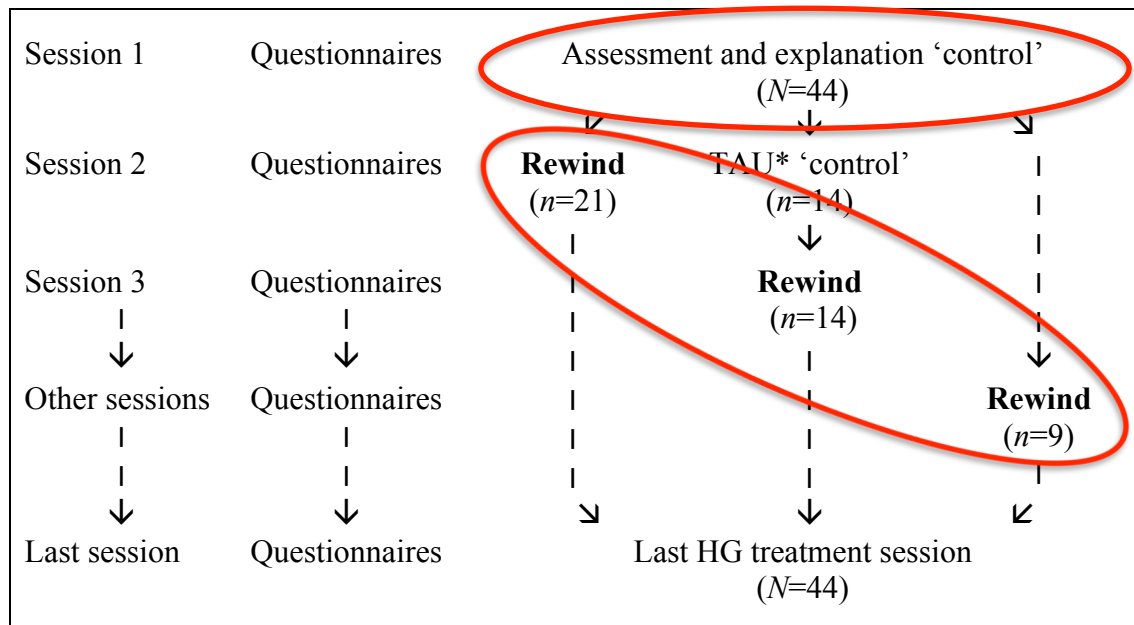
2. Method

2.1 Design

An observational, quasi-experimental design was used because it was impractical to have a randomised design as all treatment needed to be determined by clinical need rather than research design in order to be acceptable in the context of a private therapy clinic. All treatment was therefore routine clinical treatment and not randomised.

To determine the efficacy of Rewind, a within-subject design was used to compare the ‘Assessment and explanation’ session with the Rewind treatment sessions (see Figure 1).

Figure 1. Timeline highlighting the ‘assessment and explanation’ control session and the Rewind sessions.



* TAU=treatment-as-usual.

Note. Questionnaires refer to the previous week.

To control for a possible ‘first session effect’ from the ‘Assessment and explanation’ session, a subgroup analysis was performed using both between-subject and within-subject designs. Results of participants who had Rewind in the second session and results of participants who had treatment-as-usual (TAU) in the second session followed by Rewind in the third session (see Figure 2)¹ were reported. The Rewind and TAU sessions were quasi-independent variables, because the researcher had control over when the Rewind was administered.

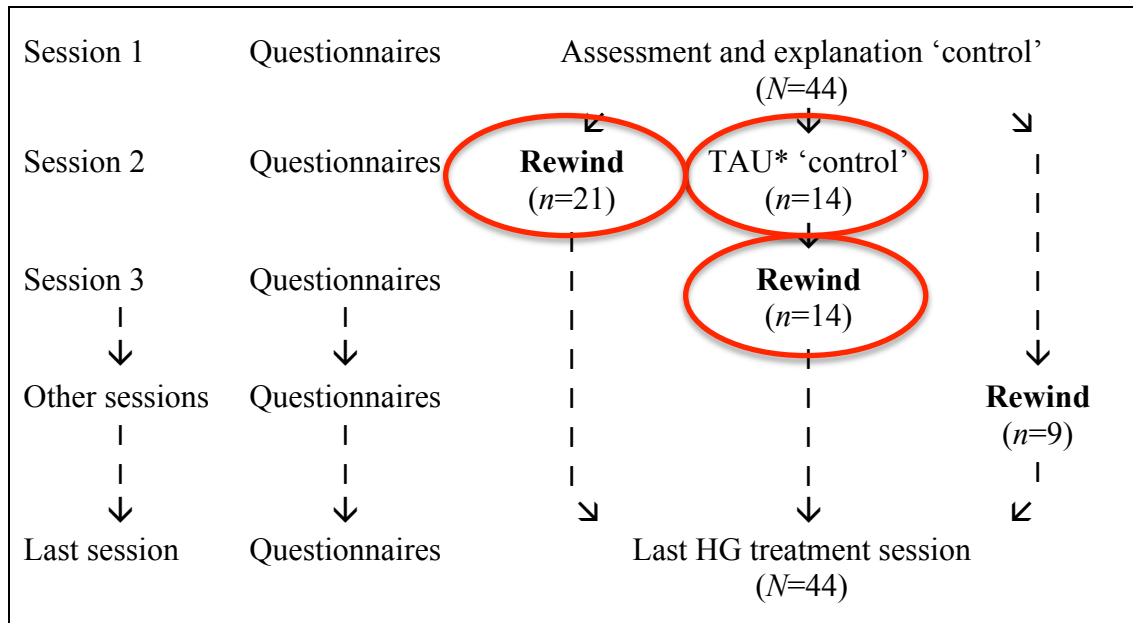
A simple pre-post design was used to evaluate whether the single Rewind sessions could be used to treat severe symptoms, chronic symptoms, and multiple traumas. A pre-post design was also used to determine the efficacy of Rewind on participants with and without a PTSD diagnosis.

To assess the acceptability of Rewind, participants’ ratings on the Session Rating Scale of the first session, the Rewind session and the last session were compared.

To evaluate the efficacy of HG therapy in this study, a pre-post design was selected using questionnaires from the first and last treatment sessions, and these results were compared to practice-based benchmarks.

¹ This might also be considered to be a partial crossover design.

Figure 2. Timeline highlighting the Rewind and Treatment-as-usual control sessions that were compared.



* TAU=treatment-as-usual.

Note. Questionnaires refer to the previous week.

2.2 Participants

All who were seen in a private clinic between March 2009 and March 2011 and who had Rewind treatment were eligible for this study. There were no exclusion criteria. One therapist who was also the main researcher treated all the participants.

There were 44 participants, 34% were male and 66% were female. All the participants were adults with a mean age of 37 (SD =11.9) years and a range of 18-60 years. The majority of the participants (89%) were of white British ethnic origin. With regard to referral source, private psychiatrists referred 73%, 7% were referred by their GP, 7% were referred directly through an insurance company, 11% were self-referrals, and for 2% the referral source was unknown.

2.3 Interventions

2.3.1 Human Givens (HG) therapy. HG therapy is brief and solution-focussed. HG therapy incorporates specific intervention strategies for each phase of the APET model (Griffin & Tyrell, 2003): Activating agent is the stimulus that caused the emotional arousal, and interventions could include problem solving or goal setting to change the

environment, or graded exposure to reduce anxiety produced by the stimulus; **P**attern matching is the unconscious act of relating current events to previous patterns of behaviours or events and interventions include Rewind, imagery re-scripting, counter-conditioning, and the use of story telling and metaphors; **E**motions are the feelings and physical sensations associated with the above and interventions include anxiety management strategies like 7/11 breathing, progressive muscular relaxation, shifting focus of attention like spelling backwards, and imaginal relaxation; **T**houghts arise from those emotions (e.g. “I must get out”) and interventions include reframing and informally challenging negative thoughts as well as mentally rehearsing different actions in response to thoughts. See Yates and Atkinson (2011) for a more detailed description. Treatment techniques also include strategies like skills training to help meet emotional needs and an understanding and utilisation of imagery, the trance state, and the therapeutic use of language.

2.3.2 Assessment and explanation (Control condition). In the assessment and explanation session, the presenting problems, resources, unmet emotional needs, and achievable goals were identified using the HG ‘RIGAAR’ model was used: **R**apport building, **I**nformation gathering, **G**oal setting, **A**ccessing resources, **A**greeing a strategy, and **R**ehearsing success (see Yates & Atkinson, 2011). A personalised explanation of the symptoms and maintaining factors such as unmet emotional needs, the role of REM sleep, pattern matching, cognitive distortions, and behaviours such as avoidance, was provided based on HG theory.

2.3.3 Treatment-as-usual (Control condition). When it was not clinically appropriate to administer Rewind in the second session because the participants wanted to address another issue first, other HG treatment strategies were used in treatment-as-usual. For example, for those with panic symptoms this may have included teaching strategies for reducing emotional arousal like controlled breathing to help them feel safe and more in control of their symptoms. Where another issue was paramount in the session, skills training and problem solving to help them resolve difficult situations, and other HG techniques like the use of imagery and metaphors were utilised to help them meet their emotional needs.

2.3.4 Rewind (Intervention condition). The HG protocol for Rewind was followed (Griffin & Tyrrell, 2001). The trauma(s) requiring treatment was identified, activating the emotional ‘trauma template’. An imaginary ‘video’ of the trauma(s) was created with a positive memory at the beginning and the end of the ‘video’. Between the positive memories, each trauma within the ‘video’ began before emotional arousal increased and ended when emotional arousal had decreased and the trauma incident had ended. A state of deep relaxation was then induced, including using guided visualisation to vividly imagine a real or imaginary place that has pleasant or relaxing connotations. Imagining being in this imaginary place was used to keep emotional arousal relatively low during the graduated exposure. While relaxed, the person was then guided by the therapist to imagine watching themselves watch the ‘video’ in the grounding place, until their anxiety habituated. Then they imagined watching the ‘video’ very quickly backwards and forwards until they indicated that their emotions had subsided while watching the video. Finally, they imagined entering the ‘video’ and experiencing the trauma very quickly backwards. If required, appropriate reactions to previously difficult situations could be mentally rehearsed by vividly imagining reacting or doing the desired behavior in the desired manner.

2.4 Measures

2.4.1 Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM).

CORE-OM (Evans *et al.*, 2000; Barkham *et al.*, 2001) was designed in the UK to measure outcomes in psychological therapy. It is a 34-item questionnaire with questions on subjective well-being, symptoms, functioning, and risk. Items are scored on a 0 to 4 likert-type scale, rated over the past week. The clinical score is the mean of all items multiplied by 10. Forms with up to three items missing are considered valid. The recommended cut-off between clinical and non-clinical populations is 10, and the Reliable Change Index is 5, with scores of 5 or above indicating reliable change (Connell & Barkham, 2007). The internal consistency of the CORE-OM has been reported as $\alpha = 0.94$ and the 1-week test-retest reliability as Spearman’s $\rho = 0.90$ (Evans *et al.*, 2002). CORE-OM was administered at the beginning and end of treatment if there was an agreed planned ending.

2.4.2 CORE-10. CORE-10 (Connell *et al.*, 2007) is a brief 10-item version of the CORE-OM which uses questions from the CORE-OM and is designed to be used in every session. Items cover anxiety (2 items), depression (2 items), trauma (1 item), physical problems (1 item) functioning (3 items - day to day, close relationships, social relationships) and risk to self (1 item). The item related to trauma symptoms states “Unwanted images or memories have been disturbing me”. Regarding validity, the CORE-10 is able to discriminate between clinical and non-clinical populations using a cut-off of 11, can discriminate between those diagnosed with depression using a cut-off of 13, and has good correlations with other measures of depression, anxiety, and general mental health (Connell & Barkham, 2007). Improved Access to Psychological Therapy (IAPT, 2012), a CBT community-based treatment service, use the CORE-10 clinical cut-off of 13. A CORE-10 score of 11-14 is in the *mild* range, 15-19 is the *moderate* range, 20-24 is the *moderately severe* range, and 25 or over is considered *severe* (Connell & Barkham, 2007). CORE-10 has a Reliable Change Index of 6, with gains in scores of 6 or more indicating reliable improvement (Connell & Barkham, 2007). Connell *et al.* (2007) found that CORE-10 had high internal consistency ($\alpha = .82$), was sensitive to change, and correlated very highly with CORE-OM with $r = .94$ in a clinical sample. Similar to Andrews *et al.* (2011; 2013) when the CORE-OM was administered in this study, the embedded CORE-10 scores were extracted and used in analyses.

2.4.3 Outcome Rating Scale (ORS). The ORS was developed by Miller and Duncan (2000) as a brief self-report outcome measure designed to assess satisfaction with life and track progress in every session. It is a 4-item visual analogue scale measuring personal well-being, family relationships, social relationships, and general well-being. The total score was 40, with scores of 25 and above considered to be in the *normal* range and a Reliable Change Index of 5, with scores of 5 or more indicating reliable improvement (Miller & Duncan, 2004). Brighurst, Watson, Miller, and Duncan (2006) found the ORS to have high test-retest reliability ($\alpha = .80$) and strong internal consistency ($\alpha = .93$). The ORS has good construct validity in being able to differentiate between clinical and non-clinical samples, and is sensitive to change as a result of psychotherapeutic interventions, showing no significant change for the untreated population (Miller *et al.*, 2003). It has good concurrent reliability with DASS depression and DASS stress subscales with measures of self-esteem, self-efficacy, and quality of life (Campbell & Hemsley, 2009).

2.4.4 Session Rating Scale (SRS). The SRS is a four-item visual analogue self-report measure developed by Miller and Duncan (2000) to rate each treatment session. Specifically, ratings are completed of the therapeutic relationship (feeling heard, understood, and respected), goals/topics (talked about or worked on what they wanted to talk about or work on), approach/ method (therapist approach being a good fit for them) and overall experience of the therapy session. The SRS was used to assess the acceptability of the Rewind session. The total score is 40, with the cut-off being 36 (Duncan *et al.*, 2003). Duncan *et al.* (2003) found the SRS to have good reliability, with the test-retest reliability of .64 and internal consistency of .88. Similarly, Campbell and Hemsley (2009) reported a good internal reliability (Cronbach's alpha = .93) and concurrent validity with the Working Alliance Inventory (WAI).

2.4.5 Impact of Events Scale – Extended Version (IES-E). The IES-E was derived from Horowitz's Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979) by Tehrani *et al.* (2002), who used British subjects and added a hyper-arousal subscale. The IES-E has 23 questions relating to the impact of a specific event, with each question rated on a five point scale ranging from 'never' to 'most of the time'. It has three subscales; avoidance, hyper-arousal, and intrusions. The internal reliability using Cronbach's alpha was 0.91 for the avoidance subscale, 0.92 for the hyper-arousal subscale and 0.93 for the intrusions subscale. Tehrani *et al.* (2002) also reported good discriminant validity in being able to discriminate between positive and negative life events. Scores of 50 and above indicate a likely diagnosis of PTSD with a qualifying index event, scores of 40 and above indicate the need for treatment, and scores of below 30 are considered to be within the *normal* range (Tehrani, Rainbird, & Dunne, 2005).

A copy of all measures used in this current study is provided in Appendix H.

2.5 Procedure

Prior to treatment, all those treated were asked if they wanted to participate in research that monitored their progress and were told that their participation would not affect their treatment. All treatment followed routine HG therapy protocols and was determined by clinical need. As practice-based clinical studies have tended to have high

levels of missing post-treatment data (Cahill, Barkham & Stiles, 2010) and questionnaires administered in every session tend to produce higher data capture rates (e.g. Andrews *et al.*, 2011; Andrews *et al.*, 2013; Clark *et al.*, 2009), the CORE-10, ORS, SRS were all administered in every session. The IES-E was administered when appropriate trauma was identified. CORE-OM was administered at the beginning and end of treatment. It is considered good clinical practice in HG therapy to monitor progress in every session.

After treatment was completed, all those who met the inclusion criteria were sent a consent form and an information sheet explaining the study (See Appendix I). All those eligible for this study consented to take part, but five specifically requested that only the therapist who treated them extract their data from their file. If they consented to taking part in the study, demographic information, information about the trauma and treatment, and scores on the questionnaires were extracted from their files. As in previous studies (e.g. Andrews *et al.*, 2011; 2013), those who scored below the clinical cut-off of 10 for the CORE-10 ($n=8$) before treatment were excluded from this study because they were statistically limited in the improvement they could achieve and therefore would have skewed the results. Those who did not have any treatment sessions after the Rewind technique ($n=4$) and those who had a missing questionnaire from one of the critical stages ($n=7$) were not included in the analysis.

This project was awarded ethical approval by Leicester University, Ethical Application Ref: SA524-2c2d (see Appendix J), and complied with the ethical guidelines.

2.6 Statistical Analysis

Preliminary analyses were performed on all data to determine whether they met assumptions of normality by applying the Kolmogorov-Smirnov and Shapiro-Wilkes tests and checking for skewness and kurtosis. Appropriate analyses for the data were then selected and are described in the relevant Results sections below.

In addition to the data analyses, CORE-10 recovery rates and reliable improvement rates were also reported, as recommended by Cahill *et al.* (2010) for practice-based studies. Recovery rates were calculated using the proportion of participants who were below the CORE-10 clinical cut-off of 11 (Andrews *et al.*, 2011; 2013). Reliable improvement was calculated using CORE-10's Reliable Change Index, as illustrated in Jacobson and Truax (1991) and Barkham *et al.* (2013), where CORE-10

scores that improved by 6 or more were considered to be reliably improved. The clinical cut-off for the ORS was 25 or higher and an improvement by 5 or more indicating 'reliable improvement' on the ORS. Recovery rates and rates of reliable improvement were calculated for both the single Rewind session and HG therapy using pre-post treatment scores for the single Rewind session and pre-post scores for all of the sessions. Results were reported for intention-to-treat data, which included all those participants in this study who started treatment (including those who did not complete treatment), as well as data only for those who completed treatment. Thus, results using completed treatment data were predominantly reported to provide accurate information on those who completed treatment, and intention-to-treat results were also reported to account for potential attrition bias due to missing data.

To compare the overall results of HG therapy in this present study to a benchmark HG study, Andrews *et al.* (2013) was selected as the benchmark because it was an HG practice-based study with a large sample size ($N=3,885$) and reported effect sizes, as well as reliable improvement and recovery rates. Clarke *et al.* (2009) was the first published benchmark for the Improved Access to Psychological Therapy (IAPT) programme and was selected as the practice-based CBT benchmark for this study because CBT treatment followed strict criteria and it had high data capture rates. It also had a large sample size ($N=1,903$), used the same methodology for calculating effect size, and was the same CBT benchmark previously selected by Andrews *et al.* (2013). Published CORE benchmarks (CORE, 2011) were also used for recovery rates for those who completed treatment, as they represented 35 primary care services ($N=26,467$), although the treatments provided varied and the data capture rate was only 67%.

3. Results

3.1 Participants

A total of 82 people were seen during the eligibility period, three of those were for assessment only leaving 79 who received treatment. Only 64 were treated with Rewind and were therefore eligible for inclusion in this study. Of these, nine were below the CORE-OM clinical cut-off before treatment and therefore were excluded, leaving an intention-to-treat sample of 55. Of those, four were excluded because they did not have a

post-Rewind session and seven did not complete any questionnaires in at least one of the pre or post ‘assessment and explanation’ or Rewind sessions. A sample of 44 had a complete data set and was therefore used in this study.

Demographics, other treatments, and co-morbidity. This was a fairly representative sample in relation to other practice-based studies in terms of age, gender, ethnicity, and medication use (see Table 1). Regarding other treatments, 19 (43%) had previous psychological treatment, and 21 (48%) were prescribed psychotropic medication. Based on the referral information and assessment, only 5 (11%) were diagnosed with PTSD, 39 (89%) were diagnosed with anxiety, and 38 (86%) were diagnosed with depression, indicating high levels of co-morbidity.

Symptom severity, chronicity and number of traumas treated. Regarding severity, the mean score of those who completed the CORE-10 in the first session ($n=43$) was 21.14 ($SD=6.31$), with 13 (30%) in the *moderately severe* and 9 (20%) in the *severe* range. Regarding chronicity, 21 (48%) were chronic, with treatment required over 5 years after the trauma, nine (20 %) were treated 2-5 years after the trauma, eight (18%) were treated between 6 months and 2 years after the trauma, and one (2%) was acute, with treatment less than six months after the trauma. The majority of the sample ($n=38$; 86%) were treated for multiple traumas, four were treated for a single trauma, and for two the number of traumas treated was not recorded.

Table 1. Demographics of current study compared to benchmark studies.

	Current study (<i>N</i> =44)	Andrews <i>et al.</i> (2013) (<i>N</i> =3,885)	Clark <i>et al.</i> (2009) Doncaster (<i>N</i> =1,654) Newham (<i>N</i> =249)	
Mean Age	37 (<i>SD</i> =11.9)	40 (<i>SD</i> =12.59)	-	-
Age distribution				
18-24 years	18%	-	16%	13%
25-44 years	55%	-	52%	58%
45-64 years	27%	-	28%	25%
Females	66%	66%	65%	60%
White British	89%	75%	99%	51%
On medication	48%	40.5%	55%	20%
Trauma/abuse	11%	28.7%	0%	5%
Duration				
< 6 months	2%	-	33%	22%
6 mths-2 years	18%	-	33%	17%
over 2 years	20%	-	34%	61%
over 5 years	48%	-	-	-

3.2 Preliminary analysis

To test assumptions of normality, for each questionnaire that was administered, skewness, kurtosis, Kolmogorov-Smirnov statistics, and Shapiro-Wilkes were examined at each time point.

To confirm the validity of using embedded CORE-10 scores from the CORE-OM, the relationship between the CORE-OM and the embedded CORE-10 was examined using the pre-assessment data. Preliminary analyses were performed to ensure no

violation of the assumptions of normality, linearity, and homoscedasticity. Using the Pearson product-moment correlation coefficient, there was a very high correlation between the CORE-10 and the CORE-OM, $r = .95, n = 73, p < .001$.

The IES-E, a measure of PTSD symptoms, had substantial missing data and therefore the CORE-10 was considered as the measure of symptom severity. To establish the validity of using the CORE-10 as a measure of symptom severity, a Pearson product-moment correlation coefficient the pre-assessment CORE-10 and pre-assessment IES-E both met the assumptions of normality. There was a strong correlation between the pre-assessment IES-E scores ($n=25$) and the pre-assessment CORE-10 scores ($n=43$), $r = .80, n = 24, p < .001$. Although there is one item on CORE-10 measuring PTSD intrusion symptoms, CORE-10 is not a specific measure of PTSD symptoms.

3.3 The efficacy of Rewind

To assess the efficacy of a single Rewind session, a control session (assessment and explanation) was compared to the intervention session (Rewind), using standardised measures of symptoms and satisfaction with life. Symptoms were measured using the CORE-10 and satisfaction with life was measured using the ORS. A one-way repeated measures ANOVA was conducted to compare scores on the CORE-10 at Time 1 (pre-assessment), Time 2 (post-assessment), Time 3 (pre-Rewind) and Time 4 (post-Rewind). This was repeated for the ORS. Cohen's d effect sizes for the control and the intervention session were then calculated using pooled standard deviations (Clark *et al.*, 2009). Recovery rates and reliable improvement rates for the single Rewind session were then presented using complete data and intention-to-treat data.

Descriptive statistics for the CORE-10 and the ORS at the different time points are presented in Table 2. The post-treatment means were below the IAPT CORE-10 clinical cut-off of 13 and within the *normal* range on the ORS after the Rewind session but not after the control session. The mean improvement was above the Reliable Change Index after the single Rewind session on the ORS.

Table 2. Descriptive statistics for CORE-10 and ORS for Time 1, Time 2, Time 3, and Time 4.

	Assessment and explanation		Rewind	
	Pre	Post	Pre	Post
	Time 1	Time 2	Time 3	Time 4
CORE-10 ($N=41$)				
Mean	21.22	17.93	16.71	11.83*
(SD)	(6.37)	(6.21)	(6.08)	(4.63)
ORS ($N=43$)				
Mean	15.13	19.80	20.71	26.68**†
(SD)	(7.75)	(7.86)	(9.77)	(9.02)

* = Below the IAPT cut-off of 13, ** = Within the *normal* range for CORE-10 or ORS, † = greater than the Reliable Change Index, SD = standard deviation, *Note.* On the CORE-10, scores of below 11 are considered in the *normal* range, 11-15 is mild, 16-20 is moderate, and over 20 is severe. On the ORS, the higher the score the better, with scores of 25 and above considered in the *normal* range.

With regard to the one-way repeated measures ANOVA for the CORE-10, the Mauchly Sphericity test was significant ($p=.048$) therefore violating the assumption of sphericity. The Huyn-Feldt correction was performed, and found a significant effect for time, $F(2.73, 109.12) = 46.44, p < .001$, partial eta squared = .54. A series of pairwise comparisons specifically examined the significance between Time 1 and Time 2 (pre and post control session) and between Time 3 and Time 4 (pre and post Rewind intervention) on the CORE-10. The difference between Time 2 and Time 3 was not significant. The mean difference between Time 1 ($M = 21.22, SD = 6.37$) and Time 2 ($M = 17.93, SD = 6.21$) was significant, $p < .005$ (two-tailed with a Bonferroni correction). The mean difference between Time 3 ($M = 16.71, SD = 6.08$) and Time 4 ($M = 11.83, SD = 4.63$) was significant, $p < .001$ (two-tailed with a Bonferroni correction). The mean decrease in the CORE-10 score after the control assessment session was 3.29 (95% CI [.93 - 5.65]) and after the Rewind session was 4.88 (95% CI [.24 - 7.12]). Thus, while scores on the

CORE-10 showed statistically significant improvement after both the single control (assessment and explanation) session and the single intervention (Rewind) session, the improvement was greater with the Rewind session.

For the ORS, the Mauchly Sphericity test was significant ($p < .001$) therefore violating the assumption of sphericity. The Huyn-Feldt correction was performed, and found a significant effect for time, $F(2.2, 92.56) = 31.08, p < .001$, partial eta squared = .43. A pairwise comparison examined the significance between Time 1 and Time 2 (pre and post control) and between Time 3 and Time 4 (pre and post Rewind intervention) on the ORS. The difference between Time 2 and Time 3 was not significant. The mean difference between Time 1 ($M = 15.13, SD = 7.75$) and Time 2 ($M = 19.8, SD = 7.86$) was significant, $p < .005$ (two-tailed with a Bonferroni correction). The mean difference between Time 3 ($M = 20.71, SD = 9.77$) and Time 4 ($M = 26.68, SD = 9.02$) was significant, $p < .001$ (two-tailed with a Bonferroni correction). The mean improvement in the ORS scores after the control session was 4.67 (95% CI [1.4 - 7.94]) and after the Rewind session was 5.98 (95% CI [3.48 - 8.57]). Thus, similar to the CORE-10, changes after the both the control and the Rewind treatment session on the ORS were statistically significant.

Cohen's d effect sizes were calculated. On the CORE-10, the control session had a medium effect size, $d = .68$, and the intervention (Rewind) session had a large effect size, $d = .90$. For the ORS, the control session had a medium effect size, $d = .60$, and the intervention (Rewind) session also had a medium effect size, $d = .63$.

Recovery rates and reliable improvement rates. Recovery rates and reliable improvement rates on the CORE-10 for the single Rewind session are presented in Table 3. Both complete data and intention-to-treat data are reported. Recovery rates and reliable improvement rates for the 'assessment and explanation' session can be found in Appendix K. Of those with complete data, 40% ($n=17$) were below the clinical cut-off after Rewind, 40% ($n=17$) had reliably improved, and 57% ($n=24$) had either reliably improved or were below the clinical cut-off. For those with complete data, participants who subsequently had planned endings and those with unplanned endings who did not complete treatment are also reported. Interestingly, 70% ($n=7$) of those who did not complete treatment had either reliably improved or recovered post-Rewind and may not have felt the need for further treatment.

Table 3. Recovery and reliable improvement rates on the CORE-10 for the single Rewind session using complete data, including planned and unplanned endings, and intention-to-treat data.

	Recovery rate	Reliable improvement Rate	Recovered and/or reliably improved
Total complete data ($n=42$)	40% ($n=17$)	40% ($n=17$)	57% ($n=24$)
Planned endings ($n=32$)	50% ($n=16$)	31% ($n=10$)	56% ($n=18$)
Unplanned endings ($n=10$)	10% ($n=1$)	70% ($n=7$)	70% ($n=7$)
Intention-to-treat ($n=55$)	31% ($n=17$)	31% ($n=17$)	44% ($n=24$)

Note. ‘Recovered’ is defined as below the clinical cut-off of 11 on the CORE-10. ‘Reliable improvement’ is an improvement of 6 or more.

