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Time Perspective after Trauma: A research portfolio

Melanie Suettmann

Doctorate in Clinical Psychology

The University of Edinburgh

March 2018
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Signature …………………………………………… Date
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Thesis Overview

This thesis follows a research portfolio format and is carried out in part fulfilment of the academic component of the Doctorate in Clinical Psychology at the University of Edinburgh.

The portfolio contains two independent research projects, an empirical study and a narrative synthesis, that are organised around the common theme of time perspective (TP; Zimbardo & Boyd, 1999) in the context of trauma. The empirical study tests TP in terms of its ability to predict depressive symptoms in a clinical sample