3.4 The efficacy of Rewind: a subgroup analysis

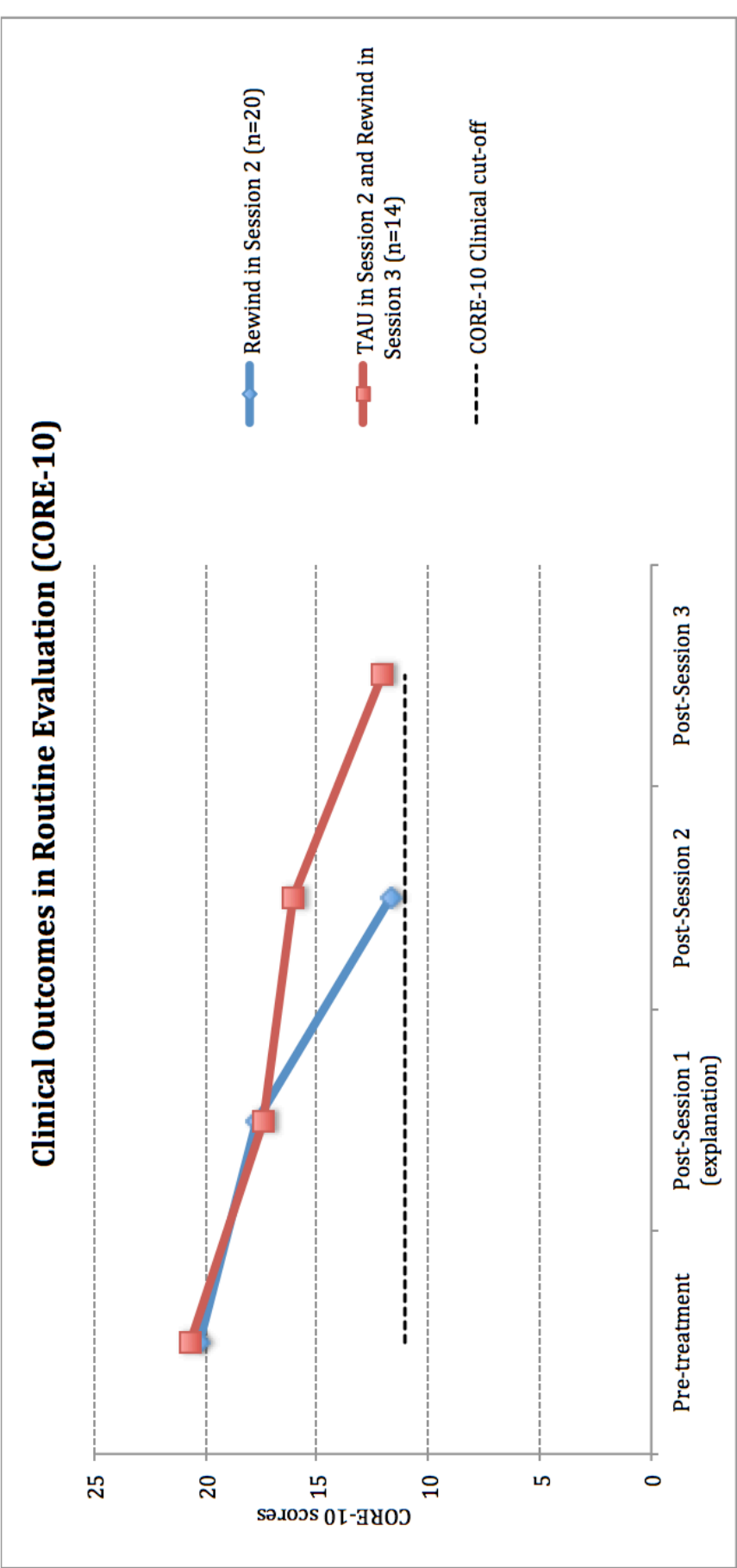
There was an initial decrease in symptoms after the initial ‘assessment and explanation’ session, an effect that had been noted in other CBT studies (Ilardi & Craighead, 1999; Kleim *et al.*, 2013; MacDonald, Monson, Doron-Lamarca, Resick, & Palfai, 2011; Strunk, Brotman, & DeRubeis, 2010). To control for this possible ‘first session effect’ a subgroup analysis was used to examine the efficacy of Rewind in the second session with treatment-as-usual (TAU) in the second session and Rewind in the third session. The pre-treatment and Session 1 (explanation) scores were used as a baseline.

Figure 3 presents the results on the CORE-10 for participants who had Rewind in Session 2 ($n=20$) and participants who had TAU in Session 2 followed by Rewind in Session 3 ($n=14$). The mean pre-treatment CORE-10 score of the group who had Rewind in Session 2 was $M=20.23$ ($SD=6.96$) and was $M=20.71$ ($SD=5.58$) for the group who had Rewind in Session 3. The mean CORE-10 score after Session 1 (explanation) was $M=17.75$ ($SD=6.97$) for the Rewind in Session 2 group and was $M=17.36$ ($SD=5.83$) for the Rewind in Session 3 group. The mean CORE-10 score after Session 2 for those who had Rewind in Session 2 was $M=11.70$ ($SD=5.05$), which is above the reliable change index of 6 for CORE-10. The mean CORE-10 score after Session 2 for those who had

TAU in Session 2 was $M=16.07$ ($SD=6.21$) and was $M=12.07$ ($SD=4.94$) after Rewind in Session 3 for the same participants. The post-Rewind CORE-10 scores for both groups were above the CORE-10 clinical cut-off of 11, but below the IAPT clinical cut-off for depression of 13.

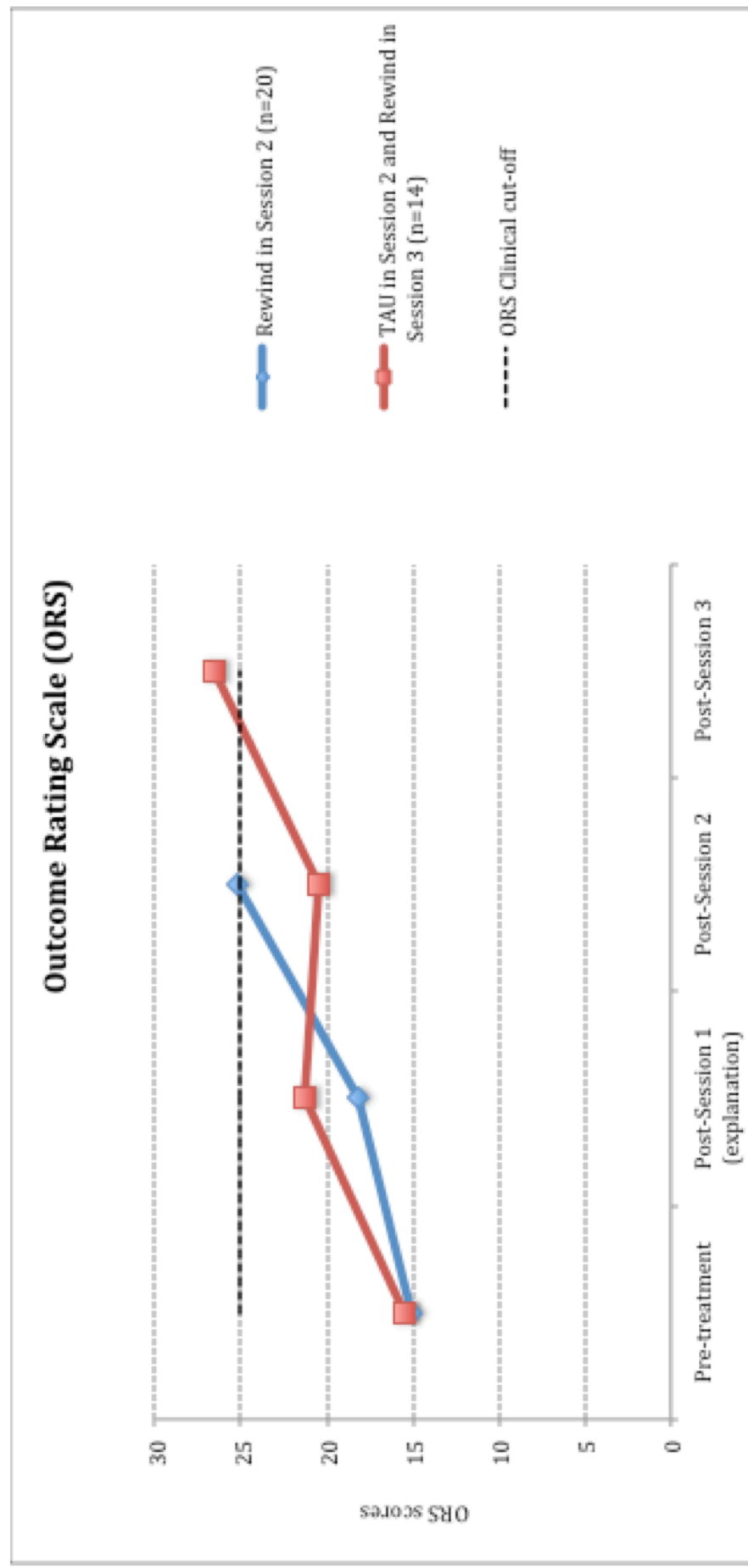
Figure 4 presents the results on the ORS for participants who had Rewind in Session 2 ($n=20$) and participants who had TAU in Session 2 followed by Rewind in Session 3 ($n=14$). The mean pre-treatment ORS score of the group who had Rewind in Session 2 was $M=15.02$ ($SD=8.84$) and was $M=15.46$ ($SD=7.55$) for the group who had Rewind in Session 3. The mean ORS score after Session 1 (explanation) was $M=18.13$ ($SD=8.56$) for the Rewind in Session 2 group and $M=21.31$ ($SD=6.46$) for the Rewind in Session 3 group. The mean ORS score after Session 2 for those who had Rewind in Session 2 was $M=25.23$ ($SD=9.33$). The mean ORS score after Session 2 for those who had TAU in Session 2 was $M=16.07$ ($SD=6.21$) and then $M=12.07$ ($SD=4.94$) after Rewind in Session 3 for the same participants. The mean ORS post-Rewind scores for both groups were in the *normal* range of 25 and above.

Figure 3. CORE-10 scores for pre-treatment, post-Session 1 (explanation), post-Session 2 (Rewind or treatment-as-usual), and post-Session 3 (Rewind) for the group who had Rewind conducted in Session 2 and the group who had treatment-as-usual (TAU) in Session 2 and Rewind conducted in Session 3.



Note. On the CORE-10, scores of below 11 are considered in the *normal* range, 11-15 is mild, 16-20 is moderate, and over 20 is severe. On the ORS, the higher the score the better, with scores of 25 and above considered in the *normal* range.

Figure 4. ORS scores for pre-treatment, post-Session 1 (explanation), post-Session 2 (Rewind or treatment-as-usual), and post-Session 3 (Rewind) for the group who had Rewind conducted in Session 2 and the group who had treatment-as-usual (TAU) in Session 2 and Rewind conducted in Session 3.



Note. On the ORS, higher scores indicated improvement, with scores of 25+ being in the *normal* range.

As pre-and post session questionnaires did not meet assumptions of normality, a Wilcoxon signed-ranks Test was performed to compare pre and post treatment CORE-10 scores for Rewind that was conducted in Session 2, TAU that was conducted in Session 2, and Rewind that was conducted in Session 3. This was repeated for the ORS. For participants who had Rewind in Session 2 ($n=20$), a Wilcoxon signed-ranks Test revealed that pre-Rewind CORE-10 scores ($Mdn = 17$), were significantly higher than the post-Rewind CORE-10 scores ($Mdn = 13$), $z = -3.83$, $p < .001$, $r = -.61$, indicating a large effect size. For participants who had TAU in Session 2 ($n=14$), there was no significant difference between the pre-treatment CORE-10 scores ($Mdn = 17$) and the post-treatment CORE-10 scores ($Mdn = 15$), $z = -1.13$, $p = .261$, $r = -.21$. For these same participants who then had Rewind in Session 3 ($n=14$), a Wilcoxon signed-ranks Test revealed that pre-Rewind CORE-10 scores ($Mdn = 15$) were significantly higher than the post-Rewind CORE-10 scores ($Mdn = 12$), $z = -2.55$, $p < .05$, $r = -.48$, indicating a medium effect size. Similarly, for the ORS, a Wilcoxon signed-ranks Test revealed that for participants who had Rewind in Session 2 ($n=21$), pre-Rewind ORS scores ($Mdn = 21.05$) were significantly improved compared to the post-Rewind ORS scores ($Mdn = 31.75$), $z = -3.74$, $p < .001$, $r = -.58$, indicating a large effect size. For participants who had TAU in Session 2 ($n=14$), pre-treatment ORS scores ($Mdn = 20.0$) did not differ significantly from post-treatment ORS scores ($Mdn = 22$) $z = -0.39$, $p = .700$, $r = -.07$. For these same participants who then had Rewind in Session 3 ($n=14$), a Wilcoxon signed-ranks Test calculated that pre-Rewind ORS scores ($Mdn = 22$) were significantly higher than the post-Rewind ORS scores ($Mdn = 27.75$), $z = -2.61$, $p < .05$, $r = -.49$, indicating a medium effect size.

Thus in the subgroup analysis, there was a significant effect with a large effect size after the Rewind in Session 2, but no significant difference after TAU in spite of having similar baseline scores in the previous session. Those who did not have significant improvement after the TAU session then showed a significant effect with a medium effect size after Rewind in the following session. The ORS produced similar results.

3.3 Symptom severity, chronicity and number of traumas

To evaluate whether the single Rewind sessions could be used to treat people with severe symptoms, chronic symptoms, and multiple traumas, a simple pre-post treatment design was used.

Symptom severity. Pre-Rewind and post-Rewind scores were compared for participants in the *severe* range on the pre-Rewind CORE-10, with *severe* defined as those scoring 21 or above on the CORE-10. Examination of the descriptive data for the above sample ($n=12$) revealed the mean score on the CORE-10 reduced from the *severe* range pre-Rewind ($M=24.42$, $SD=4.19$) to the *mild* range post-Rewind, ($M=14.83$, $SD=4.22$), with a mean improvement of 9.59 on the CORE-10 which is above the CORE-10 Reliable Change Index of 6. Data did not meet the assumptions of normality. For participants in the *severe* range before the Rewind session ($n=12$), a Wilcoxon signed-ranks Test revealed that pre-Rewind CORE-10 scores ($Mdn =23$), were significantly higher than the post-Rewind CORE-10 scores ($Mdn =16$), $z = -3.06$, $p < .05$, $r = .62$, indicating a medium effect size. Of these participants, 10 (83%) had reliable improvement after the single Rewind session, 2 (17%) were below the CORE-10 clinical cut-off of 11 and 4 (33%) were below the IAPT cut-off of 13 after treatment.

Chronicity. To evaluate whether people with chronic symptoms could be treated in the single Rewind session, pre-Rewind and post-Rewind CORE-10 scores were compared for participants with chronic symptoms using a paired-samples t-test, as assumptions for normality were met. Chronic symptoms were defined by the trauma occurring at least five years prior to treatment. For those with chronic symptoms ($n=21$), there was a statistically significant difference between the pre-Rewind ($M=17.24$, $SD=7.35$) and the post-Rewind scores ($M=11.86$, $SD=5.16$), $t(20) = 4.68$, $p < .001$ (two-tailed), $r = .72$, indicating a medium effect size. The mean post-Rewind CORE-10 score for these participants was in the *mild* range and was below the IAPT clinical cut-off. The mean decrease in CORE-10 scores was 5.38, below the Reliable Change Index of 6. Of the participants with chronic symptoms, 10 (48%) had reliable improvement, nine (43%) were below the CORE-10 clinical cut-off of 11 and 12 (57%) were below the IAPT cut-off of 13.

Multiple traumas. To explore whether people with multiple traumas could be treated in the single Rewind session, pre-Rewind and post-Rewind scores for those who were treated for more than one trauma were compared using a paired-samples t-test. Preliminary analysis revealed that for those with multiple traumas, pre-Rewind and post-Rewind CORE-10 scores met assumptions of normality. For those treated for multiple traumas there was a statistically significant difference between the pre-Rewind CORE-10 scores ($M=16.73$, $SD=6.25$) and the post-Rewind CORE-10 scores ($M=11.92$, $SD=4.83$),

$t(36) = 5.72, p < .001$ (two-tailed), $r = .69$, indicating a medium effect size. The mean CORE-10 score for these participants was in the *mild* range and below the IAPT clinical cut-off after treatment. The mean decrease in CORE-10 scores was 4.81, below the Reliable Change Index. Of those who had multiple traumas ($n=37$), 15 (41%) showed reliable improvement after the single Rewind session, 16 (43%) were below the CORE-10 clinical cut-off of 11, and 22 (59%) were below the IAPT cut-off of 13 after treatment.

In summary, some severe symptoms, chronic trauma, and multiple traumas could be treated in a single Rewind session. Those with *severe* symptoms on the CORE-10 showed the greatest improvements but had fewer people below the clinical cut-off after the Rewind session.

3.4 PTSD and sub-threshold trauma

Participants who did not have a PTSD diagnosis were labelled as having ‘sub-threshold trauma’. The pre and post-Rewind questionnaires for those with PTSD and those with sub-threshold trauma did not meet assumptions of normality. Therefore Wilcoxon signed-ranks Tests were conducted. Pre and post-Rewind scores for those with a PTSD diagnosis and with sub-threshold trauma were compared for the CORE-10 and the ORS. Using the CORE-10, for participants with sub-threshold trauma ($n=37$) a Wilcoxon signed-ranks Test revealed that pre-Rewind scores ($Mdn = 16$), were significantly higher than the post-Rewind scores ($Mdn = 13$), $z = -4.36, p < .001, r = .51$, indicating a large effect size. For participants with a PTSD diagnosis ($n=5$), pre-Rewind scores ($Mdn = 18$), were significantly higher than the post-Rewind scores ($Mdn = 11$), $z = -2.02, p < .05, r = .64$, indicating a large effect size. Using the ORS, for participants with sub-threshold trauma ($n=38$) a Wilcoxon signed-ranks Test revealed that pre-Rewind scores ($Mdn = 20$), were significantly higher than the post-Rewind scores ($Mdn = 27$), $z = -4.67, p < .001, r = .54$, indicating a large effect size. For participants with a PTSD diagnosis ($n=5$), there was no significant difference between pre-Rewind ORS scores ($Mdn = 34.5$) and post-Rewind ORS scores ($Mdn = 36$), $z = -1.60, ns, r = .51$.

Table 4 presents the means and standard deviations for pre and post-Rewind scores on the CORE-10 and ORS for those with PTSD and those with sub-threshold trauma. While the PTSD sample size ($n=5$) was too small to draw any conclusions, it was interesting to note that those with PTSD had more severe pre-treatment symptoms and

had a greater improvement in symptom severity (mean improvement of 8), while those with sub-threshold trauma ($n=37$) were not as severe, and did not have as large an improvement (mean improvement of 4.46). With regard to the ORS scores, it is interesting to note that the PTSD group was already in the *normal* range on the ORS for general satisfaction with life in spite of having more severe symptoms on the CORE-10. The sub-threshold trauma groups mean ORS score improved by 5.98, and the PTSD group improved by 5.9, both above the ORS Reliable Change Index.

Table 4. Descriptive statistics for CORE-10 and ORS scores for PTSD and sub-threshold trauma pre and post treatment.

	PTSD		Sub-threshold trauma	
	Pre-Rewind	Post-Rewind	Pre-Rewind	Post-Rewind
CORE-10				
<i>n</i>	5	5	37	37
Mean	18.40	10.40** [†]	16.68	12.22*
(<i>SD</i>)	(6.54)	(4.83)	(6.11)	(4.71)
ORS				
<i>n</i>	5	5	38	38
Mean	25.90**	31.80** [†]	20.03	26.01** [†]
(<i>SD</i>)	(14.47)	(8.97)	(9.03)	(8.97)

* = Below the IAPT cut-off of 13, ** = Within the *normal* range on CORE-10 or ORS, [†] = Above the Reliable Change Index. *Note.* On the CORE-10, scores of below 11 are considered in the *normal* range, 11-15 is mild, 16-20 is moderate, and over 20 is severe. On the ORS, the higher the score the better, with scores of 25 and above considered in the *normal* range.

In summary, while the sample size was too small to draw any conclusions about PTSD, preliminary results for the efficacy of a single Rewind session in reducing symptoms for sub-threshold trauma were promising. After the Rewind session the sub-threshold group improved to the *normal* range in satisfaction with life, as measured by the

ORS, and were below the IAPT clinical cut-off for symptoms, as measured by the CORE-10. While symptoms improved on the CORE-10 from the *moderate* to the *mild* range, gains were not above the CORE-10 Reliable Change Index.

3.5. Acceptability of Rewind

To assess the acceptability of Rewind, participants' SRS ratings of the first session, the Rewind session, and the last session were compared. The SRS scores for the first session, the Rewind session and the last session are reported in Table 5. A manual check of the scores confirmed that for each participant the Rewind session scored no lower than their scores for the other sessions, indicating that the Rewind session was as acceptable as the other treatment sessions. As the SRS did not meet the assumptions for normality, a Friedman Test was used to explore the acceptability of Rewind. It indicated that there was a statistically significant difference in the SRS scores across the three points in time (first session, Rewind session, and the last session), $\chi^2(2) = 6.165$, $p < .05$. Inspection of the median values indicated that the acceptability of the Rewind treatment session ($Md = 1.95$) was within the range of the ratings of the assessment ($Md = 1.79$) and the ratings of the last treatment session ($Md = 2.26$). A post hoc Wilcoxon Signed Rank Test was used to look if the time points were significantly different to each other. It revealed that there was no significance between SRS scores for the Rewind session ($Mdn = 39$) and the first session ($Mdn = 38.3$), $z = -1.94$, $p = .052$, and between Rewind and the last session ($Mdn = 40$), $z = -1.34$, $p = .181$. The significant difference was between the first and last sessions, $z = -2.62$, $p < .05$, $r = .34$. Thus, while there was a slightly greater satisfaction with the last session than the first session, for all the participants the Rewind treatment session was as acceptable as the other sessions that did not include the Rewind treatment.

Table 5. Descriptive statistics for the SRS scores in the first, Rewind and last sessions.

Session	minimum	Percentiles			maximum
		25 th	50 th	75 th	
First session	27	34.8	38.3	40	40
Rewind session	27	37.1	39	40	40
Last session	24	37.6	40	40	40

Note. Higher scores indicate more satisfaction, with the highest satisfaction score being 40 and the cut-off being 36.

3.6 Efficacy of HG therapy

To evaluate the efficacy of HG therapy in this study, a paired-samples t-test was conducted to compare the first and last therapy session for all participants using the first and last CORE-10 and ORS treatment scores. A paired-samples t-test and effect size were also calculated for the planned endings only, as many studies only report on the effectiveness of those who complete treatment. Then, to replicate a previous finding comparing the efficacy of HG therapy to benchmarks (Andrews *et al.*, 2013), the planned and unplanned ending effect sizes were then compared to CBT benchmarks (Clark *et al.*, 2009). Finally, recovery rates and reliable improvement rates for the CORE-10 were calculated for both planned and unplanned endings and compared to CORE benchmarks (CORE, 2011).

T-test results. For the whole sample ($N=44$), a paired-samples t-test was conducted and revealed a statistically significant difference between the CORE-10 scores in the first session ($M=21.14$, $SD=6.31$) and the CORE-10 scores in the last session ($M=10.28$, $SD=5.88$), $t(42) = 10.37$, $p < .001$ (two-tailed), with the mean CORE-10 being in the *normal* range by the end of treatment. The mean decrease in CORE-10 scores was 10.86 (95% CI [8.75 - 12.97]), which is above the Reliable Change Index. On the ORS, there was a statistically significant difference from the assessment ($M=19.8$, $SD=7.86$) and the end of treatment score ($M=29.8$, $SD=9.72$), $t(42) = -8.778$, $p < .001$ (two-tailed).

An increase in ORS scores indicates an improvement. The mean increase in ORS scores was 10.01 (95% CI [12.31 - 7.71]). For those with planned endings only, a paired-samples t-test revealed a statistically significant difference between CORE-10 scores from the first session ($M=20.97$, $SD=6.41$) and the last session ($M=9.03$, $SD=4.76$), $t(31) = 10.55$, $p < .001$ (two-tailed). The mean decrease in CORE-10 scores was 11.94 (95% CI [9.63 - 14.24]). On the ORS, there was a statistically significant difference for those with planned endings between the first session ($M=15.53$, $SD=7.59$) and the last session ($M=32.72$, $SD=5.99$), $t(31) = -12.59$, $p < .001$ (two-tailed). The mean change in ORS scores was 11.94 (95% CI [19.97 - 14.4]). Thus, there was a significant mean gain between the first and last sessions in HG therapy for both the CORE-10 and the ORS.

Effect size. To replicate a previous finding comparing the efficacy of HG therapy to benchmarks (Andrews *et al.*, 2013), the pooled Cohen's d effect size were then calculated for planned and unplanned endings and then compared to the IAPT CBT treatment benchmark (Clark *et al.*, 2009). Using the same formula as Clark *et al.* (2009), treatment effect sizes were calculated by subtracting the post-treatment score from the initial assessment score and dividing by the pooled standard deviation. These were then compared to the benchmark effect size of Cohen's $d= 1.22$ (Clark *et al.*, 2009) using a 10% effect size margin as the criterion for clinical significance, as suggested by Minami, Serlin *et al.* (2008) and Minami, Wampold *et al.* (2008). Thus, if the pre-post treatment effect size observed was within 10% of the IAPT benchmark data obtained from Clark *et al.* (2009), $d=1.22$ then the effect size would be considered to be at least clinically equivalent to the benchmark.

See Table 6 for the pooled Cohen's d effect size for the CORE-10 and ORS, as well as for planned and unplanned endings. There was a very large effect size for HG therapy for symptom reduction (CORE-10) and improved satisfaction with life (ORS) for those with planned endings and for the whole sample. The pre-post treatment effect sizes were within 10% of the IAPT benchmark data indicating that the effect size was at least clinically equivalent to the CBT benchmark.

Table 6. Cohen's d effect size for CORE-10 and ORS for planned and unplanned endings using pooled standard deviations.

	Planned endings	Unplanned endings	Total
CORE-10 ($n=43$)	1.86*	1.23*	1.72*
ORS ($n=43$)	2.27*	.87	1.27*

* within 10% of Clark *et al.* (2009) benchmark, $d=1.22$

Recovery rates and reliable change rates. Recovery rates and reliable improvement rates for the CORE-10 were calculated for both planned and unplanned endings for the HG therapy in this present study and the results compared to CORE benchmarks (CORE, 2011). Recovery rates were calculated using the number of participants below the CORE-10 clinical cut-off of 11 and reliable improvement referred to the proportion of participants whose CORE-10 scores improved by 6 or more points by the end of treatment. Table 7 presents the recovery rates and reliable improvement rates for both planned and unplanned endings, as well as the number who either recovered and/or had reliably improved. There was missing data for one participant with a planned ending and one with an unplanned ending.

Table 7. Recovery and reliable change rates on the CORE-10 for the HG therapy for planned and unplanned endings with complete data and intention-to-treat data.

Endings	Recovery rate	Reliable change Rate	Recovered and/or Reliably improved
Complete data ($n=43$)	56% ($n=24$)	79% ($n=34$)	84% ($n=36$)
Planned endings ($n=32$)	63% ($n=20$)	84% ($n=27$)	91% ($n=29$)
Unplanned endings ($n=11$)	36% ($n=4$)	64% ($n=7$)	64% ($n=7$)
Intention-to-treat ($n=55$)	44% ($n=24$)	62% ($n=34$)	65% ($n=36$)

Note. 'Recovered' is defined as below the clinical cut-off of 11. 'Reliable improvement' is defined on CORE-10 as pre-post difference of 6 or more.

With regard to the HG therapy, of those who completed treatment 84% showed reliable improvement and 63% were considered ‘recovered’ and in the non-clinical range by the end of treatment. The overall number of planned endings that showed improvement by either of these criteria was 91%. Interestingly, 36% of those with unplanned endings were in the non-clinical range, and 64% showed a clinically significant improvement. The CORE-10 recovery rate of 63% for those who completed treatment was in the top quartile of the services in comparison to the CORE-OM benchmarks (CORE, 2011), with the top quartile of services having 57% of those who completed treatment being below the clinical cut-off after treatment.

In summary, regarding the HG treatment in this study, there was a significant improvement from the first to last treatment session. There was a very large Cohen’s *d* effect size that was at least equivalent to the CBT benchmarks for both those with planned endings and for the whole sample. By the end of treatment, 63% of those who completed treatment and 56% of those in the whole sample were in the non-clinical range on the CORE-10, with 84% of those who completed treatment showing reliable change and 91% showing either reliable change or were below the clinical cut-off.

4. Discussion

4.1 Summary of findings

A convenient sample of 44 outpatients participated in this study. They had similar demographics to other practice-based studies. Of these, 50% were in the *severe* or *moderately severe* range on the CORE-10, 47% had chronic symptoms, more than 5 years since the traumatic incident, and 86% had multiple traumas. There was high co-morbidity, 43% reported having had previous psychological treatment and 48% were prescribed psychotropic medication.

The overall objective was to assess the efficacy and acceptability of Rewind and the efficacy of HG therapy used in this study. A single Rewind session was more effective than the control sessions for reducing symptoms and improving general satisfaction with life. Regarding symptoms, 40% of participants were below the CORE-10 clinical cut-off after Rewind, 40% had reliably improved, and 57% had either reliably improved or were

below the clinical cut-off. This present study found that after a single Rewind session, 83% ($n=10$) of those with *severe* symptoms had reliable improvement on the CORE-10, and 17% ($n=2$) of those with *severe* symptoms, 43% ($n=9$) of those with chronic trauma, and 43% ($n=16$) who were treated for more than one trauma in the session were below the clinical cut-off of 11 on the CORE-10. It is important to note that PTSD symptoms were not directly measured. There were insufficient numbers of participants referred to the clinic with a PTSD diagnosis and caution should be taken in drawing conclusions from this study about PTSD. For the sub-threshold group, mean ORS scores improved to the *normal* range in satisfaction with life and while mean CORE-10 scores for symptoms improved from the *moderate* to the *mild* range and were above the IAPT clinical cut-off. Rewind was rated as acceptable as other treatment sessions, as measured by the SRS. The CORE-10 was validated as being a reliable alternative to using the longer CORE-OM. With regard to the HG therapy in this present study, 91% of people were either ‘reliably improved’ and/or were below the clinical cut-off after completing treatment, with 63% being below the clinical cut-off. Effect sizes were found to be equivalent to benchmarks.

4.2 Single Rewind session

Compared to the assessment and explanation ‘control’ session, Rewind was more effective in reducing symptoms on the CORE-10, with a large effect size for the Rewind session and a medium effect size for the assessment and explanation session. Compared to the treatment-as-usual ‘control’ session Rewind was more effective in reducing symptoms and improving general satisfaction with life. The efficacy of a single Rewind session was in line with other pre-post treatment studies that have suggested Rewind might be effective (Guy & Guy, 2009; Murphy, 2007). This present study found that some people with severe, chronic, and multiple traumas could be treated using the single Rewind session. The results of this study were in line with evidence from other studies that suggested that a single Rewind session could be effective in treating people with severe symptoms (Guy & Guy, 2009), people with chronic symptoms and multiple traumas could be treated in one session (Murphy, 2007), though more sessions were often needed. Results of this present study that found that sub-threshold trauma responded well to the PTSD treatment, Rewind, and are similar to the findings of Dickstein *et al.* (2013) and Handley *et al.* (2009) who found sub-threshold PTSD responded well to PTSD treatment, and that trauma-focused CBT could improve the overall satisfaction with life (Schnurr

et al., 2007).

These current results for a single session of imaginal trauma-focussed exposure treatment stand in contrast to ‘reliving’, the verbal CBT trauma-focussed exposure treatment technique. Kleim *et al.* (2013) reported 3–5 sessions devoted to the ‘reliving’ treatment and Ehlers *et al.* (2003) reported an average of 3.3 sessions whereas Rewind was usually completed in one session. There were no benchmarks for single treatment sessions for trauma, as single session treatments are not currently recommended by the National Institute for Clinical Excellence (NICE, 2005). Nonetheless, the results of this current study found that a single Rewind session significantly improved symptoms and satisfaction with life for some people, 40% of participants were below the CORE-10 clinical cut-off after Rewind. The results of this present study, finding 40% of participants below the CORE-10 clinical cut-off after a single Rewind session, were similar to those found by Adams, Allan and Bristow (2013) where 37% of those treated with Rewind at a single session trauma clinic did not need further treatment. This was in line with Reinecke, Waldenmaier, Cooper, and Harmer (2013) who reported a single exposure treatment session reduced symptoms of agoraphobia, with over a third of patients being below the clinical cut-off four weeks later. In summary, Rewind appeared to be an effective single session treatment for sub-threshold trauma for about a third of participants.

4.3 Acceptability of Rewind

The Rewind treatment sessions was found to be as acceptable as the other treatment sessions. The results of this study were in line with the service evaluation and other qualitative studies on Rewind (Dale, 2012; Gofton, 2012; Murphy, 2007), but this was the first time that the acceptability of Rewind was systematically evaluated using the whole sample. While these results need to be replicated, the efficacy of the treatment combined with its acceptability indicated that Rewind could be a promising treatment.

4.4 Efficacy of overall HG therapy compared to benchmarks

Effect size. Typically effect sizes are used to compare treatments in meta-analytic studies, but there are a wide range of methods in calculating effect size (Ellis, 2010). In line with Andrews *et al.* (2013) and Clark *et al.* (2009), pooled standard deviations were used to calculate the pre and post treatment effect sizes. Using the same methodology, the

effect size for those who had completed treatment in this current study was 1.86 for the CORE-10 which was above Clark *et al.* (2009)'s benchmark of $d=1.22$ for CBT in clinical settings. These results also compared favourably to a meta-analysis of PTSD treatment in which Bradley, Greene, Russ, Dutra and Westen (2005) found the average pre-post effect size using PTSD specific questionnaires of EMDR to be 1.43, exposure to be 1.57, CBT to be 1.65, and CBT plus exposure to be 1.66. Not surprisingly, the effect sizes were higher for those who completed treatment than for those who did not complete treatment. Andrews *et al.* (2011) and Andrews *et al.* (2013) found pre-post effect sizes of HG therapy using CORE-10 were 1.39 and 1.68 respectively. Nonetheless, while pre-post effect sizes may indicate that a treatment has had a large effect, these effect sizes should not specifically be used to compare different treatments.

Completed treatment recovery rates. In this current study, 63% of those who completed the HG treatment were below the clinical cut-off on the CORE-10 after treatment. These results were similar to the results of Andrews *et al.* (2011) who reported 63.3% were below the clinical cut-off after completing HG treatment. These outcomes exceeded the UK Department of Health's target for IAPT services for a 50% recovery rate for those who completed treatment (IAPT, 2012) and were in the top quartile of the CORE-OM services benchmark (CORE, 2011). Thus, the overall efficacy of HG therapy against benchmarks indicated that HG therapy in this study met the UK standards for CBT and was equivalent to the top quartile of services.

Intention-to-treat (ITT) recovery rates. It could be argued that as ITT data includes those who did not complete treatment it would be a less accurate reflection of the efficacy of those who completed treatment. However, it was still important to report ITT results as they account for attrition and could therefore correct for potential bias due to attrition rates. This current study found 56% of all those who started treatment were below the clinical cut-off after treatment. Similarly, Andrews *et al.* (2011) reported ITT recovery rates of 57.8%, and with a sample of 3,885 and 46 therapists, Andrews *et al.* (2013) reported an ITT recovery rate of 53.9% for HG therapy. Although the cut-off for the diagnostic criteria for PTSD is higher than the clinical cut-off on CORE-10, in a meta-analysis of RCTs of PTSD treatments Bradley *et al.* (2005) found that on average ITT recovery rates to be 56%, with 67% of those who completed trauma-focussed treatments no longer meeting the criteria for PTSD after treatment.

It is interesting to note that in this current study, 36% of those who did not complete treatment were below the clinical cut-off in their last session, which was similar to the findings of Andrews *et al.* (2011). This would suggest that while the ITT assumption that those who do not complete treatment did not improve, this may be a conservative means of accounting for attrition when there is no data available. As some of the participants were self-funded, they may have chosen to end treatment early when they no longer had distressing symptoms. However, there is little research on the impact of self-funding on attrition rates. This current study also demonstrated the importance of collecting data in every session so that accurate information was available on those who did not complete treatment.

4.5 Clinical implications

HG therapy. HG therapy used in this study appeared to be as effective as other practice-based CBT studies, was in the top quartile of services using CORE (CORE,2011) and met the UK Department of Health's recovery rate target (IAPT, 2012). While a randomised study is clearly needed, the results of this present study would suggest that HG therapy could be used as an effective alternative therapy in clinical practice. Tsaroucha *et al.* (2012) found HG therapy to be as effective as treatment-as-usual for depression but with half the number of treatment sessions. This current study found that people with multiple traumas could be treated in a single Rewind session and about a third were below the clinical cut-off on CORE-10 after Rewind treatment. Taken together, this would suggest that HG therapy could require fewer number of treatment sessions, which could potentially reduce the cost of treatment. Clearly, a controlled trial is needed to ascertain whether HG therapy might be a cost-effective treatment.

Rewind. Rewind does appear to be an acceptable treatment that is effective in treating sub-threshold trauma, although more research is needed to determine the efficacy of Rewind treatment for PTSD. With about a third of participants being below the CORE-10 clinical cut-off after Rewind, there might be scope for a single treatment session clinic to be offered particularly if there are long waiting times for treatment, on the condition that further trauma treatment is available if needed.

In spite of the efficacy and acceptability of a single Rewind session, the data in this current study suggested that many participants required further treatment to address

issues like residual depression, anxiety or phobias, self-esteem and confidence, trust, skills training, other underlying unhelpful beliefs, and relapse prevention. Thus, while Rewind was effective in reducing symptoms, it often did not treat all symptoms. Grey, Young and Holmes (2002) found that a verbal trauma-focussed exposure treatment technique that used cognitive restructuring called ‘reliving’ reduced intrusions but not all trauma symptoms. They noted that if the cognitions attached to the trauma related to negative core beliefs, cognitive restructuring within ‘reliving’ would be insufficient to produce change in affect. Similarly, Speckens Ehlers, Hackmann and Clark (2006) reported that those with high levels of anger towards the traumatic event responded less well to the ‘reliving’ treatment. Further sessions may be necessary to address issues like anger, underlying negative beliefs and the impact of the trauma symptoms on other aspects of a person’s life.

4.6 Implications for methodology in future research

Session-by-session data collection. Data collected in every session could be referred to as session-by-session data collection. Similar to Clark *et al.* (2009) who found that data capture rates were much higher for session-by-session data, in this study there was less missing data on the CORE-10, ORS and SRS, the questionnaires that were used in every session, compared to the IES-E that was not used in every session. Unfortunately, the amount of missing data for the IES-E meant that the IES-E could not be used in the analysis in this study. A short PTSD questionnaire should be developed for adults for use in every session, similar to the CRIES-8 (Children and War Foundation, 2005) eight item PTSD questionnaire for children, to produce more reliable data.

Validation of the use of CORE-10. There was a high correlation ($r=.95$) between the CORE-10 and the CORE-OM, which was in line with the correlation of $r=.94$ found by Andrews *et al.* (2011), Andrews *et al.* (2013) and Connell *et al.* (2007). This confirmed the validity of using the shorter CORE-10 questionnaire in every session rather than the longer CORE-OM and would facilitate the use of session-by-session practice-based data collection.

‘First session effect’. This current study found a steep initial decline in negative symptoms after the first session, which was acting as a control session. This initial

decrease in symptoms had been noted in other CBT studies (Ilardi & Craighead, 1999; Strunk, Brotman, & DeRubeis, 2010), including treatment for PTSD (MacDonald, Monson, Doron-Lamarca, Resick, & Palfai, 2011). Kleim *et al.* (2013) hypothesised that the initial session normalised the symptoms, and gave participants a conceptualisation of their problem and a rationale for the treatment plan. They hypothesised that this would create hope and counter-act negative interpretations which would produce the initial steep improvement in symptoms after the first session. This is likely to have occurred in this current study. It may be that some participants changed their behaviours as a result of understanding some of their maintaining behaviours in the formulation. The first session therefore is not a good session to use as control session unless it is counterbalanced in the design.

4.7 Theory

Sub-threshold trauma. The efficacy of a trauma-focused treatment on sub-threshold trauma would support the notion of moving towards a symptom-based rather than diagnosis-based approach to research (e.g. Brewin, 2011; Schmidt, 2015). The results of this study indicated that Rewind could be used to treat sub-threshold trauma, and were consistent with other studies that have found PTSD treatment techniques to be effective in treating sub-threshold trauma in depression and anxiety (Dickstein *et al.*, 2013; Handley *et al.*, 2009). Pfaltz *et al.* (2013) suggested that there might be a link in aetiology between panic and PTSD, and that techniques used to treat PTSD may be used to treat other neurotic disorders if the symptoms warranted it. This study would therefore strengthen support for the notion of underlying transdiagnostic aetiology for psychiatric disorders. Possible transdiagnostic explanations mechanisms include the role of memory encoding (e.g. Brewin *et al.*, 2010), sleep disorder (Germain, 2013; Griffin & Tyrrell, 2004), attachment (Olf, 2012), immune responses (e.g. Benros, 2015; de Kloet, Vermetten, Rademaker, Geuze, & Westenberg, 2012; O'Donovan *et al.*, 2015), and epigenetics (e.g. Kaffmann, 2015) and genetics (Neylan, Schadt, & Yehuda, 2014).

Possible mechanisms for Rewind. HG theory proposes that reduced emotional arousal is important for processing memories (Griffin & Tyrrell, 2004) and that cognitive distortions are an adaptive response to danger (Adams, 2010, see Addendum). It is possible that reduced arousal from trauma-focused exposure in Rewind may normalise

brain neurochemical levels, in particular cortisol levels in the hippocampus and prefrontal cortex (Le Doux, 2002) and the corticotropin releasing factor CRF system (Henckens, Deussing, & Chen, 2016) that regulates cortisol (see Appendix L for more details). The hippocampus, which is involved in contextualising memories (Le Doux, 2002), would then be able to process the trauma memory, potentially reducing future intrusions. According to the HG theory of cognitive distortions, the pre-frontal cortex is proposed to be involved in creating cognitive distortions like negative bias, catastrophising, mind reading, and predicting the future that help us when we are in danger (see Addendum). Thus, as cortisol levels in the pre-frontal cortex reduce due to low arousal is reduced cognitive distortions could subside, thereby reducing fear bias (Reinecke *et al.*, 2013), negative trauma-related appraisals (Kleim *et al.*, 2013), and information processing difficulties (Birrer, Michael, & Munsch, 2007), which may result from these distortions. Such cognitive changes have been observed to have preceded symptom improvement (Kleim *et al.*, 2013; Reinecke *et al.*, 2013).

HG theory would predict that any means of reducing emotional arousal while recalling the trauma memory could allow the reprocessing of the traumatic memory. Different trauma therapies may also be effective as they reduce arousal via different mechanisms: CBT can reduce perceived threat by directly modifying the meaning of images and thoughts (Ehlers & Clark, 2000); eye movement desensitisation and reprocessing (EMDR), through exposure and split attention (Rogers & Silver, 2002), may reduce arousal; other psychological therapies may use the therapeutic relationship to invoke a sense of safety, thereby reducing arousal (Geller & Porges, 2014); the ‘Tetris’ computer game (Holmes, James, Coode-Bate, & Deeprose, 2009) may reduce arousal through intense distraction and the activation of logical thinking; the use of pharmacological enhancers (de Kleine, Rothbaum, & van Minnen, 2013) may reduce arousal directly. This current research did not investigate these hypotheses. Appendix L includes a more detailed discussion including other mechanisms that may have been involved in the memory processing during Rewind. Clearly more research is needed to clarify the underlying mechanisms in the treatment of PTSD and sub-threshold trauma.

4.8 Limitations of this study

There were several limitations of this current study. As this was a practice-based study and all participants seen during a specified time period were included, there were

not equal numbers of participants with and without PTSD. This study relied on questionnaires rather than a clinician-based assessment for diagnosis. A specific measure for PTSD symptoms was not administered in every session and as such there were insufficient numbers of this questionnaire. Conclusions from the results of this study therefore need to be limited to a reduction in symptoms on the CORE-10 rather than generalised to a reduction of PTSD symptoms. In this present study the SRS only compared the Rewind session to other HG sessions, and a further systematic detailed study investigating the acceptability specifically of the Rewind treatment is now required. Finally, while comparison to benchmarks indicated that HG therapy was at least equivalent to CBT in clinical settings, there was no direct comparison of HG therapy to other therapies. Clearly, a randomised controlled trial comparing HG therapy and Rewind to other treatments is now warranted.

As there was no randomised control group, confounding factors also need to be considered, particularly as the researcher was also the therapist. Those treated with Rewind were considered to be ‘ready to treat’ by the therapist who was selecting interventions they believed would be most effective but may have selected those who responded better to treatment. It is also possible that demand characteristics may also have had an influence on the participants’ responses, in that participants may respond to what they perceive the researcher would like. However, while participants knew that the efficacy of treatment was being evaluated, they were kept blind as to which particular sessions were of interest. In addition, the therapist wanted every session to be effective in reducing symptoms. As there was only one therapist, it is also possible that participants improved due to non-specific therapist related factors.

4.9 Conclusion

In spite of these limitations, the results of this current study suggested that Rewind appeared to be an acceptable treatment that was effective in reducing symptoms and improving general satisfaction with life. Some people with severe, chronic, and multiple traumas could be treated in a single Rewind session, while others required further treatment. This current study indicated that Rewind might be effective in treating sub-threshold traumas, which has implications for understanding the underlying mechanisms of trauma and PTSD. Finally, the efficacy of HG therapy compared to benchmarks indicated that HG therapy in this current study met the UK standards for a 50% recovery

rate for practice-based CBT and was equivalent to the top quartile of services that use CORE questionnaires. Clearly, HG therapy appears to be effective and Rewind seems to be a promising treatment for sub-threshold trauma, although randomised controlled trials are now needed.

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Critical Appraisal

By Shona Adams

Critical Appraisal

This critical appraisal will cover my reflections regarding my personal journey while completing this dissertation. First, I will contemplate my choice of research topics followed by specific issues I encountered while completing the empirical study and literature review. Potential future research will then be considered. Finally, I will reflect on what I have learned particularly in relation to research and about myself.

1. Choice of topics

In my clinical practice, I noticed that a trauma technique called Rewind appeared to be effective. However, as I investigated further I found that there was little research on Rewind at that time. There was also considerable scepticism in the wider scientific community about Rewind due to the lack of evidence and first-hand experience of the technique. I wanted to see for myself how Rewind stood up to scientific scrutiny.

Empirical study. In the years prior to starting this doctorate, I had participated in a Human Givens (HG) research project where I established the good practice of collecting data in every session. While participating in this project I designed the empirical study, one that could be undertaken in my routine clinical practice. Specifically I wanted to investigate the efficacy of Rewind in a clinical setting and within the wider context of HG therapy. When the HG research project ended, I continued to seek new clients' consent to participate in research evaluating the effectiveness of their treatment. This was the start of the empirical study of this dissertation.

After I had started the data collection I began supervising a clinical psychology trainee for a different research project I had designed that involved using a randomised controlled trial (RCT) to investigate the efficacy of a single Rewind session. At this point I was supervising someone else's doctorate and realised that I wanted to undertake a 'top-up' doctorate of my own. My focus was then on finding a supervisor for my doctorate, but I did not consider how important the actual supervision of my dissertation would become.

Literature review. Regarding the literature review, I had already completed an informal literature review before embarking on the empirical study and the Rewind Clinic (see Service Evaluation). Given that I was going to put considerable time and effort into

the literature review for this dissertation I wanted to make a worthwhile contribution to scientific knowledge. I was very interested in the impact of food intolerance and the immune system on mental health, but my supervisor managed to persuade me to stay on the topic of the empirical study. I therefore decided to do a systematic literature review on Rewind, and if there were a sufficient number of studies learn how to perform a meta-analysis. This turned out to be more challenging than I expected.

I will now consider the empirical study and the literature review separately and lessons I have learned as I have reflected on the research process.

2. Empirical study

2.1 Organisational issues, design and ethical approval.

Design. In a private clinic, treatment was expected to be offered as soon as possible after the referral, which meant there could not be a waiting list control and a baseline could not be established prior to treatment. Notwithstanding, there were several factors that made the results potentially more representative of clinical practice. Assuring potential participants that their treatment would not be modified if they took part in the study probably facilitated the 100% response rate for participation in the study. In addition, the empirical study was conducted in a clinical setting with no exclusion criteria.

In spite of having a fairly representative sample, I encountered challenges with the design of a practice-based study. I had grappled with the issue of controlling for extraneous variables in a practice-based context where randomisation was not possible. To continue to achieve representative results, one design I decided upon included all the participants and compared the assessment session to the Rewind sessions. A second design then compared a subsample who had Rewind in Session 2 to those with treatment-as-usual (TAU) in Session 2 followed by Rewind in Session 3. The latter could be considered a partial crossover design. In crossover designs, each participant acts as their own control thereby reducing bias associated with known and unknown confounding variables. Fewer participants are also needed. The ‘order effect’ is common in crossover studies and was evident in the first design in which all participants had the assessment session first, but was partially controlled for in Session 2 of the second design where participants either had Rewind or TAU.

Planning the statistics for this design was also challenging. In general, crossover studies use repeated measures statistics. These were applied when comparing the assessment control to the Rewind sessions. However, the data for Rewind compared to TAU was non-parametric, and “non-parametric methods of analysis for crossover data are not well developed, apart from the two-treatment two-sequence designs” (Kenward & Jones, 2014, p. 315). As well as the non-parametric statistics, I included descriptive statistics for both between-subject group means and within-subject recovery rates and reliable improvement rates.

There were other weaknesses in the designs I selected. I was disappointed that I had not foreseen the ‘first-session effect’. In hindsight, an initial improvement in general symptoms of anxiety or depression after an explanation, or formulation, could have been predicted. Ideally, half of the participants should have been randomly allocated to the control session first and the other half to the Rewind treatment in the first session, creating a balanced design. Another weakness of the design was that the decision to give Rewind in the second session was based on clinical judgment rather than being randomised. While this judgment was based on their symptoms, it could be argued that subconscious factors influenced this decision that could have skewed the results. Nonetheless, including a partial crossover design helped to strengthen the conclusions.

Measures. Regarding the choice of measures, the empirical study could be criticised for the lack of a standardised therapist-rated diagnosis of PTSD, like the Clinician Administered PTSD Scale (CAPS). However, clinician rating can be subject to bias. This study used the diagnosis of the referring consultants to determine the PTSD diagnosis, with no checks available for strict adherence to diagnostic criteria. However, in the context of this practice-based study it was not possible to make clinician administered scales part of the treatment protocol. Given the high scores on the IES-E, it is likely that more of the participants may have qualified for a PTSD diagnosis but making a diagnostic assessment was unfortunately not part of HG assessment protocol.

Unfortunately, there were also limited numbers who completed the Impact of Events – Extended version (IES-E) questionnaire, which specifically measured PTSD symptoms. I was bitterly disappointed about this, as not having a measure of PTSD symptoms was a major weakness of the empirical study. There were a low number of referrals with a PTSD diagnosis during the period of the study and recruiting additional

PTSD referrals would have created an unrepresentative sample. The IES-E was a relatively long questionnaire and was not always appropriate for those with sub-threshold trauma, and as a consequence the IES-E was not administered to every participant. However, after the study I did consider using one question in the clinical Outcomes in Routine Evaluations (CORE-10) questionnaire that was used in every session. The question asked specifically about intrusion symptoms. However, the single question was not standardised and doing so may have risked over-analysing the data. In hindsight, the IES-E may have been a poor choice for this study because of the length of the questionnaire. Selecting a brief questionnaire to measure PTSD symptoms that would be more easily administered every session would have been a better choice. While the Revised Child Impact of Events Scale (CRIES-8) only has 8 questions, to my knowledge there is no brief adult PTSD questionnaire that is designed for use in every session.

In addition, as most questionnaires rate symptoms for one trauma it would have been difficult to select a PTSD questionnaire that would measure PTSD symptoms for multiple traumas that were treated in one session. While the results on CORE-10 indicate that the single Rewind session was effective in reducing symptoms for some people and the treatment in the session could involve imaginal exposure to multiple traumas, it is more difficult to claim that Rewind was effective in treating multiple traumas because the intrusions from each trauma were not specifically measured.

This study could also be criticized for a weak measure of acceptability of treatment. The Session Rating Scale (SRS) was selected because it rated the participant's experience of every session rather than only the Rewind session. More specifically, in the SRS participants rated on a likert scale whether the therapist's approach or method was a good fit for them, how much they felt heard, understood, and respected, the extent to which they talked about or worked on what they wanted to talk about or work on, and overall experience of the therapy session. It could be argued that the SRS only indirectly measures the acceptability of treatment and that some of the items of the questionnaire were less related to acceptability of the treatment and more related to acceptability of the session. However, rating every session enabled the participants to be blind to the specific session that was being evaluated. As each of the participants' ratings of the Rewind session could be compared with their ratings of other sessions this reduced the impact of a demand bias of potentially wanting to please the therapist. This would compensate for those who might generally give high ratings (e.g. wanting to please) and those who might have low ratings (e.g. perfectionists). The SRS is designed to compare ratings of different

sessions by one participant. One could argue that a participant may have found all of the sessions unacceptable, and that using the SRS does not directly ask about the acceptability of the treatment. Given that the SRS is a standardized measure with a cut-off of 36 out of 40, and that the 25th percentile scores were 37.1, this would suggest that the Rewind session was generally rated as acceptable. Qualitative methodology may have provided richer information about the acceptability of Rewind, but that was beyond the scope of this study and the participants would not have been blind to the specific session that was being evaluated.

This research provided an example of triangulation, using several questionnaires in every session. This enabled a wealth of information to be collected. Qualitative studies on Rewind had suggested that it was not only important to measure clinical symptoms but also satisfaction with life, which is not usually measured in PTSD studies. However, the use of multiple questionnaires presented the challenge of having considerably more data to present concisely.

Ethical review. I was pleased that the ethical review was relatively straightforward and ethical approval was given without requiring any modifications.

2.2 Data collection, analysis, and limitations.

Data collection. The assessment and interventions took a long time to complete and patience was required. A small number of participants did not complete treatment. Attrition rates in a private clinic may be different to other settings because participants may be less likely to complete treatment if they are feeling well and they are paying for their treatment. In the empirical study, 40% of non-completers were no longer in the clinical range when they stopped treatment. Anecdotally, two people who phoned to cancel their last session reported they were feeling well. Ideally, participants who did not complete treatment should have been formally follow-up, but that was beyond the scope of this study.

Data analysis. I was curious about many factors relating to the efficacy of Rewind and it could be argued that I performed too many analyses. Obviously, the more analyses that are performed on a dataset, the more chance there is for Type 1 error. Another issue that arose during the course of the empirical study was the decision to use parametric or

non-parametric statistics. The properties of the questionnaires varied at different time points, with subsamples and the Session Rating Scale generally not fitting a parametric curve. I was aware of the different arguments for reporting on all parametric or non-parametric statistics for consistency, or reporting on the statistics that were appropriate for those data. I felt most comfortable using statistics that were appropriate for the data, and therefore performed a mixture of parametric and non-parametric statistics.

Limitations not discussed previously in the dissertation. This was not a randomized study, and as such the results cannot be used as a direct comparison with other studies. All that can be claimed is that the results appear to be equivalent to the benchmarks. A potential weakness was bias associated with evaluating treatment I had provided. Apart from being aware of my ethical responsibility to represent data accurately, to reduce the risk of bias a research assistant scored and entered the questionnaire data. These were randomly checked for accuracy. My supervisor ensured that I used appropriate statistics and reported in an unbiased way. Knowing that I was conducting a research project, I was also careful to ensure that I adhered to the HG treatment protocols, but there were no external checks for treatment adherence.

Data was not collected on the source of funding for treatment. Although the majority of participants were not self-funded, it is possible that this factor may have had an impact on the results, in that self-paying participants may be more motivated to recover more quickly and may therefore get better results. They may also want to end treatment early and therefore there could be fewer participants in the *normal* range after treatment, thereby possibly impacting the intention-to-treat results and the results for those who completed treatment. No studies could be found on the impact of self-payment on trauma treatment outcomes, with only research on self-payment on medical conditions and addictions reported. The number of sessions allowed by different providers varied and therefore the number of treatment sessions was not collected in this study. Unfortunately, it is not possible to know the impact of treatment funding on these results.

3. Systematic literature review and meta-analysis

3.1 Design and limitations.

I presented a history of the development of research on HG and Rewind, including the results of my empirical study, at a veteran charity annual conference. It was interesting to reflect on the increase in sophistication of the practice-based studies with the methodological innovations that were emerging. I also noticed some difficulties in practice-based research that sparked an interest that was later reflected in my literature review.

One of the strengths of the literature review included extensive searching of the grey literature, but due to my involvement in the data analysis and writing up of some of the studies, it could be argued that the literature review was open to bias. As a means of countering this bias, I wrote a PROSPERO application for the literature review but my supervisor advised me not to submit it as the dissertation was a learning process and as such may have needed modification. As it turned out, the original design and analysis was not modified. Nonetheless, I was very aware of my professional and ethical duty to represent information accurately, and my supervisor was a check to ensure that this happened.

The same criticism about performing too many analyses could be made of the meta-analysis in the literature review, as effect size, recovery rates, and reliable improvement were investigated. Multiple statistical analyses had the potential to increase Type 1 error. However, it is interesting that Borenstein, Hedges, Higgins, and Rothstein (2009) advocated the use of both fixed and random effects models for data, and did not appear to be concerned about limiting the data analyses. However, the larger question of what was the best method of analysing data that did not use control groups remained unresolved in the literature. The emergence of recovery rates and reliable improvement rates in practice-based studies meant their use in a meta-analysis required further exploration.

With regard to the inclusion criteria for the meta-analysis, I excluded studies that were case studies with less than 10 participants, as this is a common exclusion criterion applied in meta-analyses and because participants were more likely to be a selected sample and potentially non-representative. However, this criterion could be criticised because I had wanted to be as inclusive as possible in this study. In reality, the only study

that was excluded using this criteria was also the only case study with standardised questionnaires, with 3 adolescents and used a semi-structured interview and the Beck Youth Inventory (BYI-11) which was not used in any other studies. While this was an exclusion criterion for the meta-analysis, this criterion was not applied to the systematic review that remained inclusive, and as such the data from the excluded study was recorded in the results of the systematic review but not included in the statistical analysis.

3.2 Data collection, and analysis.

Grey literature. While scoping the grey literature for the systematic literature review I discovered a different version of the Rewind. I also realised that there was a considerable amount of research that had not been published and was not available to the wider scientific community. The researchers were clinicians who did not have time to analyse and write up the research. In addition, students had completed their university dissertations but did not invest the time to publish the results in peer-reviewed journals, although some were summarised in the Human Givens journal. I therefore decided to start writing some articles for peer reviewed journals with my supervisor to describe the Rewind technique and to summarise the preliminary evidence that was in the grey literature. This meant more time and energy was invested into this phase of searching through the grey literature.

Quality assessment. While looking at past systematic reviews I discovered a quality assessment tool that was specifically adapted for practice-based evidence, which seemed ideal. However when I applied the tool some of the scoring was unclear. To clarify the scoring I emailed the author of the study. It was satisfying having many of my suggestions about how to interpret the scale confirmed. As practice-based evidence becomes more popular given the advent of session-by-session methodology, it is important to have a reliable and valid quality assessment for practice-based evidence. As the authors of the adapted tool pointed out, one needs to have an appropriate measure before an area of research can flourish (Cahill, Barkham, & Stiles, 2010).

Lack of control groups. A major weakness of the meta-analysis was the lack of usable control groups. However, incorporating these studies in a meta-analysis enabled data that would not normally be considered for a meta-analysis to be analysed and

scientifically scrutinised. This did raise considerable challenges, not least in finding a suitable statistical package to use in the analysis. The main statistical packages for meta-analyses are RevMan (Cochrane review) and Comprehensive Meta-analysis Software, but neither of these allowed for analysis of data without control groups. I had to gain a good understanding of the statistics and get specialist statistical advice to ensure I was doing the analysis correctly using Open Meta-Analyst software (Byron *et al.*, 2012).

The lack of comparable control groups in this present review also created challenges in analysing data in relation to effect sizes. Alternatives such as recovery rates and reliable improvement rates were therefore used. However, there are difficulties in comparing recovery rates using different questionnaires in a meta-analysis (Holling, Bohning, & Bohning, 2007), a view supported in this current review in which recovery rates were found to vary between questionnaires. Minami, Serlin, Wampold, Kircher and Brown (2008) argue that that results should only be compared to results with the similar questionnaires, but I would go a step further after these present results comparing the IES with the IES-E for the same participants, and recommend that recovery rates should only be compared for the same questionnaire. The Reliable Change Index (RCI) accounts for statistical qualities of individual questionnaires, and therefore applying the RCI to calculate reliable improvement rates may offer a more promising method of comparing results between studies. It may be a particularly useful comparison method for pre-post tests and small sample sizes (Zahra & Hedges, 2010). Clearly more research is needed in this area.

4. Supervision

My supervisor exhibited patience and appropriate guidance whilst allowing me to explore and discover things for myself. He has helped me to understand the importance of designing a study from the beginning, including planning the statistical analysis. I learned to differentiate between ‘design’ and ‘statistical analysis’. He also taught me about the craft of scientific writing. Articles need to tell a coherent narrative and to take the reader through a logical journey. He helped me choose an appropriate level of detail when reporting scientific research. During the whole research process I found supervision to be invaluable, from the helpful advice and direction to having an objective set of eyes.

5. Learning points

Methodology. Interestingly, a large part of my theoretical journey has been related to understanding the methodology of practice-based research. While RCTs play an important role in the comparison of treatments and in establishing the efficacy of a treatment, they are not the only scientifically rigorous method of establishing treatment efficacy. As a result of my research journey, my current opinion is that a partial crossover design that not only considers the differences between group means but perhaps more importantly considers within-subject changes under different conditions could be a powerful tool in investigating the efficacy of a treatment. In essence, a partial crossover design is almost made up of two studies, one using within-subject data and the other between-subject data. However, I am not aware of any method of statistically calculating confidence levels of the combined results. Thus, it would appear that more work is needed to provide a consensus on the statistical evaluation of this type of design.

More specifically, I have considered differences in between-subject and within-subject designs. Between-subject ‘effect sizes’ report on differences between group means whereas ‘recovery rates’ and ‘reliable improvement rates’ report on changes within each individual. I have come to the conclusion that there are difficulties with each approach. Outliers and those who do not respond well to treatment would be more easily concealed using effect sizes because one is considering what happens to the group rather than to individuals. However, recovery rates can produce difficulties when comparing different questionnaires between studies because of varied cut-off rates. Cut-offs on some questionnaires are used to determine when symptoms are within a *normal* range, whilst other cut-offs are used to indicate whether symptoms might be sufficient for a full diagnosis, like PTSD. Reliable improvement rates that take into account the properties of a questionnaire might provide a better solution, but more research is needed to clarify whether reliable improvement rates can be used to compare results of different questionnaires.

Prior to this dissertation, I had noted that while they were very important in the scientific process, RCTs were more challenging for practice-based situations (Adams, 2008). However, I have learned the importance of control groups, particularly for meta-analyses. In my opinion, comparing effect sizes without using control groups can produce almost meaningless results that are very easily misinterpreted. I have discovered that a large effect size may indicate that a treatment is effective, but should not be used to

determine the extent of its effectiveness or be compared to other studies. This is because effect size is impacted by standard deviations and whether the initial sample was in severe range before treatment. While I am not a statistician, comparing standard mean difference in effect sizes in different treatments in RCTs do not appear to produce the same difficulties because these variations between samples that are being compared are controlled for.

In this dissertation, recovery, reliable improvement, and reliable deterioration rates, as well as effect sizes were reported. Hence, I did not want to report yet another measure of efficacy, namely ‘no reliable improvement’, especially as it has not been used previously in the literature. In terms of considering the efficacy of a treatment, clinically it might be helpful to report the rate of those who appear to not show symptom improvement following a specific treatment. ‘No reliable improvement’ can easily be calculated by subtracting the ‘reliable improvement’ rates from 100. It might be incorrect to attribute ‘reliable improvement’ to a specific intervention purely from ‘reliable improvement rates’, and as such this term could be misleading. It is perhaps clinically more helpful to appreciate the proportion of people who may not improve after an intervention. However, in reporting ‘no reliable improvement’ rates it would be important that the measure of change used is appropriate to the intervention.

Through this research journey, I have also discovered recent innovations in practice-based studies can make results more reliable. These include session-by-session data collection which enabled higher data capture rates and information on those who do not complete treatment. Practice Research Networks enabled registration of participants prior to treatment and the pooling of data from multiple sites with multiple therapists thus enabling larger sample sizes. Perhaps controversially I would agree with Najavrits (2015): RCTs should not automatically be considered to be the ‘gold standard’ in research, but instead the quality of the research should be considered, which should include data capture rates, attrition rates, and inclusion and exclusion criteria, all of which can affect the reliability of results.

Theory. The discovery of the Muss Rewind protocol while conducting the systematic literature review caused me to question whether reduced emotional arousal alone was the reason for the efficacy of Rewind. Unlike the HG Rewind protocol, the Muss protocol did not include specific strategies to reduce emotional arousal. For a more detailed discussion, see Appendix L.

5. Future research

I would welcome the opportunity to complete the RCT I designed to investigate the single Rewind session. A different RCT should also be conducted comparing HG therapy with CBT and a waiting list control for both PTSD as well as anxiety and depression.

I would be excited if I could obtain funding to do the MRI scan study on Rewind treatment of PTSD, which may help to clarify the underlying mechanisms of trauma treatment. It would also be interesting to explore qualitatively how trauma memories change after a Rewind session.

7. Personal reflections

On a more personal note, it was always important for me to maintain a work-life balance. This is particularly important when doing demanding clinical work. At times, family issues took precedence over my dissertation. However, in the final push to get my dissertation completed my work-life balance shifted in favour of completing the dissertation. I will be pleased to restore this balance.

Reflecting on the research process, I can see that I am curious and inquisitive, and an independent thinker. My determination enabled me to achieve what I set out to do, overcoming hurdles to evaluate the Rewind technique. I now greatly value research supervision.

7. Conclusions

I hope that this research will make a valuable contribution to the understanding of Rewind and HG therapy. I have learned a considerable amount through the invaluable support of my supervisor, advancing my knowledge of research design, statistics and the writing-up process. I was particularly pleased to have developed skills pertaining to systematic reviews and meta-analyses and explored issues relating to practice-based research. Above all, through this journey I have discovered that while I am a clinician, I am truly a researcher at heart.

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Service evaluation

Service evaluation of a pilot Rewind Clinic

Executive Summary: A service evaluation of a pilot Rewind Clinic

Background: Human Givens (HG) Rewind is a relatively new treatment for post-traumatic stress disorder (PTSD). While it is not specifically recognised by the National Institute for Clinical Excellence (NICE)², Rewind involves graduated imaginal exposure to the trauma and therefore could fall within their guidelines that approve trauma-focused exposure treatment. It differs from the currently recognised treatments in that multiple traumas can be treated in one session and traumas do not need to be discussed in detail because exposure is implemented using visualisation. Several studies suggested Rewind may be effective in reducing PTSD symptoms for severe and chronic PTSD³, and one study indicated that a single Rewind session could work well with other treatments⁴.

This trust is committed to providing value for money by utilising its workforce effectively, and is proud to offer innovative services. As such, a pilot Rewind Clinic was developed for service users with severe PTSD symptoms. They were fast tracked to receive a single treatment session by a highly specialised clinical psychologist to reduce their distressing symptoms while awaiting further treatment. Service users usually attended the Clinic with their care coordinator who then followed them up, referring for further treatment if needed.

Aims: Managers had requested information regarding referral pathways, efficacy of treatment, whether follow-up was adequate, and how many people needed further treatment or were discharged. It was also important to collect additional information from the service users' perspective.

Method: Information was extracted from case-notes of all service users referred to the Clinic between January 1 and October 31 2011. All those treated (27 service users) were sent a Service Evaluation Questionnaire and nine service users completed and returned it.

² National Institute for Clinical Excellence (2005)

³ Andrews, Twigg, Minami, & Johnson, 2011; Bishop & O'Callaghan, 2010; Guy & Guy, 2003; Guy & Guy, 2009; Murphy, 2007

⁴ Murphy, 2007

Results: This evaluation confirmed that severe, chronic, and multiple traumas could be treated in one session, although many service users needed further treatment. See attached flow chart for the referral pathways and treatment outcomes: 70% were discharged, with 37% not requiring further treatment and 33% discharged and referred for treatment to less specialist services, and only 22% remained in the specialist team. Regarding follow-up, 92.6% were followed up by their care coordinator. Service users indicated they preferred to be asked if they wanted their care coordinator to attend the Clinic with them. This evaluation provided preliminary evidence that Rewind might make treatment more accessible for shame-based trauma because traumas did not need to be discussed in detail. Most of the service users found Rewind helpful and wanted the Clinic to continue.

Discussion and recommendations: The Rewind Clinic treated service users with distressing trauma symptoms, including those with complex and chronic symptoms. A single session could potentially reduce a bottleneck in the service, reduce treatment waiting times, and enable many more PTSD cases to be treated. The Rewind Clinic was possibly a cost-effective and an efficient use of psychology resources, in which staff could fast track distressed service users when they didn't have the specialist skills to treat them. Service users could then be referred to less specialised and cheaper services for further treatment. Recommendations were in line with the trust's 2012-2014 Strategic Development Plan to provide cost-effective innovative treatment and design services around service user feedback.

Recommendations:

- Continue to offer the Rewind Clinic.
- Plan for the care coordinator to attend the Clinic, but check with the service user regarding their preference.
- Regarding staff training, staff should ideally observe service users they know.
- Care coordinators can be used to provide effective follow-up.
- Service users should be given information on whom to contact if they are not given a follow-up appointment.
- All service users must be signposted for further treatment if needed.

Service evaluation of a Rewind Clinic

1. Introduction

Post-traumatic stress disorder (PTSD) is an important issue in mental health services. McManus, Meltzer and Wessely (2009) found 3% of adults in England screened positive for PTSD. For psychiatric patients the number affected is much higher, with at least 28% of psychiatric inpatients meeting a formal diagnosis of PTSD (McFarlane, Brookless, & Air, 2001). Therefore, a specific treatment pathway for trauma symptoms may be required in psychiatric settings.

National context

The National Institute for Clinical Excellence (NICE) recommendations for treating PTSD (NICE, 2005) are 8-12 treatment sessions of eye movement desensitisation reprocessing (EMDR) or trauma-focused cognitive behavior therapy (TF-CBT), including trauma-focused exposure. In both, one trauma is treated at a time and traumas are discussed in detail. Rewind (Griffin & Tyrrell, 2001) is a Human Givens (HG) therapy technique that utilises graded trauma-focussed exposure and therefore could fall within the TF-CBT framework recommended by the NICE guidelines. Unlike other treatments, in Rewind multiple traumas can be treated in one session and the traumas need not be discussed in detail.

In the present climate of financial restraint and the context of cost efficiency savings (Department of Health, 2010), a potential single session treatment for multiple traumas could be cost-effective and therefore should be evaluated. With an increased emphasis on patient feedback (Department of Health, 2012), service users should be asked if they prefer treatment that requires detailed discussion of the trauma(s).

Local context

Service users with severe PTSD symptoms attending a tertiary outpatient mental health services assessment team required considerable support from their care coordinators while waiting for treatment because of the impact of their distressing symptoms. The clinical psychologist only worked one day a week in the service, and the local Improving Access to Psychological Therapies (IAPT) did not offer PTSD

treatment. With limited specialist psychological services in the trust there were long waiting times for specialist treatment. Given the potential cost-effectiveness of the single treatment for multiple traumas, as well as potentially reducing distressing symptoms while waiting for further treatment, the trust was interested in piloting a Rewind Clinic. This Clinic was offered in one session per week. It was the subject of the present service evaluation.

Review of relevant literature on Rewind and HG treatment

Prior to the Rewind Clinic starting, a review of the relevant literature on the efficacy of HG treatment and Rewind was completed. Similar to a literature review by Corp, Tsaroucha, and Kingston (2008), this literature review found no high quality studies with most of the larger studies having simple pre and post-treatment designs.

Three brief case studies suggested the possible efficacy of a single Rewind session in reducing flashbacks and improving mood and relationships (Ashton, 2005; Griffin & Tyrrell, 2006; Bishop, 2007) but none used standardised questionnaires. In a study with 30 participants, eleven receiving treatment for multiple traumas, participants reported increased confidence, positive mood, and a new ability to speak about the trauma without difficulty (Guy & Guy, 2003). However, there were no standardised questionnaires used and no explanation as to how data was analysed. Murphy (2007) conducted a qualitative study using IPA methodology, extracting data from the case notes of all those treated in a trauma clinic using the HG Rewind protocol (Griffin & Tyrrell, 2001). The service users in their assessment interview described symptoms and end of treatment interview and all references to PTSD symptoms were then coded. Of the 47 participants who had Rewind treatment all had a significant reduction in the number of PTSD symptoms with none meeting the DSM IV criteria for PTSD (APA, 1994) after treatment. Of the 27 who only had one treatment session, 10 of those were treated for multiple traumas in that single treatment session. For those who had further treatment after the Rewind session, treatments included HG therapy, CBT, or art therapy. This study suggested that a single Rewind session could be effective in treating both single and multiple traumas for some people. In a later study with 97 patients, pre and post-Rewind treatment scores on the Impact of Events-extended version (IES-E) were compared (Guy & Guy, 2009). They found a significant improvement in both mild and severe cases after one Rewind session, with average scores reducing from 68 (severe) to 18 (normal). However, this study did not have a baseline or

follow-up and had no randomisation or control group. While these studies are methodologically weak, they do provide preliminary evidence to suggest that a single Rewind session could be effective in treating some severe and multiple traumas.

When the literature review was conducted, there were two other studies using HG therapy, which includes the Rewind technique. In one study with 34 war veterans, Bishop and O'Callaghan (2010) reported that mean scores on the IES-E reduced from 67.24 (severe) before treatment to 29.29 (normal) after treatment in eight sessions or less (3.11 sessions average). In this study 76% of the veterans were treated for multiple traumas and 94% were chronic with treatment administered over 5 years after the trauma. These results suggested that HG treatment could be effective in treating chronic and multiple traumas, in an average of less than 4 treatment sessions. In another study, 124 patients were treated with HG therapy in an average of 3.75 treatment sessions (Andrews, Twigg, Minami, & Johnson, 2011). There was no missing data in this study and several validated measures were used in every session.

In summary, all of the studies on a single Rewind session and HG therapy had methodological weaknesses and did not have a control group or randomisation. Caution should therefore be taken in interpreting these results. Nonetheless, results provided preliminary evidence that a single Rewind session might be effective in treating chronic, severe, and multiple traumas. The single session Rewind treatment that could be followed by further therapy if needed (Murphy, 2007) provided a potential prototype for the Rewind Clinic.

Rationale and aims

Having set up the Rewind Clinic, managers wanted information for the commissioners to help them evaluate the Clinic and to ensure that good clinical standards of follow-up were being maintained. The aims of this evaluation were to identify:

1. Service user pathways (including where referrals came from and service outcomes).
2. Severity of referrals (severity of PTSD symptoms, chronicity, co-morbidity, number of traumas).
3. Whether PTSD symptoms were reduced following the Rewind intervention.
4. Whether follow-up procedures were adequate in terms of service users receiving appropriate sign-posting for further treatment if needed.

Secondary aims included:

5. Whether it was important for their care coordinator to attend the treatment.
6. Whether not having to talk about their trauma made treatment more accessible.
7. The service user's view of the Rewind Clinic and Rewind treatment.

2. Method

To evaluate the Clinic, a multi-methods design was selected, triangulating information where possible from different sources including case-notes, a standardised questionnaire and Service Evaluation Questionnaire (SEQ).

Inclusion criteria

People were referred to the Clinic for a single Rewind treatment session if they were experiencing distressing flashbacks or nightmares. They all had a care coordinator. All service users who were referred to the Rewind Clinic between January 1, and October 31, 2011 were included to provide representative data and prevent any skewing of results from sampling issues.

Participants

Of those referred to the Clinic ($N=38$), 29 were referred by the mental health assessment team prior to allocating treatment, four referrals were from within the specialist psychological treatment team, three were referred from neuro-rehabilitation service, one was referred from the early intervention team and the referral source for one was unknown (see Figure 1). The source of referrals was evenly spread for those who were treated and those who completed the SEQ (Appendix M).

A total of 27 people were treated, fourteen males and thirteen females, their average age being 38.8 (range 20-65). Of those treated, nine (33.3%) completed the SEQ. The sample that completed the SEQ was representative of the whole sample for gender, age, severity and chronicity of trauma, and type of trauma, but not for number of traumas, with 70.4% of the whole sample being treated for more than one trauma compared to 55.6% of the SEQ responders (Appendix N).

Measures

The Impact of Events Scale- Extended Version (IES-E; Appendix O), developed by Tehrani, Cox and Cox (2002), was used to measure the severity of PTSD symptoms. The IES-E was developed using British subjects and was derived from the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979). IES-E is a 23 item self-report measure with three subscales: avoidance, hyper-arousal, and intrusions. It has good internal reliability and validity (Tehrani, 2004). Scores of 30-40 on the IES-E indicate mild symptoms, 40-50 moderate symptoms that could benefit from treatment, and scores of over 50 indicating probable PTSD if there is a qualifying event (Tehrani, Rainbird, & Dunne, 2005).

Other indicators of pre-treatment severity were multiple traumas, chronicity (time since the trauma or traumas), and co-morbidity.

A service evaluation questionnaire (SEQ, Appendix P) was designed to investigate service users' views. It has 23 questions, including closed questions followed by an open-ended question to provide additional qualitative information. Some of the questions were designed to validate the information in the case-notes regarding reduction of symptoms, follow-up, and further treatment. Other items investigated secondary aims of whether service users wanted their care coordinator in the treatment session, what they felt about discussing the trauma in detail, and whether discussing it in detail affected accessibility of treatment. To measure the service users' views of Rewind treatment, they were asked if they found Rewind an acceptable form of treatment, if it was helpful, and if they felt that the Rewind Clinic should continue to be offered. The SEQ was piloted with one service user before adjustments were made for the final version.

Procedure

In the Rewind Clinic, service users completed the IES-E and then had the Rewind treatment, usually with their care coordinator present. The care coordinator met with them after a few weeks to discuss and arrange any further treatment or discharge them, and was asked to administer the post-treatment IES-E. It was noted that the care coordinators did not administer the post-treatment IES-E, therefore service users were sent a follow-up IES-E in the post with the SEQ. These questionnaires were sent in April, 2012 with an Information Letter and Consent Form (Appendix Q) to all those treated ($N=27$). This was between six months to one year

and three months after receiving treatment at the Rewind Clinic. Nine SEQ and IES-E questionnaires were returned. The information from the electronic and paper case-notes were summarised and categorised, and the information from the SEQ analysed. Open-ended questions were analysed using Braun and Clarke's (2006) content analysis method because little was currently known about this area.

Ethical issues were considered, such as confidentiality and the well-being of service users. If someone indicated that they had not had appropriate treatment, the Clinical Psychologist followed this up. The project was registered with the Trust's Research and Audit Team.

3. Results

For each aim, evidence from case-notes or the SEQ are reported. Case-notes reflected all those who were treated and the SEQ provided more detailed information from a self-selected third of the sample. Further investigation of some of the aims was undertaken if appropriate, using the multiple data sources or brief individual case studies.

3.1 Severity of referrals

Symptom severity (case-notes). Pre-treatment symptom severity was not included in the SEQ, as the IES-E in the notes completed just prior to treatment provided more accurate data. Scores were unavailable for three of those treated. The average IES-E score of those attending the Clinic was $M=69$ ($SD=15$). Scores of 50+ on the IES-E are in the severe range and indicate probable PTSD; $n=21$ (87.5%) of those treated scored above 50 and $n=3$ (12.5%) scored less than 50.

Chronicity (case-notes). Chronicity was measured using the time between the most recent trauma and treatment. Only two of all those treated were *acute* (i.e. less than 6 months), 18 (62%) were *chronic* (i.e. more than five years since the trauma), 6 (21%) people experienced the trauma between six months and five years prior to treatment, and one person was unknown.

Co-morbidity (case-notes). Information on co-morbidity was taken from the case-notes, with no available information for one person. All others (96%) had co-morbidity; six service users had at least two disorders, 13 had at least three, and eight had more than three. Of those treated, 24 (89%) were depressed, nine of those were

suicidal, and 19 (70%) had co-morbid anxiety. Other co-morbidities included bereavement, head injury ($n=3$), drugs ($n=1$), alcohol ($n=1$), and one person having a past history of psychosis.

Number and type of traumas (case-notes). The majority 19 (70.4%) were treated for more than one trauma, with only 8 (29.6%) treated for a single trauma. Types of traumas treated are listed in Table 1.

Table 1. Types of traumas treated.

Number treated	Type of trauma
9	Serious assaults
9	Childhood sexual abuse (violence and sexual abuse)
6	Serious road traffic accidents
4	Rapes
4	Domestic violence
3	Fatal fires
3	Traumatic divorces
2	Bombs
6	Witnessed death or murders not listed above
6	Almost died in situations not listed above

3.2 Service user pathways and outcomes

See Figure 1 for a flow chart of the service user pathways.

Pathways for those who did not attend (case-notes). Of the eleven who were referred but did not attend the Rewind Clinic, five people were referred for treatment to other services; one to inpatient detox, one to specialist veteran services, and one to IAPT after an inpatient admission. A psychologist in another service was already treating two who did not attend. Two people declined treatment; one due to a bereavement and one declined because she did not want to discuss her traumas, but was later treated in the Rewind Clinic when she realised she did not have to talk about her traumas in detail. The reason for two people not attending was unknown because they had moved out of the area.

Service outcomes (case-notes). In Figure 1 it is evident that 37% ($n=10$) of those treated did not have further treatment, 37% ($n=10$) were discharged for treatment in other services, and 22% ($n=6$) had further treatment in the specialist team, with no outcome information on one person (4%). Additional treatment was for

anxiety, OCD, confidence building, socialising, relationship issues, personality disorder, finances, and a gardening group, indicating that a lot of the further treatment needed may have been for co-morbid problems.

Service outcomes and symptom severity, chronicity and number of traumas (IES-E and case-notes). See Table 2 for a breakdown of the service outcomes and symptom severity, chronicity and number of traumas treated. All those with pre-treatment IES-E scores of under 50 ($n=3$) did not require further treatment. Note that of those who were in the *severe* range on the IES-E before treatment ($n=22$), six (27%) of these did not require further treatment. Of those with chronic trauma ($n=18$), seven (39%) did not require further treatment. Of those treated for multiple traumas in the single session ($n=19$), eight (42%) did not require further treatment. A further analysis examined a more detailed breakdown of service outcomes and symptom severity as measured by the pre-treatment IES-E scores (Appendix R).

Table 2. Service outcomes and symptom severity, chronicity and number of traumas.

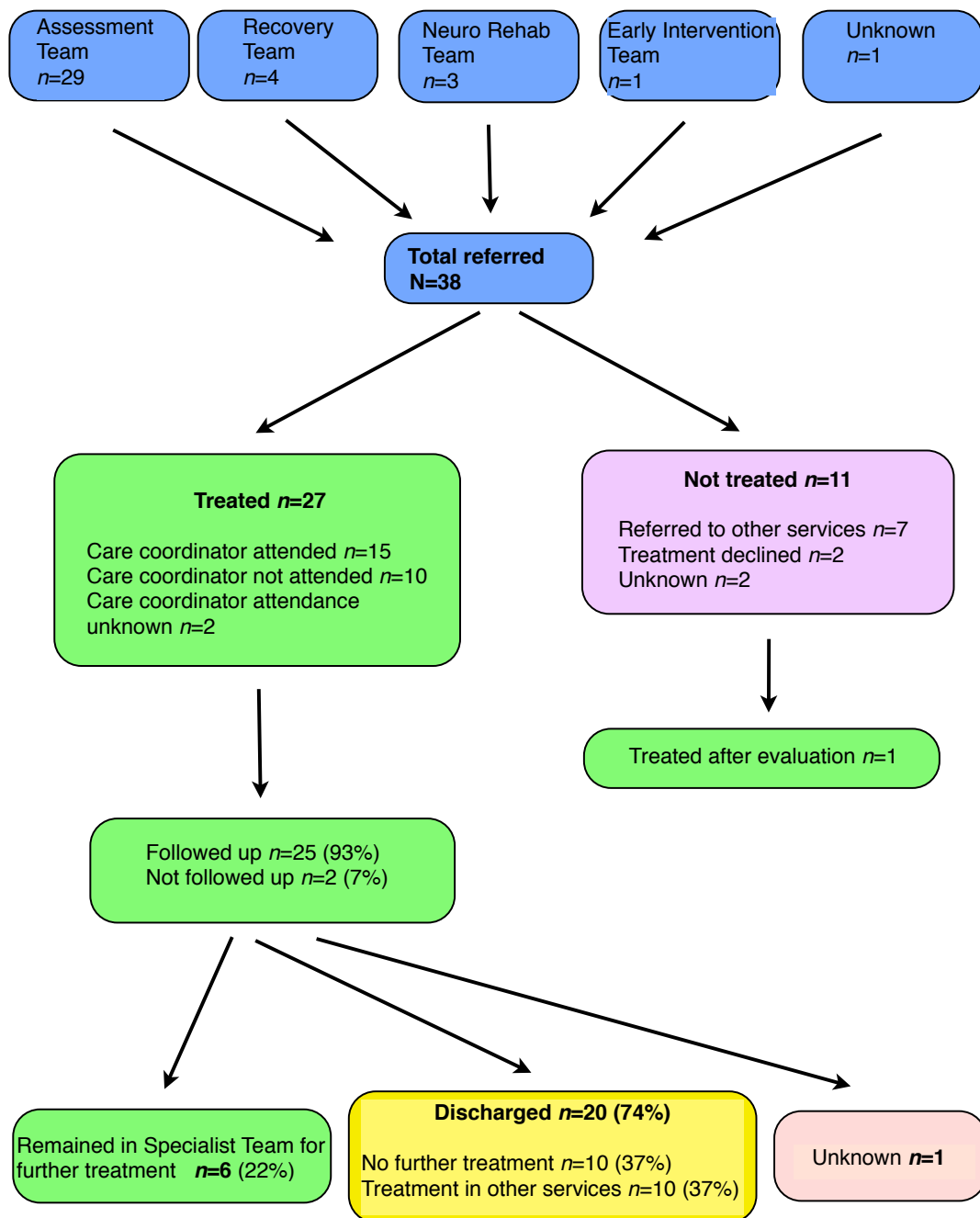
	No further treatment ($n=10$)	Discharged to other services ($n=10$)	Specialist treatment ($n=6$)	Unknown ($n=1$)
Severity (pre-treatment IES-E scores)				
Unknown ($n=2$)	1	1		
<50 (moderate) ($n=3$)	3			
50-69 (severe) ($n=7$)	4	2	1	
70-90 (severe) ($n=15$)	2	7	5	1
Chronicity (time between index trauma and treatment)				
<6 months (acute) ($n=1$)		1		
6 months-5 years ($n=8$)	3	3	1	1
5 years + (chronic) ($n=18$)	7	6	5	
Number of traumas treated in the session				
Single ($n=8$)	2	3	2	1
Multiple ($n=19$)	8	7	4	

Further treatment needed (SEQ). The SEQ investigated whether service users felt they needed further treatment; eight reported that they needed further treatment and one stated that they did not. Of those who needed further treatment, seven of the

eight reported that they were referred on for further treatment and one reported that they were not.

Further treatment (multiple data sources). All comments in case-notes from professionals on the impact of the Rewind Clinic on service users are included in Appendix S, and case examples combining information from case-notes and the SEQ are presented in Appendix T. These indicated that even for service users referred for further treatment, flashbacks and nightmares subsided after the single Rewind session. Additional treatment was often for the co-morbid disorders. One person who had severe PTSD for over 5 years indicated that the improvements from the single session continued in the year following treatment. Thus, even though service users were referred for further treatment, this did not mean they had not benefitted from Rewind treatment.

Figure 1. Flow chart of service user pathways.



3.3 Symptom reduction

IES-E scores. The care coordinators did not administer the IES-E in their follow-up session. Qualitative comments suggested that some of the IES-E responses administered with the SEQ were an invalid measure of the Clinic's effectiveness because three service users rated symptoms relating to recent traumas rather than the initial traumas treated (Appendix U). Therefore all comments on impact of the Rewind Clinic on symptoms from the case-notes were also recorded (Appendix S). Responses from the SEQ and information compiled from all the data sources on some of SEQ responders were considered to give a more detailed understanding of the impact of the Rewind Clinic on symptom reduction.

Symptom reduction (SEQ). Regarding symptom reduction, seven of the nine service users reported that Rewind helped to reduce their symptoms and did not make their symptoms worse, and only one person said that their symptoms deteriorated. Content analysis of their qualitative responses (Appendix V) indicated that those who found Rewind reduced their symptoms seemed to fall into three categories: those who had reduced intrusions (flashbacks and nightmares), those who were able to relax, and improvements in other symptoms (e.g. fear and sweating). One service user reported that flashbacks, nightmares, pain, and sweats increased. One other service user found it 'scary' to no longer have the raw fear they had lived with most of their life.

Changes in themselves (SEQ). Regarding changes in themselves, seven service users reported that Rewind produced positive changes, one indicated there was no change and one stated that there were negative changes in themselves as a result of the treatment but did not elaborate. A content analysis of qualitative responses (Appendix V) showed positive changes including increased confidence, more able to do things, improved self-esteem, increased hope and calmness, and feeling more in control. Interestingly, one service user realised their old thinking patterns had been self-destructive without directly discussing this.

Changes to their work and social life (SEQ). Changes reported by service users included being more sociable and being more active, and with two service users indicating that they had no more panic attacks. One service user experienced negative changes of increased anxiety and tearfulness.

From individual case studies of SEQ responders (Appendix T) it was evident that some service users with severe PTSD symptoms, chronic and multiple traumas,

and co-morbidity did not require any further treatment after the single treatment session.

3.4 Follow-up

According to the case-notes, 22 service users (81.5%) were followed up by their care coordinator and two (7.4%) were not. It was uncertain whether three (11.1%) were followed up or not. Of those who completed the SEQ, six service users said that their care coordinator followed them up, two said that they were not, and one did not respond. Triangulation with the case-notes helped to provide more complete information. Where information was recorded, there was 100% agreement between the case-notes and the SEQ. The case-notes indicated that the one service-user who did not respond on the SEQ did have follow-up. Of those three where follow-up was uncertain from the case-notes, the SEQ indicated that they were followed-up. Taken together, 25 (93%) of all service users who were treated were followed up by their care coordinators.

3.5 Care coordinator attendance

Regarding care coordinator attendance recorded in the case-notes, 15 (55.6%) of those treated had their care coordinator attend treatment, ten (37%) did not, and for two people (7.4%) information was unknown. Of those who completed the SEQ, three attended the Clinic with their care coordinator and six did not. Triangulation with the notes indicated 100% concordance with the SEQ. All of those who had the care coordinator present found this helpful. Three of those who did not have the care coordinator present indicated that they would have preferred them to be there. However, three of those who did not have their care coordinator present indicated that they were happy with this. Content analysis suggested that care coordinators' attendance was found to be helpful because it made the service users feel more comfortable because of their knowledge of the service user, whereas those who did not want the care coordinator present would have found it too embarrassing and felt it was unnecessary (Appendix W).

A further investigation of the case-notes and pre-treatment IES-E scores indicated that care coordinators did not necessarily attend with service users who had the most severe symptoms, who were most chronic or who had experienced multiple traumas (Appendix X). The case-notes also revealed that of those who did not have

their care coordinator present, three were referred by consultants who did not attend, and one other care coordinator did not have time to attend. Another four who did not have their care coordinator had another staff member present for training purposes. Taken together, this may suggest that sometimes when care coordinators did not attend the Clinic this may have been due to other needs of the service.

3.6 Talking about the trauma in detail and accessibility of treatment

The SEQ was used to investigate whether not needing discuss the trauma in detail made treatment more accessible for some service users. When asked if treatment would have been more accessible if they knew that they did not need to discuss their trauma in detail, four service users stated that it would have made it easier for them to attend treatment, two reported that it would not necessarily have been easier to come for treatment and three said that it was not applicable. With regard to discussing their trauma in detail, four reported that they would prefer to discuss it in detail, one reported that they would prefer to only discuss it a little, and three reported that they would prefer to not have to talk about it at all. Everyone responded to the qualitative question about discussing trauma in detail in treatment. Content analysis (Appendix Y) indicated that positives about discussing the trauma in detail included providing a more complete picture and feeling better by talking openly about it. Two of the service users stated that while this could be useful for others it was not important to them. However, three of the service users said that it could be too difficult to discuss their trauma in detail, with one stating that it would be embarrassing and humiliating, and another felt that more time would be needed to build the relationship before discussing the trauma in detail.

Possible factors affecting the importance of discussing trauma in detail were examined. Age, gender, and severity of symptoms did not seem to be significant in whether or not they wanted to discuss the trauma in detail (Appendix Z). All those who did not want to discuss the trauma in detail and stated that not discussing trauma details would make treatment more accessible had traumas involving close personal relationships in which they were likely to feel shame (Appendix AA). They had all been traumatised for over five years before getting treatment (and in one case over two decades), indicating that perhaps access to treatment had been an issue in the past. This hypothesis was tested through examining information from the case-notes for those who did not attend the treatment. One of the service users who did not attend

their appointment during the dates of this evaluation later requested to have Rewind treatment when they realised that they need not discuss their trauma in detail. This suggested that not everyone was aware that the trauma details did not need to be discussed. Four of those who did not attend appointments had been raped and two were traumatised in close relationships, again supporting a hypothesis that having to discuss their trauma in detail may make treatment less accessible for many shame-based traumas.

3.7 Rewind and Clinic ratings

Ratings of Rewind treatment and the Rewind Clinic were extracted from the SEQ.

Acceptability. Regarding acceptability of Rewind treatment, eight service users felt that it was an acceptable form of treatment, with one person saying that it was not because it was not a full enough treatment. Content analysis of their responses (Appendix AB) suggested that for seven service users the treatment made their life better, improved their life and symptoms, helped them to see the event(s) more helpfully, and to open up. Another theme emerged for four service users in terms of ‘liking the treatment’, with the treatment considered appropriate and with specific mention of quick access to treatment and individual sessions. There was an acknowledgement by three people that further treatment was needed.

Helpful. Eight service users felt that Rewind was a helpful form of treatment and one did not. All nine service users had a comment about what was most helpful, and only three people had a comment on the least helpful. In order to demonstrate the impact that Rewind had on these service users, their comments and case numbers are reported verbatim in Box 1.

Clinic ratings. Regarding whether the Rewind Clinic should continue to be offered as a faster access to brief specialist help, seven service users felt that it should and two service users felt that it should not be offered. Content analysis of responses to an open-ended question about evaluating the Rewind Clinic (Appendix AB) indicated that the Rewind Clinic helped cope with life and thoughts, was a good treatment for trauma, was an important service while waiting for further treatment, but that further treatment and follow-up might be needed.

Box 1. Verbatim comments about what was most helpful and least helpful about Rewind.

Most helpful:

"It calmed me down" (1)

"It was helpful to treat distressing trauma symptoms that were greatly impacting my life". (2)

"(The) methods. Bringing it up slowly. Going through bit by bit." (3)

"When I was frustrated before emotionally it removed a lot of negativity I held towards myself and to look at things differently. The day I had it done I felt like all my worries were over." (4)

"Most helpful was going back over the issues, all of it was helpful to think of it." (5)

"Helps me to focus on the positive rather than the negative, my life's changed." (6)

"Stopped me from committing suicide." (7)

"Had the opportunity to visit past trauma" (8)

"Gave me a way to 'unlock' trauma and emotions that just kept spinning round my head." (9)

Least helpful:

"had to wait so long to have even a one-off session" (2)

"not to contain them (trauma) after session" (8)

"could have benefitted from at least one follow up session" (9)

Note. Numbers in brackets indicate case number.

A further investigation was conducted to understand more about why the two service users felt the Clinic should not continue by looking at all their responses in the context of their cases. One service user who found that the treatment made them feel worse had been abused in a previous mental health service, and had chronic, severe PTSD symptoms, and anxiety and depression. Other comments they made indicated that they wanted the opportunity to take legal action regarding previous treatment, although this was beyond the scope of this Clinic. They were subsequently referred on for further appropriate treatment. The other service user who felt that the Rewind Clinic should not continue had ironically also said that they found the Clinic acceptable, that treatment was helpful, that the treatment improved their life and prevented them from committing suicide, as well as making it easier to discuss the trauma. However, they also wrote "you can't cover everything in one session because the healing process takes longer". They were referred on for further CBT treatment.

4. Discussion

Six of the aims of this service evaluation were met. Identifying symptom reduction was only partially met because post-treatment IES-E questionnaires were not useable.

4.1 *Service user pathways*

Referral pathways including service outcomes, severity at referral, and follow-up were identified; 27 people were treated and 93% of those were followed up. Of those treated, 37% didn't require further treatment, 37% were discharged for treatment to other services, and 22% remained in the recovery teams for treatment. Most of the additional treatment appeared to be for co-morbid disorders. In spite of some service users requiring further treatment, evidence from individual cases suggested that many still experienced an improvement in symptoms. Discharging 74% of service users with 37% of these not requiring further treatment after one treatment session would appear to be cost-effective. However, more research is needed to replicate these results.

4.2 *Severity*

The Clinic treated severe cases, with 87.5% in the *severe* range and 90% co-morbidity before treatment. Individual cases in this evaluation also indicated that 27% of severe cases were treated in one session did not require further treatment. With mean pre-treatment IES-E scores of 69 in this present evaluation, similar mean pre-treatment IES-E scores of 68 reduced to 18 after the single Rewind session (Guy & Guy, 2009) and mean pre-treatment IES-E scores of 67 reduced to 29.29 after treatment in an average of 3.11 sessions (Bishop & O'Callaghan, 2010). The number of treatment sessions is considerably less than the 8-12 sessions recommended by NICE (2005). With 62% of those attending the Clinic being treated over five years after the traumatic incident and 39% of these people not requiring further treatment, these current results supported Murphy's (2007) suggestion that Rewind could be used to treat chronic traumas. Of the people attending the Clinic, 70% were treated for more than one trauma in the single session, with 42% of those being discharged with no further treatment. These results are similar to findings suggested in other studies that Rewind could successfully be used to treat multiple traumas (Bishop &

O’Callaghan, 2010; Guy & Guy, 2003; Murphy, 2007), and that some multiple traumas could be treated in a single session (Ashton, 2005; Bishop, 2007; Griffin & Tyrrell, 2006; Murphy, 2007). Thus, the Clinic treated people with severe, chronic and more than one trauma in one session with some people not requiring further treatment, although most people required additional treatment sessions. The Clinic was able to treat severe cases, with 87.5% in the *severe* range before treatment, and 90% co-morbidity. Individual cases in this evaluation also indicated that some severe cases could be treated in one session and may not need further treatment. The efficacy of the single session may account for the fewer treatment sessions needed in Rewind studies compared to those suggested by NICE (2005).

4.3 Symptom reduction

While post-treatment IES-E scores were not available for all those treated, eight of nine service users felt that Rewind was helpful, with everyone recording something helpful about the treatment. While the majority of service users improved, one reported that their symptoms deteriorated. In a review, Kar (2011) found non-response to CBT for PTSD could be as high as 50%, and it was unclear how many of those deteriorated. Nonetheless, for most service users in this evaluation, symptoms like fear, flashbacks and nightmares reduced, and they reported that they were now able to relax. Other improvements included increased confidence, being able to do more things, increased hope, feeling more in control, more sociable, and no more panic attacks. This was in line with Guy and Guy (2003) and Murphy (2007) who found that benefits also included increased confidence, more positive mood, a new ability to speak about the trauma without difficulty, improved social engagement and sleep. It is therefore important to look for wider changes and not just improvements in PTSD symptoms when evaluating this service and other trauma treatments in future.

4.4 Care coordinators and follow-up

Qualitative responses indicated that care coordinators’ attendance helped some service users feel safe and relaxed, but that others did not want them to attend because they might feel embarrassed and humiliated. Further analysis revealed that care coordinators’ attendance was sometimes determined by the service’s needs rather than service user needs. A benefit of having care coordinators present (if helpful for the service user) was that the care coordinator would hear what post-treatment

recommendations were given in the Clinic, enabling them to provide better follow-up. This evaluation indicated that care coordinators were able to provide adequate follow-up and refer people on for further treatment if needed.

4.5 Discussing the trauma in detail and accessibility

Offering treatment in which the trauma did not need to be discussed may have made treatment more accessible for shame-based traumas. Information from questionnaire responders as well as from those who did not attend appointments would seem to suggest that this might be important for some service users. In fact, high levels of shame and embarrassment have led to treatment non-compliance (Renzi *et al.*, 2002). Similar to Guy and Guy (2003) who reported that people found it easier to talk about their trauma after Rewind, one of the questionnaire responders specifically reported that Rewind made it easier to talk about their trauma after treatment. It may be that for some service users where shame is involved Rewind might be an initial treatment of choice to facilitate engagement in treatment and reduce distressing intrusive symptoms. When less distressed, people are likely to address shame and other issues more easily. While ethnicity was not considered in this evaluation, it would be interesting to explore whether ethnicity has an impact on accessibility for shame-based traumas, as shame has a greater significance in some cultures. Clearly more research is needed in this area, with ethnicity being recorded in future research on Rewind.

4.6 Service users' view of the Clinic and Rewind

The majority of service users who responded to the questionnaire reported that the Rewind Clinic was an acceptable form of treatment and recommended that it continue to be offered. It was important to many of them to have quicker access to treatment that relieved their distressing symptoms. Murphy (2007) combined a single Rewind session with other forms of therapy, confirming that was feasible to have a single session Rewind Clinic where people could be referred for further treatment if required. However, it is also important that the Rewind Clinic not be considered a complete PTSD treatment, and that people should be referred for further treatment if needed.

4.7 Results within the wider context

The NHS Constitution (Department of Health, 2012) stated that NHS services must reflect on the needs and preferences of patients and their families, with early intervention in mental health being important (Department of Health, 2011). The Department of Health (2010) encouraged improved efficiency and using patients' feedback, with effectiveness measured in part by patient-reported outcomes. The trust's Annual Plan for 2012/2013 included reducing waiting times and being cost-efficient. It also sought to address current bottlenecks, and placed an emphasis on service user engagement. The Rewind Clinic appeared to be important to service users, and may be cost-effective and a good use of limited specialist resources.

4.8 Summary of results

This evaluation indicated that it was possible to treat severe, chronic, and multiple traumas in one session, although many people needed further treatment for co-morbid symptoms. There was preliminary evidence that Rewind might make treatment more accessible for people with shame-based traumas because the trauma does not need to be discussed in detail. Most of the service users found the treatment helpful and thought that the Rewind Clinic should continue.

Recommendations for the Rewind Clinic:

- Continue to offer the Rewind Clinic in response to service user's feedback.
- Provide written information to service users about the Rewind Clinic when they are referred to reduce DNAs.
- Plan for the care coordinator to attend the Clinic, but check with the service user regarding their preference.
- Regarding staff training, staff should ideally observe service users they know.
- Care coordinators can be used to provide effective follow-up.
- Service users should be given information on whom to contact if they are not given a follow-up appointment.
- All service users must be signposted for further treatment if needed.

Dissemination

A copy of this evaluation was distributed to the head of psychology, the new manager of the service, and the head of mental health services, as well as the hospital audit team. Service users who requested further information were sent a copy of the executive summary.

5. Critical review

One of the limitations of this evaluation was potential bias from evaluating a service that one designed and implemented. The questions in the SEQ could have been biased, service users' responses may have intended to please the psychologist, and there may have been a bias in interpretation. A psychologist who was not involved in the Clinic or with Rewind supervised the design of the SEQ and the final write-up. All questions in the SEQ were balanced, asking for both positive and negative responses. All the data was sent out and entered by a psychology assistant to minimize bias.

A second weakness was relying on care coordinators who were not be used to evaluating their work with questionnaires to collect post-treatment IES-E scores, an important part of the outcome data. However, if the specialised psychologist had offered follow-up appointments only half of the service users would have been treated. With hindsight, it may have been better to use an assistant psychologist to collect data for evaluating the service. Fortunately, the use of multiple sources of data did enable some information on post-treatment symptoms to be collected from the case-notes and from the SEQ.

The initial design that was proposed used the IES-E to evaluated post-treatment PTSD symptoms. However, the IES-E measures PTSD symptoms for a single trauma. When multiple traumas are treated in one session it is unclear which trauma the IES-E is referring to, making it difficult to evaluate whether all the traumas have been successfully treated using the IES-E. Moreover, in this evaluation it appeared that two service users rated symptoms related to more recent traumas rather than the traumas treated. In future, instructions for the follow-up questionnaires for PTSD symptoms should emphasise completing the questionnaire for those same events that were treated.

Another weakness of this evaluation was potential bias in data sources. The outcomes from the professional's comments in the case-notes were not systematically investigated and could therefore be biased. Only 9 (33%) of 27 service users completed the SEQ, which was a self-selected rather than randomly selected sample. Nonetheless, the sample that completed the SEQ was representative of the whole sample for gender, age, severity, chronicity, and type of traumas, but not for the number of traumas treated. One could argue about a potential bias in using selected individual cases. However, the cases selected were the extreme examples of both treatment that worked and treatment that didn't work. In addition, the use of multiple sources of information for all those treated allowed triangulation of data and could counter some of those potential biases.

Nonetheless, one strength of this evaluation was direct the feedback from the service users. The rich qualitative data on effectiveness of the Rewind provided more detailed information about the wider effects of the treatment rather than purely PTSD symptoms. While the Rewind Clinic may be a promising service model in the context of limited resources in the NHS, clearly further research is necessary.

Recommendations for future evaluations

- Use a psychology assistant to administer post-treatment IES-E questionnaires rather than care coordinators
- Instructions for follow-up questionnaires for PTSD symptoms should emphasise completing the questionnaire for those same events that were treated
- Administer standardised questionnaires that also measure more global symptoms like self-esteem and satisfaction with social and work life
- Record ethnicity
- A properly designed randomized controlled treatment trial should be conducted to evaluate the efficacy of the Rewind for PTSD.
- Another randomised controlled treatment trial could be conducted to evaluate the efficacy of Rewind for sub-threshold trauma that specifically measures symptoms of depression and anxiety.

Personal reflections

It was a challenge to complete this evaluation while working in the service one day a week; there was not much time to resolve organisational delays quickly. Nonetheless, it was exciting to be able to develop this innovative service, combining a relatively new technique within the constraints of the NHS.

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Appendices

Literature Review Appendices

Appendix A. Database searches undertaken for systematic review.

Search date: March 12, 2016

Database	Keywords used	Articles returned	Number relevant
Cochrane Library	“human givens”	4	0
	“rewind technique”	3	0
MEDLINE, OVID ALL	“human givens”	19	3
	“rewind technique”	15	2
Networked Digital Library of Theses and Dissertations	“human givens”	24	1
	“rewind technique”	0	0
PILOTS database	“human givens”	1	0
	“rewind technique”	3	1
PsychInfo	“human givens”	9	3
	“rewind technique”	5	2
PubMed	“human givens”	0	0
	“rewind technique”	9	1
SCOPUS	“human givens”	6	0
	“rewind technique”	4	1
Web of Science	“human givens”	2	1
	“rewind technique”	1	1

Appendix B. Data Extraction Form.

ID Number Title: Authors: Publication Date: Journal/Source: Aims:	
<u>Participant characteristics</u> Sample size: Age (mean and range): Gender (% female): Ethnicity: Co-morbidity: Medication: Employment status: Relationship status:	
<u>Trauma characteristics</u> Measure of severity used: Severity: Single or multiple traumas: Chronicity Types of trauma:	
<u>Study characteristics</u> Design: Setting (including country): Questionnaires used: Primary questionnaire: Subgroups (if any): Number of therapists: Selection method: Measures/outcome: Inclusion and exclusion criteria: Data capture rate: Drop-out rate: Number of sessions: Follow-up:	

Data Extraction Form (cont.).

Results Pre-treatment mean: Pre-treatment standard deviation: Post-treatment mean: Post-treatment standard deviation: Effect size: Type of effect size: Recovery rate: Reliable Change Index: Reliable improvement: Reliable deterioration: No reliable change:	
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Appendix C. Downs and Black's Quality Assessment Tool adapted for practice-based studies.

Downs and Black rating sheet: Adapted version		ID
Reporting Yes = 1 No = 0 Unable to determine = 0		
1	Is the hypothesis/aim/objectives of the study clearly described	<input type="checkbox"/>
2	Are the main outcomes to be measured clearly described in the introduction or methods section	<input type="checkbox"/> If the main outcomes are first mentioned in the results section, the question should be answered No
3	Are the characteristics of the clients included in the study clearly described	<input type="checkbox"/> Inclusion and/or exclusion criteria should be given. Emphasis on inclusion and exclusion criteria, other characteristics are age/gender/morbidity
4	Are the interventions/treatments of interest clearly described?	<input type="checkbox"/> Treatments and placebo (where relevant) that are to be compared should be clearly described
5	Are the distributions of principal confounders in each group of clients to be compared (or within a single group) clearly described?	<input type="checkbox"/> A list of principal confounders is provided. Morbidity, co-morbidity, age, gender, previous history. Good qual will include adjustment regression or matching
6	Are the main findings of the study clearly described?	<input type="checkbox"/> Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. This question does not cover statistical testes which are considered below
7	Does the study provide estimates of the random variability in the data for the main outcomes?	<input type="checkbox"/> In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation, or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes
8	Have all the important adverse events that may be a consequence of the intervention/treatment been reported?	<input type="checkbox"/> This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events (A list of adverse events is provided). E.g. early discontinuation of therapy
9	Have the characteristics of clients lost to follow-up been described?	<input type="checkbox"/> This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.
		Follow – up = post – therapy, or loss from study at baseline

Reporting Yes = 1 No = 0 Unable to determine = 0

- | | | | |
|----|--|--------------------------|--|
| 10 | Have actual probability values been reported (e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.01 | <input type="checkbox"/> | |
| 11 | Have sufficient data been provided to enable calculation of outcomes such as pre-post ESs, estimates of reliable and clinically significant change | <input type="checkbox"/> | If data are provided to enable calculation of any one of these outcomes score the question yes |
-

External validity/clinical representativeness Yes = 1 No = 0 Unable to determine = 0

- | | | | |
|----|--|--|--|
| 12 | (a) Were the clients asked to participate in the study representative of the entire population from which they were recruited
(b) Were clients referred through usual clinic routes | <input type="checkbox"/>
<input type="checkbox"/> | The study must identify the source population for clients and describe how the patients were selected. Clients would be representative if they comprised the entire source population, an unselected sample of consecutive clients, or a random sample. Random sampling is only feasible where a list of all members of the relevant population exists. Where a study does not report the proportion of the source population from which the patients are derived the question should be answered as unable to determine |
| 13 | Were those clients who were prepared to participate representative of the entire population from which they were recruited? | <input type="checkbox"/> | The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population |
| 14 | (a) Were client heterogeneous in personal characteristics
(b) Were clients heterogeneous in terms of presenting problems | <input type="checkbox"/>
<input type="checkbox"/> | |
| 15 | (a) Were the staff, places, facilities where the patients were treated representative of the treatment the majority of patients receive?
(b) Was the treatment conducted in a non university setting

(c) Was implementation of treatment monitored (R) | <input type="checkbox"/>
<input type="checkbox"/>

<input type="checkbox"/> | For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population

The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend |

External validity/clinical representativeness Yes = 0 No = 0 Unable to determine = 0

16	Were therapists experienced, professionals with regular caseloads	<input type="checkbox"/>
17	Were therapists free to use a wide variety of procedures in treatment and not just limited to one treatment procedure	<input type="checkbox"/>
18 (R)	Were therapists trained immediately before the study and in the specific treatment being studied	<input type="checkbox"/>

Internal reliability Yes = 1 No = 0 Unable to determine = 0

19	If any of the results of the study were based on 'data dredging' was this made clear	<input type="checkbox"/> Any analysis that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analysis were reported, then answer yes
20	Were the statistical tests used to assess the main outcomes appropriate	<input type="checkbox"/> The statistical techniques used must be appropriate to the data. For example, non parametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken, but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes
21	Was the compliance with the intervention/s/treatments reliable?	<input type="checkbox"/> Where there was non compliance with the allocated the question should be answered no
22	Were the main outcome measures used accurate (valid and reliable)	<input type="checkbox"/> For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered yes
23	Do the analyses adjust for different lengths of follow-up of patients in different treatment groups?	<input type="checkbox"/> Where no comparison group score 0. Where lengths of follow-up the same score 1

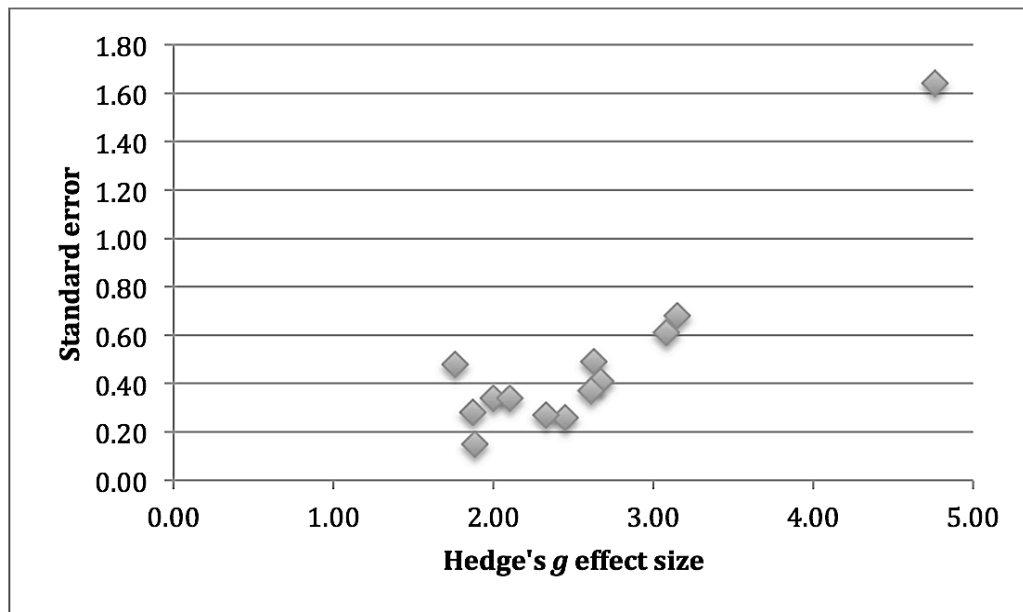
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Appendix D. Leave-one-out analysis with Hedge's *g* effect size using a random effects model.

Source (date)	Hedge's <i>g</i> (95% CI)	Std. error	p-Val
Overall	2.25 (2.02 - 2.49)	0.12	< 0.001

Adams <i>et al.</i> (2015)	2.29 (2.03 - 2.55)	0.13	< 0.001
Andrews (2013)	2.32 (2.09 - 2.55)	0.19	< 0.001
Andrews (2015)	2.31 (2.05 - 2.56)	0.13	< 0.001
Barr (2015a)	2.28 (2.02 - 2.54)	0.13	< 0.001
Barr (2015b)	2.24 (1.99 - 2.48)	0.13	< 0.001
Bishop <i>et al.</i> (2010)	2.22 (1.98 - 2.47)	0.12	< 0.001
Guy & Guy (2009)	2.23 (1.98 - 2.49)	0.13	< 0.001
Guy & Guy (2015)	2.26 (1.99 - 2.52)	0.13	< 0.001
Timmens (2015)	2.22 (1.98 - 2.47)	0.13	< 0.001
Muss (2015)	2.22 (1.99 - 2.45)	0.12	< 0.001
Norris (2015)	2.22 (1.99 - 2.45)	0.12	< 0.001
Utuza <i>et al.</i> (2015)	2.28 (2.04 - 2.53)	0.13	< 0.001
Williams (2015)	2.23 (2.01 - 2.45)	0.11	< 0.001

Appendix E. Funnel plot for Hedge's g effect size and standard error.

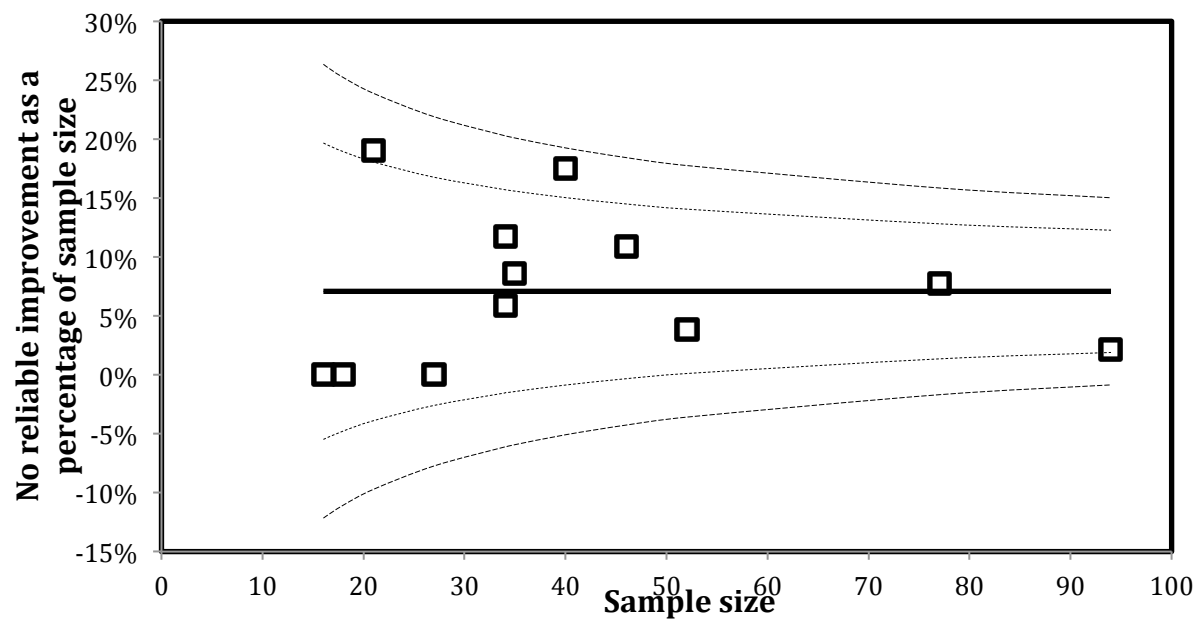


Appendix F. Leave-one-out cross validation analysis for proportion with no reliable improvement.

Studies	Estimate	Lower bound	Upper bound	Std. error	p-Val
Overall	0.055	0.030	0.081	0.013	< 0.001
Adams <i>et al.</i> (2015)	0.047	0.025	0.069	0.011	< 0.001
Andrews (2015)	0.051	0.026	0.077	0.013	< 0.001
Barr (2015a)	0.054	0.028	0.081	0.014	< 0.001
Barr (2015b)	0.052	0.027	0.077	0.013	< 0.001
Bishop <i>et al.</i> (2010)	0.057	0.029	0.084	0.014	< 0.001
Guy & Guy (2009)	0.063	0.036	0.090	0.014	< 0.001
Guy & Guy (2015)	0.053	0.026	0.080	0.014	< 0.001
Timmens (2015)	0.060	0.031	0.089	0.015	< 0.001
Muss (2015)	0.062	0.034	0.090	0.014	< 0.001
Norris (2015)	0.059	0.031	0.086	0.014	< 0.001
Utuza <i>et al.</i> (2015)*	0.051	0.027	0.075	0.012	< 0.001
Williams (2015)	0.060	0.032	0.087	0.014	< 0.001

* single group treatment session with translator


Appendix G. Funnel plot of sample size and the rate of no reliable improvement.



Empirical Study Appendices

Appendix H. Copy of the measures used in empirical study.

Clinical Outcomes in Routine Evaluation Outcome – Outcome Measure (CORE-OM).



Site ID

letters only

Client ID

Therapist ID

Sub codes

D D M M Y Y Y Y

Date form given

numbers only

numbers only (1)

numbers only (2)

Age

Male ☐

Female ☐

Stage Completed

S Screening

R Referral

A Assessment

F First Therapy Session

P Pre-therapy (unspecified)

D During Therapy

L Last Therapy Session

X Follow up 1

Y Follow up 2

Stage

Episode

IMPORTANT - PLEASE READ THIS FIRST

This form has 34 statements about how you have been OVER THE LAST WEEK.
Please read each statement and think how often you felt that way last week.
Then tick the box which is closest to this.
Please use a dark pen (not pencil) and tick clearly within the boxes.

	Not at all	Only Occasionally	Sometimes	Often	Most or all the time	OFFICE USE ONLY
1 I have felt terribly alone and isolated	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
2 I have felt tense, anxious or nervous	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
3 I have felt I have someone to turn to for support when needed	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
4 I have felt OK about myself	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> W
5 I have felt totally lacking in energy and enthusiasm	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
6 I have been physically violent to others	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R
7 I have felt able to cope when things go wrong	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
8 I have been troubled by aches, pains or other physical problems	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
9 I have thought of hurting myself	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R
10 Talking to people has felt too much for me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
11 Tension and anxiety have prevented me doing important things	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
12 I have been happy with the things I have done	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
13 I have been disturbed by unwanted thoughts and feelings	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
14 I have felt like crying	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> W

Please turn over

Over the last week

	Not at all	Only Occasionally	Sometimes	Often	Most or all the time	OFFICE USE ONLY
15 I have felt panic or terror	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
16 I made plans to end my life	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R
17 I have felt overwhelmed by my problems	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> W
18 I have had difficulty getting to sleep or staying asleep	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
19 I have felt warmth or affection for someone	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
20 My problems have been impossible to put to one side	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
21 I have been able to do most things I needed to	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
22 I have threatened or intimidated another person	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R
23 I have felt despairing or hopeless	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
24 I have thought it would be better if I were dead	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R
25 I have felt criticised by other people	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
26 I have thought I have no friends	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
27 I have felt unhappy	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
28 Unwanted images or memories have been distressing me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
29 I have been irritable when with other people	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
30 I have thought I am to blame for my problems and difficulties	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> P
31 I have felt optimistic about my future	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> W
32 I have achieved the things I wanted to	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/> F
33 I have felt humiliated or shamed by other people	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> F
34 I have hurt myself physically or taken dangerous risks with my health	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> R

THANK YOU FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

Total Scores

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	→	<input type="text"/>	→	<input type="text"/>
↓	↓	↓	↓		↓		↓
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>		<input type="text"/>
(W)	(P)	(F)	(R)		All items		All minus R

Mean Scores

(Total score for each dimension divided by number of items completed in that dimension)


30706

Survey: 151

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Page: 1

CORE-10

 CORE - 10	Site ID <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	Male <input type="checkbox"/>	
	letters only <input type="text"/> <input type="text"/>	numbers only <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Age	Female <input type="checkbox"/>
	Client ID Therapist ID <input type="text"/> <input type="text"/>	numbers only (1) <input type="text"/> <input type="text"/>	numbers only (2) <input type="text"/> <input type="text"/>	Stage Completed S Screening R Referral A Assessment F First Therapy Session P Pre-therapy (unspecified) D During Therapy L Last Therapy Session X Follow up 1 Y Follow up 2
	Sub codes D D M M Y Y Y Y	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/>	Date form given	Stage <input type="text"/> Episode <input type="text"/>

IMPORTANT – PLEASE READ THIS FIRST

This form has 10 statements about how you have been OVER THE LAST WEEK.

Please read each statement and think how often you felt that way last week.

Then tick the box which is closest to this.

Please use a dark pen (not pencil) and tick clearly within the boxes.

Over the last week

	Not at all	Only Occasionally	Sometimes	Often	Most or all the time
1 I have felt tense, anxious or nervous	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2 I have felt I have someone to turn to for support when needed	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
3 I have felt able to cope when things go wrong	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
4 Talking to people has felt too much for me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5 I have felt panic or terror	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
6 I made plans to end my life	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
7 I have had difficulty getting to sleep or staying asleep	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
8 I have felt despairing or hopeless	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
9 I have felt unhappy	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
10 Unwanted images or memories have been distressing me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Total (Clinical Score*)

*** Procedure:** Add together the item scores, then divide by the number of questions completed to get the mean score, then multiply by 10 to get the Clinical Score.

Quick method for the CORE-10 (if all items completed): Add together the item scores to get the Clinical Score.

THANK YOU FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

Outcome Rating Scale (ORS)

Outcome Rating Scale (ORS)

Name _____	Age (Yrs): _____
ID# _____	Sex: M / F
Session # _____	Date: _____

Looking back over the last week, including today, help us understand how you have been doing in the following areas of your life, where marks to the left represent low levels and marks to the right indicate high levels.

Individually:
(Personal well-being)

I-----I

Interpersonally:
(Family, close relationships)

I-----I

Socially:
(Work, School, Friendships)

I-----I

Overall:
(General sense of well-being)

I-----I

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Session Rating Scale (SRS)

Session Rating Scale (SRS V.3.0)

Name _____	Age (Yrs): _____
ID# _____	Sex: M / F
Session # _____	Date: _____

Please rate today's session by placing a hash mark on the line nearest to the description that best fits your experience.

I did not feel heard,
understood, and
respected

I-----I

I felt heard,
understood, and
respected

We did *not* work on or
talk about what I
wanted to work on and
talk about

I-----I

We worked on and
talked about what I
wanted to work on and
talk about

The therapist's
approach is not a good
fit for me.

I-----I

The therapist's
approach is a good fit
for me.

There was something
missing in the session
today

I-----I

Overall, today's
session was right for
me

Institute for the Study of Therapeutic Change

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Impact of Events Scale – Extended version (IES-E)

Confidential

Impact of Events (extended) Questionnaire

Name	Date of Birth
Work address	Home Address
Date of Incident	Today's Date

This questionnaire has been designed to look at the ways that a distressing event you have experienced has impacted on you and the way you behave. Spend a minute or two thinking over the past two weeks and indicate how often the following things have occurred by ticking ✓ the appropriate box.

0-Never 1-Seldom 2-Sometimes 3-Often 4-Most of the Time

	STATEMENT	0	1	2	3	4
1	I felt as if it hadn't happened or wasn't real					
2	I tried not to think about it					
3	I tried not to talk about it					
4	My feelings about it were kind of numb					
5	I stayed away from any reminders					
6	I tried to remove it from my memory					
7	I avoided letting myself get upset when I thought about it or was reminded of it					
8	I felt down or depressed for no reason					
9	I experienced wide mood swings					
10	I experienced tenseness in my body					
11	I was irritable with others					
12	I had a tendency to avoid other people					
13	I jumped or got startled by sudden noises					
14	I avoided some situations or places					
15	I thought about it when I did not mean to					
16	I experienced feelings of self-blame or guilt					
17	Pictures about it popped into my mind					
18	I had waves of strong feelings about it					
19	I had dreams about it					
20	I had trouble falling asleep or staying asleep					
21	Other things kept making me think about it					
22	Any reminder brought back feelings about it					
23	I was aware that I still had a lot of feelings about it but did not deal with them					

Appendix I. Information sheet and consent form.

The effectiveness of HG Rewind in treating PTSD and sub-threshold trauma

Purpose of this study

This study is an extremely important study that will look at the effectiveness of the Rewind treatment (this was the session when you imagined the video being played backwards and forwards). Currently, all the treatments that the government recommend for trauma involve talking in detail about the traumatic event(s). As you know, you did not need to talk in detail about the trauma in the Rewind treatment.

This study will look at the effectiveness of the Rewind treatment to treat difficult events that precipitated depression or anxiety as well as symptoms of post traumatic stress disorder (PTSD) using the questionnaires you completed in each session. It will also look at the overall effectiveness of the treatment. Finally, it will take a preliminary look at how the difficult event(s) seems different after the Rewind treatment. The exact words you used to describe what was different after treatment were recorded in your notes (at the end of the rewind treatment when I checked if the treatment had been successful).

This study is a very important part in the process of getting Rewind treatment approved by the government so that it can be more widely available to others. The more people who take part in this study, the more reliable and better the results will be.

What will happen?

If you give your consent to take part in this study, Shona or a research assistant will anonymise information from your file, so that any information that is recorded for this study will not have any of your personally identifiable information.

Information like how you saw the difficult event(s) differently after the Rewind treatment, as well as your gender, age when treated, diagnosis, how long you had your difficulties, and whether it was a single or multiple events, will be taken from the file. Scores of questionnaires at the beginning and end of treatment and before and after Rewind will also be recorded. Data will then be analysed.

Potential risks and ethical considerations

Because the treatment has already been completed and we are only requesting to use the information from your files, there are no real risks or ethical considerations apart from obtaining your consent to take part.

Benefits

I trust that you have already found the treatment you received to be beneficial.

The other benefits of taking part in this study are knowing that you are helping this treatment to become more widely available for others, and that if you needed further treatment in the future the Rewind would be more likely to be available in other parts of the country in the future.

Confidentiality

Your confidentiality is extremely important, and will be ensured within the research team. However, you can specifically request on the consent form for Shona to be the only person to look at your file, if you prefer.

All information that is recorded for the purpose of this study will have no personally identifying information, meaning that there is no way that anyone can know it is you. Every person will be given a number so that there is no link between the anonymised data and yourself.

Right to decline to participate or withdraw from the study

Your decision to give your consent to be part of this study or not will not affect any treatment you might want in the future in any way.

As you will not need to do anything further after you have given your permission to take part in this study, there is not any further participation for you to decline. Because all the data will be anonymised it will not be possible to withdraw your consent once the data has been collected from your file because we will not know which data is yours.

Invitation to ask further questions

If you have any questions about the study or want to clarify anything before giving your consent, please email them to me, Shona Adams, on shona-adams@sky.com or leave a message on 01908 677716.

CONSENT FORM

In order to participate in this research study, it is necessary that you give your informed consent. By signing this informed consent statement you are indicating that you understand the nature of the research study and your role in that research and that you agree to participate in the research. Please consider the following points before signing:

- I understand that I am participating in psychological research;
- I understand that I will not be required to do anything else apart from give consent for information from my file to be part of this study;
- I understand that the data will be anonymised, so that my personal identity will not be able to be linked with any of the data;
- I understand that the research team will have access to my personal data in the file to get this information, and that I can tick after this statement if I only want Shona get information from my file

- I understand that I have been provided with an explanation of this study on the information sheet
- I understand that I have been given the name and telephone number of an individual to contact if I have questions about the research on the information sheet.
- I understand that I can get a summary of the results if I would like them (please complete contact details at the bottom of this form)
- I understand that participation in research is not required, is voluntary, and that my participation will not affect any future treatment that I might want.

By signing this form I am stating that I am over 18 years of age, and that I understand the above information and consent to participate in this study being conducted in Milton Keynes.

Signature: _____ Today's Date: _____
(of participant)

Print your First Name: _____ Print your Last Name: _____

Contact email or address for summary of the results of the research to be sent to:

Please feel free to write down any comments about your treatment in general or about the Rewind:

Many thanks.

Please return this form to Shona Adams, 8 High Street, Great Linford, Milton Keynes, MK14 5AX

Appendix J. Ethical approval.

To: **SHONA ADAMS**

Subject: Ethical Application Ref: **SA524-2c2d**

(Please quote this ref on all correspondence)

28/03/2012 10:00:42

Psychology

Project Title: **Effectiveness of Human Givens Rewind treatment for PTSD and sub-threshold trauma**

Thank you for submitting your application which has been considered.

This study has been given ethical approval, subject to any conditions quoted in the attached notes.

Any significant departure from the programme of research as outlined in the application for research ethics approval (such as changes in methodological approach, large delays in commencement of research, additional forms of data collection or major expansions in sample size) must be reported to your Departmental Research Ethics Officer.

Approval is given on the understanding that the University Research Ethics Code of Practice and other research ethics guidelines and protocols will be compiled with

- <http://www2.le.ac.uk/institution/committees/research-ethics/code-of-practice>
- <http://www.le.ac.uk/safety/>

Appendix K. Recovery and reliable improvement rates on the CORE-10 for the single ‘assessment and explanation’ session presenting complete and intention-to-treat data.

	Recovery rate	Reliable improvement Rate	Recovered and/or reliably improved
Single ‘assessment and explanation’ session			
Total complete data (<i>n</i> = 44)	19% (<i>n</i> =8)	32% (<i>n</i> =14)	41% (<i>n</i> =18)
Planned endings (<i>n</i> = 33)	21% (<i>n</i> =7)	33% (<i>n</i> =11)	4% (<i>n</i> =15)
Unplanned endings (<i>n</i> = 11)	9% (<i>n</i> =1)	27% (<i>n</i> =3)	27% (<i>n</i> =3)
Intention-to-treat (<i>n</i> =55)	15% (<i>n</i> =8)	25% (<i>n</i> =14)	33% (<i>n</i> =18)

Note. ‘Recovered’ is defined as below the clinical cut-off of 11 on the CORE-10.
‘Reliable improvement’ is an improvement of 6 or more.

Possible mechanisms for the efficacy of Rewind

Griffin and Tyrell (2004) postulated that emotional needs such as feeling safe, feeling valued, and feeling connected to others, if unmet, could trigger the flight and flight response. They proposed that reduction in arousal was crucial in enabling the processing of traumatic memories, through lowering of cortisol levels in the hippocampus (Griffin & Tyrell, 2004; Le Doux, 2002). In my theory about cognitive distortions (Adams, 2010, see Addendum), cognitive distortions were seen as an adaptive response to perceived threat to enable us to respond to danger more effectively. I proposed how specific neural pathways involving the prefrontal cortex might produce these distortions, and that perceived threat from the distortions might cause further arousal and stronger cognitive distortions that could then again increase perceived threat.

Role of cognitive distortions

Cognitive distortions, such as negative bias, predicting the future and catastrophising, could produce a fear bias and contribute to negative trauma-related appraisals. In a single session treatment for panic, Reinecke, Waldenmaier, Cooper and Harmer (2013) reported that a reduction in fear bias preceded clinical improvements and concluded that the fear bias change might be a crucial mediator for the effects of CBT for anxiety. Kleim *et al.* (2013) found a reduction in negative trauma-related appraisals predicted PTSD symptom decrease. It is possible that reduced arousal due to desensitisation from exposure could produce a reduction in cognitive distortions which in turn could produce the reduced fear bias and reduction in negative trauma-related appraisals found by Reinecke *et al.* (2013) and Kleim *et al.* (2013).

There are several hypotheses relating to the aetiology of trauma symptoms that could be related to cognitive distortions. Steel, Fowler and Holmes (2005) argued that a schizotypal information processing style which had a weak contextual integration was associated with trauma symptoms. Similarly, Birrer, Michael, and Munsch (2007) noted that people with high positive schizotypy were more prone to experience trauma-related ‘hot spots’ than those with a low score (Holmes & Steel, 2004; Steel *et al.*, 2005). Whalley, Farmer, and Brewin (2013) hypothesised that avoidance was key to PTSD symptoms, whereas Ehlers and Clark (2000) hypothesise that it was the meaning of images that produced perceived threat that was involved in the aetiology of intrusive images. Brewin (2011) suggested that processing deficits, avoidance and negative appraisals might all play a causal role in PTSD symptoms. It is possible that high arousal could cause distortions that could produce the negative appraisals and the information processing difficulties as well as the subsequent anxiety that could result in avoidance.

Griffin and Tyrell (2004) proposed that cortisol levels from high arousal could disrupt information processing through the prefrontal cortex and the contextualising of memories in the hippocampus. However in 2010, I suggested that corticotropin releasing factor (CRF), also known as corticotropin releasing hormone, which triggers the release of cortisol might be involved in this process (pp. 197-199, Addendum). A recent review suggested that CRF and urocortin (UCN) may be implicated in depression, PTSD, the regulation of stress levels and may mediate stress recovery

(Henckens, Deussing, & Chen, 2016). They reported that one CRF receptor, CRFR1, acts immediately in response to stress and is active in the hippocampus. Activation of CRFR1 seemed to be dependent on current stress levels and stress history. Similarly, they reported another CRF receptor, CRFR2, which mediates stress recovery also exhibits plasticity and was responsive to stress exposure. Both CRFR receptors appear to be involved in the balance of slow-wave and REM (rapid eye movement) sleep (Henckens *et al.*, 2016). I would hypothesize that the CRF system interacts with other systems involving dopamine, norepinephrine, serotonin and GABAergic and NMDA receptors (see Sherin & Nemeroff, 2011), rather than cortisol alone, may be involved in the formation of PTSD symptoms and the activation of cognitive distortions.

While cognitive distortions may have a role in maintaining PTSD symptoms, reducing arousal may not be the mechanism for processing trauma memories in Rewind. The Muss Rewind protocol differs from the HG Rewind protocol in that it does not include relaxation but it still appears to be effective in reducing symptoms. Indeed, Rogers and Silver (2002) found that some studies did not report reduced arousal prior to trauma memory processing. Other theories that might explain the efficacy of Rewind will now be considered.

Dual Representational Theory

The role of the hippocampus, pre-frontal cortex and amygdala in HG theory bears some resemblance to the Dual Representational Theory (DRT; Brewin, 2011). In the revised version of this theory, Brewin and Burgess (2014) proposed that there were two types of memory that are encoded during a traumatic event; one is the sensory-bound representation that is affect-laden (called s-rep for sensory representation) that is linked to the amygdala and the other is a recoding of the memory into an 'abstract structural description' within a spatial and personal context (called c-rep for contextual representation) that is linked to the hippocampus. This theory provides description of the process in Rewind whereby the sensory aspects of the traumatic memory become contextualised. It may be significant that the trauma 'videos' in both Rewind protocols start prior to the trauma and end when the trauma is over, as this may facilitate the contextualising of the memory in the hippocampus and the subsequent processing of the trauma memory.

Brewin and Burgess (2014) also suggest that concurrent visuospatial tasks that compete for resources with s-reps during encoding or consolidation would reduce the number of intrusive images in the future. In a review Brewin (2013) found that in 12 out of 13 studies, visuospatial tasks during or shortly after watching a film reduced the number of intrusions relative to the control condition. Both Rewind protocols include watching the imaginary trauma 'video' backwards, which may constitute a visuospatial task while recalling the memory. Thus the DRT might suggest that memories may be reprocessed during a concurrent visuospatial task. This may be a similar mechanism used in eye movement desensitisation and reprocessing (see Rogers and Silver, 2002), although this process is not well understood. An alternative explanation is that imagining the trauma backwards also requires logical thinking and may activate the pre-frontal cortex, which in turn could exert top-down regulation of the amygdala and reduce the flight of flight response.

Brewin & Burgess (2014) hypothesised that visualising traumatic scenes from alternate perspectives may be an effective trauma treatment technique as it would facilitate the hippocampus strengthening the c-rep aspects of the memory. Activating the 'observing self', or the third person perspective, while recalling traumatic events

has been found to have a distancing function and reduces emotion (Sutin & Robins, 2008). Thus, employing the ‘observing self’ while observing the trauma ‘videos’ in both protocols may indirectly facilitate reduced arousal and improved memory processing.

Thus, according to the DRT there may be several ingredients in the Rewind protocol that could facilitate the processing of trauma memories. While in the revised version of DRT there is less emphasis on verbally processing the trauma memory to create stronger c-rep memories, DRT differs from HG therapy in that HG theory does not require narrative processing.

Distancing

One mechanism mentioned above is that the distancing in the Rewind protocol may aid in the processing of the traumatic memory. Ochsner and Gross (2008) found that several studies suggested that distancing was an effective method of emotional regulation. They postulated that distancing strategies may depend on medial systems for evaluating self-relevance of images and the right PFC systems generally were involved in attentional control. For reinterpretation strategies that might be used in cognitive reappraisal techniques, the dorsal PFC may depend on selective attention (as the context is encoded) and the left lateralised systems for language and verbal working memory. Distancing strategies appear to correspond to non-verbal processes, which make them more likely to be involved in the Rewind processing of trauma.

Koenigsberg, et al. (2010) reported that distancing can regulate emotional responses to social situations. They found that when distancing from socially aversive images, distancing activated the precuneus and posterior cingulate cortex (PCC), intraparietal sulci (IPS), and the middle/superior temporal gyrus (M/STG), were all implicated. When distancing from aversive images, there was increased activity in the dorsal anterior cingulate (dACC), medial prefrontal cortex (mPFC), lateral prefrontal cortex, precuneus and PCC, IPS and M/STG. The amygdala activity is modulated via engagement of networks involved in social perception, perspective-taking, and attentional allocation.

While distancing techniques have been shown to be effective in regulating affect in non-clinical populations (e.g. Koenigsberg, et al., 2010; Ochsner & Gross, 2008) and with mood disorders (e.g. Kross, Gard, Deldin, Clifton & Ayduk, 2012), results are less clear in relation to PTSD. When individuals with PTSD were asked whether they adopted a distanced or immersed perspective of their trauma memories, the distance perspective reported reduced emotional reactions (McIsaac & Eich, 2004). However, other research has suggested that the tendency to adopt a distanced perspective when recalling a trauma memory can be predictive of PTSD (Kenny & Bryant, 2007; Kenny et al., 2009). Wisco et al. (2015) found that self-distancing with Veterans with PTSD reduced physiological reactivity but not subjective emotions when recalling trauma memories. However, the authors noted that the trauma memories had high re-experiencing and affect ratings compared to distancing studies with other populations where distancing was found to be effective. It may be that graduated distancing Rewind contributes to the technique’s efficacy.

Memory reconsolidation or extinction

Gray and Liotta (2012) proposed memory reconsolidation and extinction as two possible mechanisms that might explain the efficacy of Rewind; if Rewind is

administered correctly memory reconsolidation should occur. The reconsolidation hypothesis suggests that original memories are made labile immediately after being retrieved and that updating a fear memory with non-fearful information obtained from extinction training (exposure) could rewrite the original fear response and prevent the return of fear (Nader, Schafe & LeDoux, 2000; Schiller, Monfils, Raio, Johnson, LeDoux & Phelps, 2010). During the original memory consolidation repeated production of proteins foster the growth of dendritic spines during a process called long term potentiation, and each time the memory is activated protein synthesis from the original memory is reactivated (Gray & Liotta, 2012). Gray and Liotta (2012) proposed that when a trauma memory in Rewind and VKD is activated, if the situation is significantly different to the original event (i.e. not emotionally overwhelming when recalled) the memory trace can be modified. Griffin and Tyrell (2004) proposed that it is specifically the reduced arousal during the memory recall in Rewind that is the significant component in the treatment process. There is neurophysiological support for a fear memory reconsolidation to occur in one session (Baldi & Bucharelli, 2015). The process of memory reconsolidation is in contrast to regular extinction training when the extinction occurs after the reconsolidation window has closed and a different process occurs. In this situation the prefrontal cortex exerts an inhibitory influence over the amygdala (Schiller, Kanen, LeDoux, Monfils & Phelps, 2013) and the fear memory is masked rather than modified as in the reconsolidation process. While there are many questions to be answered, the process of reconsolidation can explain how memories can be processed in a single session in Rewind and without verbal processing.

Other theories

Cognitive theories do not tend to account for other factors like the role of sleep (Germain, 2013; Griffin & Tyrrell, 2004), attachment (Olf, 2012), immune responses (e.g. Benros, 2015; de Kloet, Vermetten, Rademaker, Geuze, & Westenberg, 2012; O'Donovan *et al.*, 2015) and epigenetics (Neylan, Schadt, & Yehuda, 2014). HG therapy incorporates the role of REM sleep in the processing of memories. Attachment is likely to be related to the oxytocin levels (Olf, 2012) and vagal nervous system (Geller & Porges, 2014). HG theory would postulate that social and relationship threats produce unmet emotional needs, including the need to feel connected, valued and safe, that can trigger the physiological fight or flight response. Some forms of treatment may be aimed at reducing interpersonal threat or increasing oxytocin levels and thereby reduce arousal for some people with PTSD symptoms. It is likely that epigenetics may make certain individuals more susceptible to some of the psychological changes. It is interesting to consider the potential role of the immune system in activating an internal fight or flight response. Clearly, more research is needed to understand the mechanisms involved in the treatment of traumatic memories.

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Service Evaluation Appendices

Appendix M. Referral sources for the Rewind Clinic.

	Total Referred	Did not attend	Total treated	Completed SEQ
Mental health assessment team	28 (73.7%)	8 (72.7%)	20 (74.1%)	7 (77.8%)
Recovery team	4 (10.5%)	1 (9.1%)	3 (11.1%)	1 (11.1%)
Neuro rehabilitation	4 (10.5%)	2 (18.2%)	2 (7.4%)	1 (11.1%)
Early intervention team	1 (2.6%)	0	1 (3.7%)	0
Unknown	1 (2.6%)	0	1 (3.7%)	0
TOTAL	38	11	27	(9)

Appendix N. Representativeness of the Service Evaluation Questionnaire sample.

	Whole sample	SEQ sample
Demographics		
Male	14	4
Female	13	3
Age	38.8 (range 20-65)	37.4 (range 20-52)
Severity of traumas (pre-treatment IES-E scores)		
Less than 50	3 (12.5%)	1 (12.5%)
50+ (probable PTSD)	21 (87.5%)	7 (87.5%)
Chronicity of traumas (Time between trauma and treatment)		
5years + (chronic)	18 (66.7%)	5 (55.6%)
2 years – 5 years	2 (7.4%)	1 (11.1%)
6 months- 2 years	4 (14.8%)	2 (22.2%)
<6 months since trauma (acute)	2 (7.4%)	1 (11.1%)
Unknown	1 (7.4%)	
Number of traumas		
Single	8 (29.6%)	4 (44.4%)
Multiple	19 (70.4%)	5 (55.6%)
Types of trauma		
Serious assaults	9	2
Childhood abuse	9	1
Serious road traffic accidents	6	2
Rapes	4	1
Domestic violence	4	1
Fires	3	
Traumatic divorces	3	
Bombs	2	1
Witnessed deaths or murders but not listed above	6	1
Almost died but not listed above	6	3

Appendix O. Impact of Events Scale - Extended Version (IES-E).

Confidential

Impact of Events (extended) Questionnaire

Name	Date of Birth
Work address	Home Address
Date of Incident	Today's Date

This questionnaire has been designed to look at the ways that a distressing event you have experienced has impacted on you and the way you behave. Spend a minute or two thinking over the past two weeks and indicate how often the following things have occurred by ticking ✓ the appropriate box.

0-Never 1-Seldom 2-Sometimes 3-Often 4-Most of the Time

	STATEMENT	0	1	2	3	4
1	I felt as if it hadn't happened or wasn't real					
2	I tried not to think about it					
3	I tried not to talk about it					
4	My feelings about it were kind of numb					
5	I stayed away from any reminders					
6	I tried to remove it from my memory					
7	I avoided letting myself get upset when I thought about it or was reminded of it					
8	I felt down or depressed for no reason					
9	I experienced wide mood swings					
10	I experienced tenseness in my body					
11	I was irritable with others					
12	I had a tendency to avoid other people					
13	I jumped or got startled by sudden noises					
14	I avoided some situations or places					
15	I thought about it when I did not mean to					
16	I experienced feelings of self-blame or guilt					
17	Pictures about it popped into my mind					
18	I had waves of strong feelings about it					
19	I had dreams about it					
20	I had trouble falling asleep or staying asleep					
21	Other things kept making me think about it					
22	Any reminder brought back feelings about it					
23	I was aware that I still had a lot of feelings about it but did not deal with them					

Appendix P. Service evaluation questionnaire (SEQ)

Case number: _____

1. Given the difficult nature of the events that were treated, did you think the rewind treatment was an acceptable form of treatment for you? Yes _____ No _____

2. What made it acceptable or not acceptable?

3. Was it helpful or unhelpful? Helpful _____ Unhelpful _____

4. What was most helpful and what was least helpful about it?

5. In treatment, would you prefer to talk about your trauma in detail or not need to talk about it?

Discuss it in detail _____ Discuss it a little _____ Not need to talk about it at all _____

6. If you were told that you did not need to talk about your trauma in the rewind treatment, did it make it easier for you to come for treatment? Yes _____ No _____ Not applicable _____

7. In some trauma treatments, people need to talk in detail about their trauma. We would be interested in your thoughts about this.

8. Did you have your care co-ordinator with you in the session? Yes _____ No _____

9. Was it helpful or unhelpful? Helpful _____ Unhelpful _____

10. In what way was it helpful or unhelpful?

11. Did you have contact with your care co-ordinator afterwards to see how you were and if you needed further treatment? Yes _____ No _____

12. Did you need further treatment? Yes _____ No _____

13. Did you get referred on for further treatment if you needed it? Yes _____ No _____

14. If yes, what issues/problems did you need more help with?

Please turn page over

15. Did the rewind clinic help reduce your symptoms? Yes _____ No _____

16. Did the rewind clinic make your symptoms worse? Yes _____ No _____

17. If so, which symptoms (eg flashbacks, breathing difficulties, heart racing, nightmares, shaking, etc) were helped (or made worse)?

18. Have there been any positive or negative changes in yourself (eg calmness, confidence, self-esteem, etc) as a result of the rewind clinic?

Positive changes _____ No change _____ Negative changes _____

19. If yes, what were these changes?

20. Has there been any wider changes in your social or work life as a result of the rewind clinic? Positive changes _____ No change _____ Negative changes _____

21. If yes, what were these changes?

22. There is a relatively long wait for specialist trauma treatment. Do you think we should continue to offer the rewind clinic as a faster access to brief specialist help when people are struggling with the effects of a traumatic event? Yes _____ No _____

23. Please tell us any further comments that might be helpful to us in evaluating the **rewind trauma clinic** (feel free to continue writing on an separate piece of paper):

Please write your contact email or address if you would like a summary of the results:

Many thanks for your time. Shona

Appendix Q. Information letter and consent form.

20 June, 2012

Dear

We are doing an evaluation of the **rewind trauma clinic** and would appreciate your feedback! This information will help plan the best possible treatments for people in the future.

The questionnaire is not anonymous because if you have any unmet needs, then we make sure that these are followed up. It also helps us link your responses to the treatment session and the questionnaire that you completed at the beginning of the treatment session. Your answers will also not affect any treatment you will receive in the future.

All of the information will be anonymised when it is taken from the questionnaires and there will be no references to specific individuals in the evaluation. This means that there will be no way that you or your responses will be able to be identified by anyone else.

If you complete and return the questionnaires, it will be assumed that you are happy to take part. If you would like to receive a summary of the results of this evaluation, please include your contact details on the form so that we can email or send you the results in the post.

If you have any questions or would like help filling out the form, please call 07717361179.

Please could you fill out both sheets and return in the self-addressed envelope as soon as possible.

Many thanks.

Yours sincerely,

Shona Adams
Highly Specialised Clinical Psychologist

Appendix R. Service outcomes and pre-treatment severity and a detailed breakdown of IES-E scores.

Table 1. Service outcomes and pre-treatment severity.

Service outcomes	<i>N</i> = 27	Pre treatment IES-E scores
No information	1 (4%)	86
No further treatment	10 (37%)	
Discharge, no further treatment needed	8	31, 44, 47, 54, 68, 78, 79, unknown
Treatment declined	2	58, 58
Discharged, referred to other services	10 (37%)	
IAPT	3	67, 71, 72
Neuro Rehabilitation	2	72, 90
Sexual Abuse Counselling Service	2	75, 86
Out of area	2	57, unknown
Heart specialist	1	86
Further treatment in recovery team	6 (22%)	64, 76, 78, 80, 86, 87

Table 2. Service outcomes and a detailed breakdown of IES-E scores.

	< 50	51 - 60	61 - 70	71 - 80	81 - 90	Unknown
No information					1	
No further treatment	3	1	1	2		1
Discharged to other services for treatment		1	1	4	2	1
Further treatment in recovery team			1	2	3	

Appendix S. All comments in the case-notes from other professionals on the impact of the Rewind Clinic on the service users.

Positive quotes:

"No further psychological treatment needed. There is considerable improvement in (*their*) mental state. Brighter and more energy to do things. Feels better and able to deal with (*their*) thoughts. Ready to do voluntary work" (multiple traumas; 5+ years; IES-E:79)

"Doing well, no negative thoughts of self harm, some flashbacks continue, but much less than before, and (*they*) can cope better, socialisation improved, looking after (*themselves*), says rewind helped" (single trauma; 5+ years; IES-E:64)

"Doing better, not so many intrusive thoughts from past" (multiple traumas; 5+ years; IES-E:67)

"Rewind helped slightly, wants more treatment" (multiple traumas; 5+ years; IES-E:75)

Mixture:

"Day after, felt calmer, no suicidal thoughts, not depressed; but it had left (*them*) numb, ...then (*they experienced a new trauma*), and then (*they*) felt (*they*) had not benefitted from rewind" (multiple traumas; 5+ years; IES-E:87)

"Memories from past bothered (*them*) again after (*new contact with the abuser*)" (multiple traumas; 5+ years; IES-E:80)

"Still difficulty with sleep. Calmer, no negative thoughts, no thoughts to harm others" (multiple traumas; 5+ years; IES-E:86).

Negative comments:

"(*They*) said nothing had really changed" (multiple traumas; 5+ years; IES-E:58)

"Still struggles with flashbacks and nightmares, ...depression," (multiple traumas; 6 months-5 years; IES-E:90)

Note. Comments in italics have been modified to maintain anonymity.

Appendix T. Additional individual examples from the SEQ and case-notes.

Case A.

A service user who indicated that they did not need any further treatment after the one Rewind treatment session had chronic PTSD with multiple traumas. Their IES-E scores improved from 78 to 34. They felt that some of their improvements had happened gradually over the year, and that they no longer needed further treatment. Qualitative comments indicated that learning to relax and focussing more on the positive than the negative was most helpful. The panic attacks stopped straight after the treatment, and they described gradually feeling stronger and more confident as they tried new things.

Case B.

Another service user was treated for fatal fires, bombings, and traumatic deaths in the one session, had an IES-E score of 79 and a diagnoses of PTSD, depression and anxiety, but did not need any further psychological treatment after the single Rewind session.

Case C.

A more detailed look at the questionnaire responses for the service user who felt they needed further treatment did not receive it revealed that in spite of multiple traumas, including bombing and traumatic bereavement. They only wanted one more treatment session to help plan for the future. The IES-E scores that improved from 47 to 39 supported this. Qualitative comments indicated that they felt that their flashbacks and nightmares especially had eased and reported feeling more in control of their panic attacks.

Appendix U. Qualitative comments suggesting some of the post-treatment IES-E scores were related to more recent traumas rather than the traumas treated.

One service user wrote about how their symptoms had improved, but that new traumas after the treatment had made them feel worse, which was reflected on their post-treatment IES-E scores, even though this was not the trauma that had been treated.

Another wrote that continued difficulties were due to their personality disorder and not trauma (referring to completing the post-treatment IES-E questionnaire).

A third person wrote about how they felt re-traumatised following an unexpected recent contact with their abuser and that this had triggered symptoms again since the treatment.

These responses indicate that several people may have incorrectly filled out the form rating more recent traumas instead of the initial traumas that were treated, and the post-treatment IES-E may therefore be under-estimated. While the post-treatment IES-E scores are in the right direction to support the initial hypothesis, they are not all an accurate reflection of the effectiveness of this treatment on the trauma(s) that were treated, and therefore cannot be relied on to be the only source of information on the effectiveness of the treatment.

Appendix V. Thematic results for changes in symptoms, changes within themselves, and changes to their social and work life as a result of Rewind.

Theme	Number of comments	Case numbers
Changes in symptoms		
Positive		
Flashbacks and nightmares reduced	4	1,2,5,9
Able to relax	2	6,7
Sweating reduced	1	5
Removed raw fear	1	4
Negative		
Flashbacks, nightmares, pain, sweats increased	1	8
Scary no longer having fear that they had all their life	1	4
Changes within themselves		
Positive	6	1,3,4,5,6,9
Able to do more things/increased confidence	2	1,6
Self-esteem	2	3,6
Realised self-destructive thoughts	1	4
Hope	2	4,6
Calmness	2	1,5
More in control	1	9
Negative		
Increased anxiety	1	8
Changes to their social and work life		
Positive		
More sociable and talk confidently	2	3,6
More active	1	3
No more panic attacks	1	6
Negative		
More tearful	1	8
Other		
Current difficulties have other causes	1	4
Symptoms getting worse due to more recent events	1	2

Appendix W. Thematic results about what was helpful and unhelpful about the care coordinator attending the session.

Theme	Number of comments	Case numbers
Benefits of care coordinator in session		
Support helpful	2	1,4
Knowledge of client	1	8
Helped to feel more comfortable	1	6
Negatives about care coordinator in session		
Too embarrassing to have more than one per	1	2
No need for care coordinator to be there	1	3
Other		
Wasn't given the option but would have liked them there	1	7

Appendix X. Care coordinator attendance and trauma variables.

Trauma variables	Attended	Did not attend	Unknown
Time since trauma			
Less than 6 months (<i>n</i> =2)	2 (100%)		
6 months – 2 years (<i>n</i> =4)	2 (50%)	2 (50%)	
2 years-5 years (<i>n</i> =2)	2 (100%)		
More than 5 years (<i>n</i> =19)	9 (47.4%)	8 (42.1%)	2
IES-E scores			2
Less than 50 (<i>n</i> =3)	1 (33.3%)	2 (66.7%)	
50 – 60 (<i>n</i> =4)	3 (75%)	1 (25%)	
61 –70 (<i>n</i> =3)	3 (100%)		
71 – 80 (<i>n</i> =8)	3 (37.5%)	5 (62.5%)	
81 – 90 (<i>n</i> =5)	3 (60%)	2 (40%)	
Number of traumas			
Single trauma (<i>n</i> =8)	5 (62.5%)	2 (25%)	1
Multiple traumas (<i>n</i> =19)	10 (52.6%)	8 (42%)	1

Appendix Y. Thematic results about discussing the trauma in detail.

Theme	Number of comments	Case numbers
Positives about talking in detail		
To communicate a more complete picture	3	4,7,9
Can see it could be useful for others	2	2,3
Felt better talking openly about it	1	7
Negatives about talking in detail		
Can be too difficult	3	1,2,4
Can be humiliating and embarrassing	1	2
Need a longer relationship to be able to talk i	1	2
Other		
Had complete assessment, so didn't need to	1	6
Ambivalence about discussing in detail	1	4
Other needs weren't addressed in one session	1	8

Appendix Z. Discussing trauma in detail, demographics, and trauma characteristics.

	Don't want to discuss in detail, and difficult to attend if needed to	Wanted to talk in detail	Want to discuss in detail but wont affect attendance
Age	20, 26, 28, 52	33, 49	40, 40, 49
Gender	M, F, F, F	M, F	M, F, M
Severity of symptoms	58, 72, 78, unknown	57, 72	47, 76, 86
Single (S) or multiple (M) traumas	S, M, M, M	S, S	M, M, S
Chronicity (years)	5+, 5+, 5+, 5+	<0.5, 5+	0.5-2, 2-5, 5+

Appendix AA. Attendance, wanting to discuss trauma in detail, and type of trauma.

Response of SEQ	Type of trauma
Easier to attend treatment if don't need to discuss trauma in detail	
Didn't want to discuss in detail	Fatal RTA (was the driver and killed friend)
Didn't want to discuss in detail	Emotional abuse (father)
Didn't want to discuss in detail	Abusive relationship (partner)
Unknown	Multiple abuse in mental health service (physical, emotional and sexual abuse)
Not easier to attend treatment if don't need to discuss trauma in detail	
Only wanted to discuss a little	Unknown trauma
Wanted to discuss in detail	Work injury to head
Discussing trauma in detail not applicable for attending treatment	
Wanted to discuss in detail	Multiple assaults (at school)
Wanted to discuss in detail	7/7 bombing, husband's death from cancer
Wanted to discuss in detail (but also ambivalent)	RTA

Appendix AB. Thematic results for comments about the Rewind Clinic.

Theme	Number of comments	Case numbers
Acceptability of the Rewind Clinic		
Made their life better	7	1, 2, 3, 4, 5, 6, 7
Improved life and/or symptoms	4	2, 4, 6, 7
Saw event(s) more helpfully	2	1, 5
Helped open up	2	3, 7
Liked the treatment	4	2, 3, 4, 9
Treatment was appropriate	3	3, 4, 9
Quick access	1	2
Individual session	1	3
Did need further treatment	3	2, 7, 8
Any further comments about the Rewind Clinic		
Helped cope with life and thoughts	4	1, 2, 4, 6
Good treatment for trauma	4	1, 2, 4, 5
Important while waiting for further treatment	4	2, 7, 8, 9
Also need longer term treatment	3	2, 7, 8
Need follow-up	1	9

Note. Some participants made more than one comment in response to the questions in the SEQ.

Mandatory Appendices not referred to in the body of the thesis

Appendix AC. Chronology of Research Process

	Service evaluation	Empirical study	Literature review
Late 2008 - early 2009		Design empirical study	
March 2009 – March 2011		Inclusion period for new participants in the empirical study	
Jan 2011 – Oct 2011	Inclusion period for the service evaluation		
Oct 2011 – Aug 2012	Design of Service Evaluation Questionnaires and collection of data		
Sept 2012 - March 2013	Data analysis of service evaluation		
March 2013 – Oct 2013	Write up for service evaluation		
Sept 2013 – Feb 2014		Empirical study data extraction and analysis	
Feb 2014 – Sept 2014		Write up of empirical study	Plan literature review
Sept 2014 - Oct 2014			Scoping literature review
Nov 2014 – Dec 2015			Search and write up grey literature
Jan 2016 – July 2016			Literature review and meta-analysis
Aug 2016 – Sept 2016	Final review and submission	Final review and submission	Final review and submission

Appendix AD. Statement of epistemological position.

This research was conducted from an objectivist epistemological position, with the assumption that there is objective truth that is external to our mind and that it is possible to discover this truth. The positioning of the research can have an impact on the epistemological stance. This study was in a Situated position (Feast, 2010), as opposed to an Isolationist position, which means that the research design was positioned in a comparative and competitive environment and therefore needed to find commonalities within the academic community. This meant that a positivist epistemological position needed to be adopted, which assumed that only facts derived from scientific method could make claims of legitimate knowledge. This was reflected in the use of standardised questionnaires, benchmarks and effect sizes.

Constructs explored from this perspective were therefore measurable using quantitative methods. They included symptom severity, satisfaction with life, and acceptability of treatment. The standard construct in assessing efficacy of psychological treatment is symptom severity, in which predetermined symptoms are usually categorised in terms of frequency. This study also measured more subjective constructs such as satisfaction with life and ratings of acceptability.

The measurement of treatment efficacy using effect size was a reductionist approach, with an assumption that an average score could be a representation of the whole sample. On the other hand, measuring individual change using recovery rates and reliable improvement reflected a more subjective stance and acknowledgement of individual differences and responses within the sample. The researcher assumed the more subjective approach that represented individual differences might be a more accurate and more helpful representation of efficacy, but chose to represent both positions due to the Situated position of the design.

Thus, from within an objectivist epistemological position this study had subjective stance but needed to maintain a more reductionist approach due to the study's Situated position. As such, it could be argued that the meta-epistemological position was one of constructionism, which acknowledged that different researchers in different settings could have differing constructions of the same phenomenon. This constructionist approach enabled the researcher to question some of the traditional assumptions of the scientific method, such as the use of effect size and RCTs being the gold standard design and explore some alternative approaches. Hence, this stance then led to the use of the within-subject design instead of randomisation, the additional use of more subjective measures, and the reporting of individual change in addition to effect size as a measure of efficacy.

Critique of epistemological stance

While it was acknowledged that this epistemological stance, in which objectivism and positivism positions were adopted, was required due to the Situated position of the research in the academic world, there are several inherent contradictions in this epistemological stance. Objectivism has been criticised because concepts can be confused with universal truths and for its inability to deal with facts that do not fit into the 'truth' because there is seen to be one objective truth (Bass, 2001). However, this position was in the broader context of constructivism, in which

there is an implicit acknowledgement that our construction of the world is based on our experiences, goals and expectations and that there may be more than one way to define our reality.

A criticism of positivism and its reliance of the scientific method in social sciences is Weber's doctrine that it is value-free (Weber, 1949, cited in Keat, 2013). While questioning the reductionist view of using effect sizes to evaluate the efficacy of treatment, it could be argued ironically that by considering the within-subject design a different reductionist approach was adopted through attempting to reduce people's experiences of a particular treatment using standardised measures. Even from a constructivist position we are still defining the world of others' views based on how we see the world (von Glasersfeld, 2000). The method of measuring was affected by the researcher's experience, values and social setting. Thus the choice of measurement of the participants' experience of treatment was based on the researcher's values and Situated position rather than asking the participants about the most meaningful way of measuring their experiences.

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Appendix AE. Guidelines for authors for the British Journal of Clinical Psychology.

The British Journal of Clinical Psychology publishes original contributions to scientific knowledge in clinical psychology. This includes descriptive comparisons, as well as studies of the assessment, aetiology and treatment of people with a wide range of psychological problems in all age groups and settings. The level of analysis of studies ranges from biological influences on individual behaviour through to studies of psychological interventions and treatments on individuals, dyads, families and groups, to investigations of the relationships between explicitly social and psychological levels of analysis.

All papers published in The British Journal of Clinical Psychology are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF).

The following types of paper are invited:

- Papers reporting original empirical investigations
- Theoretical papers, provided that these are sufficiently related to the empirical data
- Review articles which need not be exhaustive but which should give an interpretation of the state of the research in a given field and, where appropriate, identify its clinical implications
- Brief reports and comments

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The word limit for papers submitted for consideration to BJCP is 5000 words and any papers that are over this word limit will be returned to the authors. The word limit does not include the abstract, reference list, figures, or tables. Appendices however are included in the word limit. The Editors retain discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length. In such a case, the authors should contact the Editors before submission of the paper.

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All manuscripts must be submitted via Editorial Manager. The Journal operates a policy of anonymous (double blind) peer review. We also operate a triage process in which submissions that are out of scope or otherwise inappropriate will be rejected by the editors without external peer review to avoid unnecessary delays. Before submitting, please read the terms and conditions of submission and the declaration of competing interests. You may also like to use the Submission Checklist to help you prepare your paper.

4. Manuscript requirements

- Contributions must be typed in double spacing with wide margins. All sheets must be numbered.
- Manuscripts should be preceded by a title page which includes a full list of authors and their affiliations, as well as the corresponding author's contact details. A template can be downloaded from [here](#).
- The main document must be anonymous. Please do not mention the authors' names or affiliations (including in the Method section) and refer to any previous work in the third person.
- Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript but they must be mentioned in the text.
- Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi. All figures must be mentioned in the text.
- All papers must include a structured abstract of up to 250 words under the headings: Objectives, Methods, Results, Conclusions. Articles which report original scientific research

should also include a heading 'Design' before 'Methods'. The 'Methods' section for systematic reviews and theoretical papers should include, as a minimum, a description of the methods the author(s) used to access the literature they drew upon. That is, the abstract should summarize the databases that were consulted and the search terms that were used.

- All Articles must include Practitioner Points – these are 2–4 bullet points to detail the positive clinical implications of the work, with a further 2–4 bullet points outlining cautions or limitations of the study. They should be placed below the abstract, with the heading 'Practitioner Points'.
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- In normal circumstances, effect size should be incorporated.
- Authors are requested to avoid the use of sexist language.
- Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright. For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

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These allow publication of research studies and theoretical, critical or review comments with an essential contribution to make. They should be limited to 2000 words, including references. The abstract should not exceed 120 words and should be structured under these headings: Objective, Method, Results, Conclusions. There should be no more than one table or figure, which should only be included if it conveys information more efficiently than the text. Title, author name and address are not included in the word limit.

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Addendum

Addendum

Handout given at the HG Annual Conference

Accompanying the presentation

**ARE COGNITIVE DISTORTIONS MUCH MORE IMPORTANT
THAN YOU REALISED?**

Given by Shona Adams

Sunningdale, UK, 2010.

ARE COGNITIVE DISTORTIONS MUCH MORE IMPORTANT THAN YOU REALISED?

By Shona Adams

Cognitive distortions have also been referred to by several names, including ‘thinking errors’, ‘faulty thinking’, and ‘mind traps’. It refers to the way our brain can distort information to give us an inaccurate view of the world. ‘Things always go wrong for me’, ‘I am a complete failure in everything’, ‘You can’t trust anyone’.

In CBT, these cognitive distortions have been identified by Beck in the 1980s. However, CBT treatment has tended to only involve labelling the distortions, and then addressing the resulting negative thoughts and behaviours without further reference to the distortions.

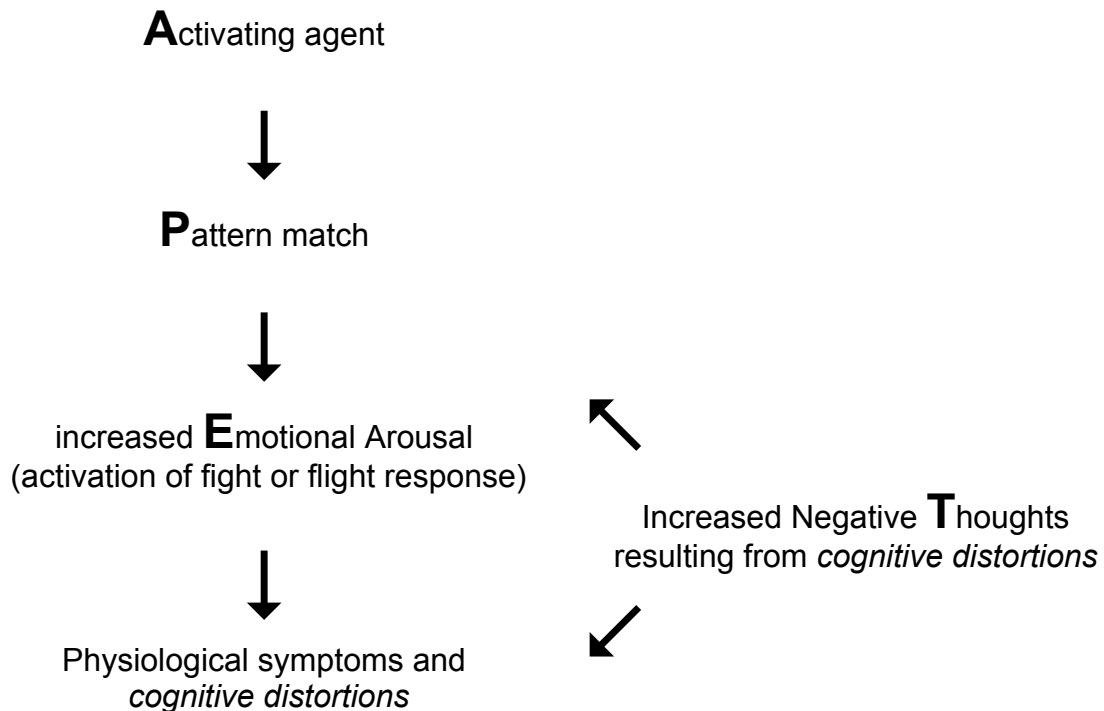
I have applied some basic principles of Human Givens (HG) theory to cognitive distortions, to provide greater insights into distortions and as a way of testing the validity of some of those HG principles; namely (1) the important role of emotional arousal (APET), (2) that our emotions have evolved to be adaptive and help us survive, and (3) that they have a biological basis. If there is validity to these principles, then they should be able to be applied to cognitive distortions. Apart from the obvious role in anxiety and depression (as seen in CBT), I will also be discussing their role in the formation of self-esteem and shattered beliefs in trauma. With regards to the theme of relationships, their role in social anxiety, irritability and anger, as well as co-dependency is mentioned. Their possible role in borderline personality disorder will also be discussed.

The therapeutic implications of the application of HG theory to cognitive distortions will be discussed, with practical suggestions for interventions. This includes examples of how to use the distortions therapeutically! I have also summarised how specific CBT techniques can help to correct individual distortions, thereby reducing the subsequent negative thoughts. I will also introduce a novel way of introducing this to clients to help them select which CBT technique might be most useful to them at that moment.

The role of emotional arousal

The HG theory uses the APET model to describe the interaction between emotional arousal and negative thoughts. Cognitive distortions are the link by which emotional arousal causes negative thoughts. In the HG model, the ‘Activating Agent’ is the trigger, usually sensory information, that comes into the thalamus. A ‘Pattern Match’ between the ‘activating agent’ and stored memories of perceived threat then occurs which activates ‘Emotional Arousal’. This activates the fight or flight response, which helps us respond more effectively to danger. The changes that happen to our body are well known, but lesser known are the changes that happen in our brains; cognitive distortions. These cognitive distortions distort the way we see things, leading to negative thoughts. These negative thoughts often lead to increased perceived threat, and hence increased emotional arousal. The thoughts can also trigger further pattern matches which can also trigger emotional arousal. Thus, cognitive distortions are a result of emotional arousal that in turn generates more emotional arousal through the negative thoughts. Thus, it could be argued that negative thoughts are the product of the distortions, and that to change the negative thoughts, one must decrease the distortions either directly or by reducing emotional arousal.

Diagram of the Human Givens Approach to Cognitive Distortions



Adaptive function of cognitive distortions

Strong emotions like depression, anxiety, anger and even falling in love have an adaptive response to help our survival. Our strong emotions, or heightened emotional arousal, triggers the fight or flight response to help maximize our chances of responding well to the situation. In the example of perceived danger, much is known about the physiological changes that help us run or fight danger, but much less has been understood about the role of cognitive distortions in this process. Cognitive distortions, like their physiological counter-parts, facilitate our successful escape from danger. Information is distorted to enable us to respond more efficiently and quickly to an emergency situation.

DESCRIPTION AND ADAPTIVE PURPOSE OF COGNITIVE DISTORTIONS

Black and white thinking

In **black and white thinking**, we see things in all or nothing terms. When we use words like 'always', 'everybody/all', 'never', 'nobody', etc we are probably using this distortion. If there is an element of doubt or 'grey' when we are emotional, we will see it in an extreme 'black' form. For example, if you see a lion in front of you, you may be perfectly calm if it is behind bars in a zoo. However, if there is any element of doubt about your safety, like the back gate being open, the emotional part of your brain will classify the grey as being black and your body will be ready to run from potential danger. If we were to react as if there was relatively little danger in this situation, which may well be the case if there is another gate too, our logical brain would be too busy calculating potential risk, which may prevent us responding quickly if necessary. So, if there is a potential threat and things aren't completely 'safe', our brain will categorise things in black and white terms to help us respond very quickly to danger, which may save our lives.

Perfectionism

When we do something in an emergency, it is important we do it right, or we could die, leading to the tendency for **perfectionism**. So, for example, if we are tying a knot in a rope to swing out

of danger, it is very important that we get that knot right or we could die! Perfectionism is also influenced by the black and white thinking distortion. Either something is completely perfect or else we react as if it is not worth anything at all. We are likely to be using a perfectionistic distortion if we use words like 'should', 'ought', and 'must', and therefore is sometimes called 'musterbation'. When we have this mindset, getting things perfect makes us feel good. However, because of the importance of getting things right, we may become very upset and find it difficult to tolerate situations that are not perfect.

Catstrophise

Related to black and white thinking is **catastrophising**, in which we act as if we know that the worst thing will happen. It is very adaptive for us to plan for the worst case scenario, as this may save our lives if it actually occurs. In high risk jobs, there is often a plan for dealing with worst case scenarios, as this can provide an important safety net to have in place which make us more able to relax and feel better. However, when we are emotionally aroused, we are more likely to believe that the worst situation will actually occur. Using the above example, it may be quite adaptive to be ready to run if we notice that a gate to a lion's cage is open, even if there is only a slim chance that it may be true!

Predicting the future

Predicting the future or 'fortune telling' is where we act as if we know what will happen. In order for us to react quickly to potentially dangerous situations, we need to assume we know what will happen. We do not have time to think through the factors that might affect the likelihood of this happening, as this would dangerously slow down our reaction time. Thus, if a lion is nearby, you might predict that it might want to eat you and get into your jeep without waiting to find out! Unfortunately, we are not actually able to predict the future - we would be very rich from winning the lottery!

Mind reading

Mind reading is a form of predicting the future, when we assume and act as if we know what the other person is thinking without them telling us. In a dangerous situation, it is important for us to predict what the other person is thinking, so that we can quickly take evasive action. So, if we meet someone with a knife on a dark street, we might read their mind and assume that they are intending to stab us and cross the road. We do not have time to consider the evidence as to whether or not that thought is actually true. While mind reading may be adaptive, if we think others are thinking badly of us, this may increase our perceived threat and make us more anxious or depressed.

Personalise

We are also more likely to **personalise** situations that might be unrelated to us, or take responsibility for things that are not under our control. Using the example of a lion, if we are in the wild and see some grass moving, we may wonder if the lion is behind it and relate the random event to ourselves. Similarly, we might take a random comment that we hear and assume that the person is talking about us.

Over-responsibility

The other aspect of personalising is that we might try to **take responsibility for things that are beyond our control**. It is sensible to try to change things around us to make us safer, and many of us try to control our environment or those around us as a way of managing our emotions to help us feel better. So, if we can influence our environment it may help us be safer or at least feel better. Unfortunately, we can only control what we do, say, or choose to dwell on. If we try to regulate our emotions by focussing on things beyond our control, we may feel more helpless or scared when we are not able to control those things. Thus, while personalising has an adaptive function, it can also inadvertently increase our emotional arousal.

Overgeneralise

HG recognises our ability to pattern match. **Overgeneralising** is taking one specific incident and responding as if that happens all the time or in all situations. We can pattern match from one

dangerous situation to another because very rarely is one danger absolutely identical to the next. If we have been hit by a bus in the past, that memory is stored so that when we see a different vehicle coming hurtling quickly towards us, a pattern match happens to our past experience and our body gets ready to run from the truck. However, because of pattern matching we may sometimes inaccurately **overgeneralise** and feel strong emotions in safe situations. For example, if I make a mistake on the computer, I might think that I am incapable of using computers!

Negative bias

When in danger, we have a tendency to scan for danger, focus on the negatives and potential danger, and block out the positives that may be irrelevant to helping us respond in the emergency. For example, if we know there is a lion out there, we will be focused on the potential danger instead of admiring the pretty butterflies and flowers! This is called a **negative bias**. As a result of the negative bias, we over emphasise the negative that often leads to increased perceived threat and stronger negative emotions. The trance-like state intense focus of attention in high emotional arousal, which helps us concentrate in an exam, enables us to have this negative bias.

Minimise coping resources

A side effect of the negative bias is **minimising our coping resources**. Because we are focused on the problem and not the solution, we will also block out the positive resources that we have, or examples of times when we have dealt well in similar situations. This can undermine our resources and make us underestimate our ability to cope.

Emotional reasoning

Finally, in an emergency the logical part of our brain inhibited. This is because the logical part of our brain is slower and will slow our responses down. The more emotionally aroused we are, the less logical we are! So, if we have not got full access to our logical thinking, what are we going to base our decisions on? All we have to rely on is our gut instinct or our initial thought., which we need to rely on without questioning it in order to respond rapidly to danger. This tendency to believe something, just because we think it or feel it, is called **emotional reasoning**. The inhibition of our rational thought when we are emotionally aroused has a very adaptive function. If you were walking along the pavement with a motorbike hurtling towards you, and your rational brain wondered what speed it might be travelling and what make it is, you may well get run over! As you will see, this inhibition has an impact on our distortions too.

Magical Thinking

Emotional reasoning and personalising can also lead to **magical thinking**. In this distortion, we believe that just because we have a thought that one of our behaviours might have caused an unrelated event, it must therefore be true. We may then invest much energy in doing those behaviours to prevent the disaster we fear. The more we try not to think of the thought, the more often it pops into our heads, further exacerbating the situation! So, if I flap my arms on the street corner to keep the dragons away, I may believe that there are no dragons because I have been flapping my arms, and feel compelled to continue flapping my arms. The more anxious I become if I am not able to flap my arms on the street corner, the more emotionally aroused I become. I will then not be able to see the situation very and become more anxious.

When emotional reasoning is combined with the other distortions it escalates our perceived threat. So, my perfectionistic and black and white distortions can lead me to think that either I can do salsa dancing perfectly or else I can't dance at all. The catastrophising will influence me to think the worst; that I will slip and fall over breaking my leg and front teeth. Mind reading will then cause me to think that I know that you are thinking the worst; that I can't dance at all. Generalising may cause me to think that you think I'm stupid and can't do anything because I can't dance. And emotional reasoning will dictate that because I think it, therefore it must be true! This is an example of how these distortions, which have an important adaptive function, can create havoc with our emotions. The more emotionally aroused we are, the stronger our distortions are.

POSSIBLE PHYSIOLOGICAL MECHANISMS CAUSING COGNITIVE DISTORTIONS

HG theory would postulate that high emotional arousal would be key in the biological mechanisms that produce cognitive distortions. Therefore there would have to be a plausible pathway for each of these distortions that involves high emotional arousal.

Possible biological mechanisms causing cognitive distortions support the HG theory that they are caused by emotional arousal. Much is known about the link between physiology and symptoms of emotional arousal on the body, but less is known about the link between physiology and the cognitive effects of emotional arousal. To understand the impact of emotional arousal, one needs to look at both the structural connections in the brain and their function, as well as the impact on the synaptic or cellular level. Only a few researchers like LeDoux (2002, 2003) have integrated both in their understanding, but even some of his theories are now outdated (Pessoa & Adolphs, 2010). I have put more detail than most people will need to know in this section for those who are interested, and everyone else can just read the sentence at the end of each paragraph!

When a potential threat is perceived, the amygdala activates the fight or flight response which gets the body physiologically ready for danger. The amygdala, among other things, triggers the adrenal gland to produce a stress hormone called cortisol, which then regulates the release of adrenalin. However, cortisol also makes changes in the areas important for memory such as the hippocampus, the amygdala, and the prefrontal cortex (PFC) to facilitate learning, storage of relevant information and promote behavioural change (Krugers, Hoogenraad & Groc, 2010) in response to threat. Interestingly, changes caused by cortisol are true for both imaginal and real experiences (Kessels & Malinau, 2009). However, the changes that facilitate new learning can also disrupt hippocampal activity and activity in the prefrontal cortex (LeDoux, 2003). Therefore, **the amygdala causes a stress hormone called cortisol to be released to help us respond to danger. But cortisol also has the effect of making the logical part of our brain (the prefrontal cortex) and the part involved with formation of memory and putting things into context (the hippocampus) not work properly, which I propose causes the distortions.**

Negative bias, minimising resources

Information from the thalamus biases attention towards threat (LeDoux, 2003). Visual cortical routes send connections from the pulvinar nucleus of the thalamus to the higher cortex (parietal, frontal, cingulate, orbitofrontal cortex, insular) as well as to the amygdala, and the amygdala also sends connections to those same higher cortical areas (Pessoa & Adolphs, 2010). The parietal lobe and the cingulate gyrus are two areas particularly involved with attention. The parietal region, namely the superior parietal lobe and the temporal parietal lobe, is involved in selective attention; disengaging and shifting attention to novel or unexpected stimuli (Posner & Fan, in press). More is on the cingulated gyrus below. The neurotransmitter pinephrine (NE) from the locus coeruleus in the midbrain sends alerting or warning signals, and acetylcholine (ACh) from the basal forebrain is important for orienting (Posner & Fan, in press). Thus, **both the thalamus and the amygdala help direct attention to potential threat** (LeDoux, 2002).

The anterior cingulate gyrus and the lateral prefrontal areas are involved in the executive attention network, which is involved in monitoring and resolving conflicting stimuli, pain, planning and decision making, error detection, novel response, and overcoming habitual actions (Posner & Fan, in press). The lateral prefrontal area acts as the working memory to enable these functions to occur and the anterior cingulate acts as the interface between the amygdala and the prefrontal cortex. The neurotransmitters involved in this process in both these areas involve the dopamine from the ventral tegmental area, with all the dopamine receptors being in layer V of the cingulate (Posner & Fan, in press). Only humans and great

apes have these unique cells in layer V of the anterior cingulate and the insula. The insula has a 'top down' impact by sending connections to the amygdala (LeDoux, 2003). Interestingly, in ADHD, attention is not activated in the anterior cingulate but in the insula, which does not involve stimuli conflict regulation, and in schizophrenia attention deficits are due to abnormalities in the anterior cingulate due to a shift in dopamine in D2 receptors, which are strongest in the Layer II of the anterior cingulate (Posner & Fan, in press). The anterior cingulate is also important in helping us see distress in others, developing conscience, and monitoring errors. I propose **that if the lateral prefrontal area is not functioning efficiently due to high levels of cortisol, then our brain would not be able to correct the errors that responding to threat and therefore not attending to the positives, including our resources.**

When the amygdala detects threat, it not only influences the processes mentioned above to be hypervigilant and help direct attention to threat, but also has connections to the working memory in the hippocampus in a vigilant state, causing it to attend to threat, thereby biasing our thoughts and actions (LeDoux, 2002; LeDoux, 2003). **The amygdala therefore also biases the types of working memories in the hippocampus.**

Over-generalise

LeDoux (2003) describes a 'high road' of cortical pathways that are detailed but slow, and another pathway he refers to as the 'low road' of subcortical pathways which are simpler but much quicker. However, Pessoa & Adolphs (2010) have argued that a model of 'many roads' might be more accurate. Both acknowledge that the higher cortex, including the prefrontal cortex, is involved in the recognition of detailed visual stimuli. With regards to visual stimuli, Pessoa & Adolphs (2010) implicate the pulvinar region of the thalamus to be important in emotional processing of visual stimuli and describe waves of coarse to finer details being relayed in waves to the amygdala. I propose that **if the prefrontal cortex is inhibited by cortisol once the amygdala has been activated, finer details of the object might therefore not be transmitted when the conditioned fear response is formed, which explain how over-generalising might occur.**

In addition, the hippocampus provides the context for learning and remembering things (LeDoux, 2003). **If the hippocampus is dysfunctional due to excess cortisol, we will not have the specific context consolidated, making us more prone to overgeneralising.**

Black and white thinking, perfectionism

Although LeDoux's (2003) quick and dirty 'low road' pathway has been called in question, particularly relating to visual stimuli (Pessoa & Adolphs, 2010) if the logical prefrontal cortex is inhibited due to stress, it will find it difficult to logically fine tune the 'grey', and are more likely to see things in terms of 'black or white'. LeDoux (2003) discusses research on visual pathways shows that small non-cortical pathways from the retina to the superior colliculus, represents the quick route that is not very discerning and produces the startle response and quick reactions. Thus, **during arousal our brain will decide if we are in danger or not, but because of cortisol, we will not have access to the finer details from the higher cortex which help us to identify the grey areas.**

Perfectionism and minimising our ability to cope are both a form of black and white thinking; either things are perfect or they are useless/rubbish; either we cope perfectly or we can not cope at all.

Catastrophising, predicting the future,

Catastrophising and predicting the future, or fortune telling, are all related. In research on mindfulness, Brown found the midcingulate cortex kept our attention focused on the present rather than anticipating future events. Again, if this part of our brain was inhibited, we would be more likely to anticipate future events, or predict the future. LeDoux (2003) suggested that

the prefrontal cortex was also involved in planning. LeDoux (2002) noted that the amygdala was involved with actual threat while the nucleus of the stria terminus is involved in anticipated threat, and it has similar connections as the amygdala in triggering the body's response to danger. **If the prefrontal cortex is inhibited, would be less likely to correct errors and would become increasingly difficult to differentiate between what is slightly possible and what is probable when predicting the future.**

In addition, if we also had the tendency to see things in terms of black or white because of high arousal, then we might have more of a tendency to catastrophise, or predict the worst when we are predicting the future.

Personalise and mind reading

With regards to personalising, the amygdala and ventromedial prefrontal cortex were involved in judgments of self-reference, with the ventromedial prefrontal cortex having an inhibitory effect on narrative self-reference (Farb *et al.*, 2007). Thus, **when the prefrontal cortex is inhibited by cortisol, it would not be inhibiting our natural tendency for self-reference making us more prone to personalising.**

Another possible mechanism for mind reading, or predicting that we know what others are thinking or doing, comes from mirror neurons. The parieto-frontal mirror circuit, in which actions we see are understood from our own perspective, or from the 'inside' as a motor perspective rather than from an observed perspective (Rizzolatti & Sinigaglia, 2010). This means that while observing someone else's actions, mirror neurons act as if we are doing the action to help us understand it. Mirror neurons of the temporal lobe are stimulated when we see others having similar emotions to us, which helps us experience empathy for others. Similarly, mirror neurons of the parietal cortex, mentioned above, help us understand and predict the actions of others (Rizzolatti & Sinigaglia, 2010). The parieto-frontal mirror network is under the control of the ventral prefrontal cortex (Rizzolatti & Sinigaglia, 2010). Taken together, **mirror neurons help us to 'enter the mind' of another, and without the logic of the cortex to remind us that we might not actually know what other's intentions are without evidence, we would be prone to believing we know what others are thinking.**

The state of focussed attention on threat, described above, particularly on material that is personally relevant may also help to explain our tendency to personalise situations when we are highly aroused.

Emotional reasoning

Haynes, Sakai, Rees, Frith and Passingham (2007) found that activity in the medial and lateral regions of the prefrontal cortex are responsible for processing actions before we are consciously aware we have made those decisions. In fact, research shows that we make a decision have a second before we are aware we have made it (Soon, Brass, Heinze, & Haynes, 2008)). The dorsolateral prefrontal cortex gives the subjective experience of when to act, but it is really the posterior parietal cortex that is implicated in intention to act (Spence & Frith, 1999). As we have seen, the anterior cingulate and the lateral prefrontal cortex are involved in decision making, planning, correcting, and prioritising (Posner & Fan, in press). It is the role of the cortex to inhibit inappropriate responses rather than initiate appropriate ones (LeDoux, 2003). However, **if the prefrontal cortex is inhibited, then our decisions will be made without the choice or reasoning from the higher cortical evaluations, and so the automatic responses and 'emotional reasoning' will occur.**

How does cortisol stop the prefrontal cortex, the hippocampus and the amygdala from working?

The amygdala activates the paraventricular nucleus of the hypothalamus (PVN) which releases corticotropin-releasing hormone (CRH) into the pituitary gland, which in turn

releases releases adrenocorticotrophic hormone (ACTH) into the blood stream that stimulates the adrenal gland to stimulate a slow release of cortisol into the blood stream (Krugers, Hoogenraad, & Groc, 2010). Cortisol is also released in response to circadian rhythms. Cortisol acts to inhibit the production of noradrenalin by binding to receptors in the hippocampus, but this also has the effect of disrupting hippocampal activity. When sufficient numbers of receptors in the hippocampus are occupied, signals are sent to hypothalamus to stop it producing CRF corticotropin-releasing hormone, which causes the pituitary gland to stop releasing ACTH, which in turn stops the adrenal gland producing the stress hormones called cortisol and noradrenalin (LeDoux, 2002). Thus, **the amygdala causes cortisol to be released in order to regulate stress hormones.**

Cortisol initially facilitates long term potentiation (LTP) in the hippocampus (Krugers *et al.*, 2010). For LTP, or subconscious learning, to occur glutamate in the gaps between the neurons (synapses) opens NMDA receptors (like gates) on the receiving neuron (or postsynaptic neuron), which allows calcium to enter the receiving neuron. Calcium is positively charged, and therefore builds a positive charge in the neuron. Once the right electrical strength has been reached (called the 'action potential'), the neuron will 'fire' (or send its message). We have other receptors called GABA receptors to regulate or inhibit the firing of neurons, so they are firing indiscriminately! GABA receptors let chloride, which is negatively charged, in to the neuron. Active GABA receptors therefore mean that the neuron will be more negatively charged, and will therefore need a stronger signal (ie a lot more glutamate to let the positively charged calcium in). to get the neuron to the right electrical charge to fire.

Cortisol activates mineralocorticoid receptors (MRs) and glucocorticoid receptors (GRs), the latter in the synapses in the areas important for memory such as the hippocampus, the amygdala and the prefrontal cortex (PFC) (Krugers *et al.*, 2010). MRs don't need much cortisol to be activated and are therefore generally activated. They cause glutamate to be released by the presynaptic neuron via the stimulation of miniature excitatory postsynaptic currents (mEPSC), and the glutamate is essential for LTP to occur. They help to create new glutamate receptors from a pool inside the cell in a process called exocytosis, and can take a receptor from the wall and put it back into the unused pool inside the cell through a process called endocytosis. This doesn't happen at the synapse (by the gap between neurons) but further down the cell wall. MRs also move two types of glutamate receptors (GluA1 and GluA2) laterally from where they are being created or decommissioned to the synapse where they can be used. Thus, through MRs cortisol can increase the number of GluA2 receptors after LTP, and therefore consolidate learning. GluA2 have been reported to promote spine formation (ie extending the synaptic parts of the neuron), which provides a long term structural store and an increase in the capacity to store information. In times of stress, cortisol, through the MRs, triggers the release of more glutamate and creates more glutamate receptors to receive the glutamate in the post-synapse. This then allows information to be rapidly encoded through the AMPA receptors. MRs allow behavioural reactivity to new situations, appraisal of information and response selection (all from Krugers *et al.*, 2010). Cortisol also affects the ability of GABA to inhibit glutamate (LeDoux, 2002) by initially increasing the amount of glutamate in the synapse and increasing the amount of AMPA receptors. **Through MRs, cortisol therefore facilitates LTP, or unconscious learning, through the production of glutamate and increases the synaptic strength by increasing the available AMPA receptors.**

According to Krugers *et al.* (2010), the GR receptors require 10 fold more cortisol to be activated than the MRs, and so are only activated during stress. Their impact is longer lasting genomic actions (i.e. changing proteins to make changes in the cell) and tend to affect the GluA2 and GluA3 glutamate receptors. GRs move the GluA2 receptors away from the synapse, thereby deactivating them **and preventing LTP and facilitate long term depression (LTD)**, which is involved in extinction and affects memory retrieval. Decreased LTP and increased LTD weaken the synapse and is also important in the encoding and

maintenance of relevant information. These changes can occur up to 24 hours after cortisol levels have dropped. Krugers *et al.* (2010) have proposed that after hyperpolarisation, changes in glutamate transmission may interfere in the ability to subsequently evoke LTP. A stronger signal is then needed to fire the neuron. I propose **that the effect of GRs response to cortisol on decreasing LTP, increasing PTD and requiring stronger signals to fire the neuron may be the mechanisms by which cortisol inhibits the firing of neurons and hence inhibits the functioning of the prefrontal cortex and hippocampus.**

Norepinephrine and corticotropin-releasing hormone (CRH) are known to produce synaptic plasticity which enhances the effects of cortisol on the synapses in the areas important for memory such as the hippocampus, the amygdala and the prefrontal cortex (Krugers *et al.*, 2010). These could enhance the initial positive effects of cortisol on LTP (or learning).

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ROLE OF COGNITIVE DISTORTIONS

Role in the formation of low self-esteem

When we have negative experiences, there is often a perceived threat and the fight or flight response is activated with the cognitive distortions. When we are emotionally aroused, we are also in a state that facilitates learning. The adaptive function of this is that we are more likely to learn in dangerous situations, which could save our life in the future.

When we have very negative experiences in our childhood, the cognitive distortions are activated by the emotional arousal. This means that when our beliefs about ourselves, others and the world are being formed, we are more likely to see things in terms of all or nothing instead of how they really are; believe the worst about ourselves or others; personalise and blame ourselves; have perfectionistic or unrealistic expectations; over generalise and make global (usually negative) statements about ourselves or others; we may pay attention to the negative experiences, which would further strengthen our negative beliefs; minimising our coping strategies making us less confident and try fewer things; and finally, because we think these things, emotional reasoning leads us to believe that they must be true! Because we are also in an emotionally aroused state that facilitates learning in these negative experiences, we are more likely to establish beliefs in these situations. These beliefs are based on distortions and are therefore more likely to be inaccurate and unhelpful.

Conversely, if we have powerful positive experiences as a child, we are more likely to have distortions that emphasise our positive qualities and promote high self-esteem. This explains one of the mechanisms by which both positive and negative beliefs are likely to be formed from our early experiences.

Role in the formation of shattered beliefs after severe trauma

As above, it is the high emotional arousal in a trauma while experiencing distortions that makes new unhealthy beliefs likely to be formed then. This can occur when a person has had normal beliefs previously. For example, after a severe car accident one could believe that it is extremely dangerous to ride in a car because one can't guarantee it is completely safe (black and white thinking, predicting the future and catastrophising), when prior to the accident they believed that they were safe in a car.

Borderline personality disorder (BPD)

It is well known that people with borderline personality disorder often have traumas in their childhood. They also seem to have a more reactive physiological response to stress. Their underlying beliefs and assumptions on which their behaviour is based were formed during high emotional arousal, and would have been affected by cognitive distortions. As a result of these distortions, these assumptions and beliefs are more likely to be inaccurate and dysfunctional. Understanding the role of cognitive distortions can be useful in helping to correct maladaptive beliefs and assumptions. Teaching emotional regulation, or strategies to reduce emotional arousal is important for this group of people.

Role of distortions in relationship difficulties

In situations of strong emotions, like conflict, it is easy to see how cognitive distortions can make things seem worse than they really are and can polarize people, exacerbating and intensifying the conflict. Underlying rules that are based on distortions can make people more vulnerable to things like assertiveness difficulties and co-dependency (when they personalise and therefore don't look after their own needs because they are over-responsible for the needs of others). Finally, in affairs the distortions based on the strong emotions facilitate not fully seeing the consequences of actions, blocking out the negatives to focus on positives etc.

THERAPEUTIC IMPLICATIONS OF THE HG THEORY OF COGNITIVE DISTORTIONS

Reduce emotional arousal

According to the HG theory of cognitive distortions, it is emotional arousal that is causing them, so any technique that helps reduce emotional arousal should help to reduce the negative thoughts that result from the distortions.

In HG treatment, there are many powerful techniques, such as Rewind, Molar Memory treatment, the effective use of our imagination, the use of language to reduce emotional arousal. Rewind helps to reduce emotional arousal caused by traumatic or frightening experiences. Lowered emotional arousal from these events means that there will be fewer distortions and unwanted intrusive thoughts. Updating memories is helpful in shifting unhelpful beliefs and shame. Various relaxation strategies, including 7/11 or controlled breathing reduce emotional arousal. Other specific techniques such as the use of the observing self and stimulate logical, rational thinking, which in turn can inhibit emotional arousal. Recent mindfulness strategies encourage us to observe our thoughts and disregard them. Some reframing techniques, and use of metaphors and storytelling can help us observe our situation from a different perspective. The process of observing in itself detaches us from the experience somewhat, thereby facilitating the reduction of emotional arousal, which would in turn reduce the cognitive distortions. In addition, by observing the negative thoughts, we are to some extent disregarding the implications of these distortions and not reacting to them. This helps to prevent the cycle of the negative thoughts which are a result of the emotional arousal generating further emotional arousal, cognitive distortions and escalating negative thoughts.

According to HG theory, unmet emotional needs lead to high emotional arousal. Emotional needs include the need to feel safe and secure, to have a sense of autonomy and control over our life, to have appropriate attention, to have significant emotional connection to someone else, to be connected to the wider community, to have time and space to reflect and consolidate our experiences, to have a sense of status and be accepted and valued, to have a sense of our own competence and achievements, and to be stretched and have a sense of purpose or meaning. Emotional arousal, or strong emotions have the original purpose/function to help to motivate us to take action to get these needs met. When these needs are better met, our emotional arousal reduces and so do our distortions.

More recent **mindfulness** strategies encourage us to observe our thoughts and disregard them. The process of observing in itself detaches us from the experience somewhat, thereby facilitating the reduction of emotional arousal, which would in turn reduce the cognitive distortions. In addition, by observing the negative thoughts, we are to some extent disregarding the implications of these distortions and not reacting to them. This helps to prevent the cycle of the negative thoughts which are a result of the emotional arousal generating further emotional arousal, cognitive distortions and escalating negative thoughts.

Thus, HG treatment techniques some CBT techniques focus more on reducing emotional arousal that produces distortions. As arousal is reduced the distortions are also reduced, so there are fewer negative thoughts. Reduced negative thoughts mean fewer triggers for potential threat (pattern match) and subsequent emotional arousal. Thus, HG theory suggests that any technique that is effective in reducing arousal should reduce cognitive distortions. However, in themselves all of these techniques may not affect the underlying beliefs that were created as a result of distortions. This could be one of the ways that these techniques are effective.

While CBT techniques are mostly focussed on changing negative thoughts, many of them actually correct some of the specific distortions. So, even if there is high emotional arousal, there are CBT and HG techniques that can help to correct the distortions, reducing the resulting negative thoughts and therefore reducing the arousal that produces the thoughts (see handout and end of booklet).

Using cognitive distortions therapeutically

Explaining and normalising

This understanding of cognitive distortions can help clients better understand their adaptive function, which can be helpful in normalising people's distressing experiences. Also, it can help to make sense of why you might be asking them to try certain things that could help to reduce their arousal. This is particularly true if their symptoms are more thought than somatic (physical symptoms) based.

Briefly explaining that distortions occur when we are very emotional and the effect of distortions have on negative thoughts and arousal can help people to understand others. It can help people understand some of their partners, children, other family members or colleagues during conflict or high levels of stress, and help them understand the importance of calming the other person down (eg 'white tissue technique'). It may help them to personalise less if that is appropriate. It can also help them to see that their view of the situation may not be completely accurate if they are looking through the distortions too. They may then be more open to alternative ways of looking at the situation.

Understanding this principle of how dysfunctional schema are formed in low self-esteem can be quite helpful in enabling the person to see how their beliefs may not be an accurate reflection of reality. This, in itself, can help people who have very entrenched beliefs to be more willing to adapt or start to shift their beliefs to a more adaptive, accurate and balanced perspective. The great news is that it is not all doom and gloom; nature has also given us the resources to be able to correct these distortions!

We can actually use the distortions therapeutically!

A counter-conditioning technique, used in HG as part of the treatment for addictions and compulsions, uses catastrophising and predicting the future to intensify the perception of the negative consequences of the undesired behaviour. Emotional arousal is also intentionally increased to facilitate new learning/conditioning of the negative consequences of the thought or action.

Use of metaphor and storytelling uses our brains ability to overgeneralise, or pattern match. These techniques are particularly helpful in overcoming unconscious resistance. The resistance is probably there because our brain perceives some form of threat, implying that there is likely to be some emotional arousal during resistance. It would be interesting to note if storytelling and metaphors are more effective when someone is emotionally aroused?

Parents and therapists can use these distortions to help build self-esteem through positive experiences. So, if a child offers to help with the washing up, you could thank them and comment on how helpful they are, thereby using generalising in a positive way. The use of language to offer positive general statements that allows other to pattern match and fill in the gaps for themselves, thereby personalising and learning. Based on this view of the black and white thinking error as being part of our natural response to an emotionally aroused state, it is possible to understand why people may sometimes have this distortion and sometimes not.

Techniques to Correct Specific Cognitive Distortions (handout)

Cognitive distortions happen more often when we are emotionally aroused, such as feeling anxious, depressed, angry or in love. The emotional part of our brain inhibits the logical rational part of our brain, and distorts information to help us respond more efficiently and quickly to an emergency situation.

When we perceive danger, our brain categorises things as either safe, or if there is any element of doubt or grey, it responds as if the worst is happening, producing **black and white thinking**, or 'all or nothing' thinking to help us respond quickly. When we do something in an emergency, it is important we do it right, or we could die, leading to the tendency for **perfectionism**, which is another form of black and white thinking.

When we are in a high risk situation, we need to know we have a safety net, so our brain has a tendency to **catastrophise**.

We have to **predict the future** without analysing it too much so that we can respond quickly, leading to **fortune telling** and **mind reading** errors, where we think or act as if we know what will happen or what others are thinking.

In a dangerous situation, we are more likely to consider how even unrelated events are related to ourselves, and also to try to control things around us, both giving us the tendency to **personalise** situations that may be unrelated to us or outside our control or we might be over-responsible for things beyond our control.

We have the ability to pattern match from one dangerous situation to help us to respond to other similar dangerous situations. However, because of this ability, we may sometimes **over-generalise**, or 'pattern match', to unrelated situations.

When in danger, we have a tendency to scan for danger and **focus on the negatives** and potential danger, and block the positives, which may be irrelevant to helping us respond in the emergency.

Because we are focussed on the problem and not the solution, and because we do things that undermine our confidence, we often **underestimate our resources** and our ability to cope with the situation.

In an emergency, we need to rely on our gut instinct without questioning it, so there is a tendency to believe something just because we think it or feel it, called **emotional reasoning**, and can sometimes be called 'magical thinking'. This makes the effect of the other distortions to be much worse!

Because the distortions are caused by emotional arousal, any strategy that calms us down will help to reduce the distortions. There are also specific techniques to help correct distortions when we do get emotional:

1. Black and white thinking (categorising all things in terms of either all or nothing; when you use words like 'always', 'everybody/all', 'never', 'nobody ever', etc. you are probably using this distortion)

Strategy: (look for evidence that has been blocked out)

- Look for the grey that has been excluded or exaggerated in order to have the black and white thinking.
- Are there any exceptions to this?
- Look at the evidence that both supports and contradicts your negative thought. What more accurate conclusions can you make?
- If you were an objective observer, what conclusions would you make about 'the evidence'?

2. Mind reading (believing that you know exactly what other people are thinking without them telling you)

Strategy: (look at the actual evidence)

- get evidence by asking people what they are thinking
- realise you might be wrong

3. Catastrophising (responding as if the worst thing will actually happen)

Strategy: (rate the likelihood of it actually happening, plan for the worst and then let it go)

- On a scale of 1-100, rate the likelihood that this event will actually happen
- Remind yourself of the negative effects that responding as if the worst thing will actually happen (on your emotions, behaviours, relationships, and lifestyle)
- Problem solve for the worst situation so that you can let it go
 - Brain storm many possible solutions
 - Select the best one for the given situation
- Once you have a devised plan, whenever you have that thought, remind yourself that you will wait to see what does happen and then deal with it if it actually does happen. In the mean time, let it go and distract yourself.

4. Over-generalising (taking one specific incident and responding as if that happens all the time or in all situations. E.g. After one problem with the computer say that I am no good with computers or if someone doesn't like one thing you have done, that they don't like you or that they don't like anything you do)

Strategy: Be aware of our tendency to pattern match to other situations and counter it by looking at what actually happened

- Remind yourself that the incident was about a specific situation and not all situations
- Remind yourself of times when your generalisation was not true (eg things you have achieved using the computer or evidence that your friend does like you)

Strategy: discrimination training

- Notice the all differences between the past situation and your current one and focus on these differences
- Remind yourself of these differences often

5. Perfectionism (responding as if something is not worth anything unless it is absolutely perfect; when you use words like 'should', 'ought', and 'must', you are probably using this distortion)

Strategy: Rephrase 'should' phrases as "I would like..."

- This will help you to take responsibility for your own emotions and goals instead of feeling helpless and getting angry with yourself and others for your unmet needs.

Strategy: Identify and challenge perfectionistic negative thoughts

- Recognise that this is part of the black or white thinking pattern of the emotional brain
- Look for alternative, less extreme ways of looking at the situation

Strategy: Create new and more helpful rules for your current situation

- Recognise that perfectionistic tendencies are very helpful in some situations, but are not always the best 'rules' to follow in others situations
- Set up situations to test whether alternative rules are accurate

Strategy: look at it from a different perspective the doesn't involve distortions

- Imagine what would say to a friend if they were in your situation
- Imagine what someone you respect would do or say if they were in your situation

6. Predicting the future or fortune telling (responding as if you know exactly what will happen in the future)

Strategy: (behavioural experiments to test accuracy of prediction instead of assuming that you know the outcome before it has happened)

- Remind yourself that not all your predictions will come true, as none of us can know the future... or else you would be very very rich!)
- Remind yourself of the negative effects that responding as if you can actually always know the future (on your emotions, behaviours, relationships, and lifestyle)
- Make your prediction (but see it as only a prediction rather than actually knowing the future before it has happened)
- Set up a situation to test your prediction, then see what happens
- Assess whether your prediction was completely accurate or not
- Learn from it by adjusting future predictions and in future situations remind yourself that you may not always be accurate

7. Personalising (taking the blame or responsibility for things that were not under your control instead of looking after your own needs)

Strategy: (realise what you can control and are responsible for ie your own thoughts and behaviours; and what you can control while letting others be responsible for their own needs)

- Take responsibility for the things you can control, which are your own thoughts and actions
- Don't take responsibility for those things that you can't control:
 - your initial emotions (these are signals that something needs to change, whether it is something in your environment or how you perceive it; instead look to what you can do to make you feel better)
 - the thoughts, actions, and behaviour of others (while you might be able to influence these, they are ultimately not under your control and therefore it is unhealthy for you to respond as if you are responsible for them; instead focus on what you can do or say to influence others)
 - other events beyond your control (e.g. the weather, car breakdowns, etc.)
- Do a pie chart of responsibility. Create a circle and allocate a proportion of responsibility to each person/organization that has a connection with the event

8. Negative bias (intense focus of attention on the negatives while excluding the positives)

Strategy: To reduce focus of attention on the negatives and notice the positives that you have blocked out

- Think about the positives or evidence that may counter the negatives

- Ask yourself what is another, more helpful way of looking at the situation
 - How would a friend see the situation?
 - If you were feeling well, how would you see the situation?
 - Imaging you were looking at your situation like a movie
- Focus on something else other than the negatives using forms of distraction (including counting/spelling backwards)
- Pay specific attention to what you are experiencing through your senses (what you can see, hear, smell, touch) instead of focussing on a negative past or future
- Put yourself in a situation where you are stimulating your senses (e.g. go where there are lots of things to look at, listen to the radio or something that you enjoy, stroke an animal or have a massage) to help shift your focus of attention away from the negative
- Stop, pause and appreciate something (do this frequently)
- Positives diary; look for at least three things during the day that you can be grateful for and write them down in the evening (note: look for the small things too, and look for the silver linings to the dark clouds)

9. Minimising coping resources (believing you will not be able to cope at all)

Strategy: increase your confidence in your ability to cope adequately

- Remind yourself of specific times when you have coped adequately or well.
- Imagine yourself coping how you would like to in a situation (this will make it more likely that you will actually respond like this in that situation)
- Remember that just because we may not have coped perfectly in a situation, does not mean that we didn't cope at all – usually we find some way of getting by!
- Recognise that one of our resources is to ask for help when we need it

10. Emotional reasoning (just because you think/feel something, you believe that it must be true)

Strategy: Recognise that just because you think or feel something does not mean that it is true; and use your emotions to help you meet your emotional needs

- Try not to think of a pink elephant. Just because you might think of a pink elephant in the room does not mean that there is one. It is just a thought.
- Feelings can change, and therefore may not always be correct

Strategy: Learn to listen to our initial negative emotions because they are indicating to us that something is not right (perhaps it is the way we are perceiving things or perhaps something in the environment needs to change)

- Ask yourself what you need to do to feel better rather than dwelling on the issue that is triggering the emotion (dwelling on the emotion or ignoring it only usually makes the emotion stronger)

Strategy: mindfulness- thoughts are like trains

- Remember our thoughts are like trains coming into the station of our mind. We cant stop them coming, but we can choose if we are going to get on every train and ruminate on it
- Instead, accept that the thought is there, label it, then refocus onto something else, and be aware of the thought eventually fading by itself

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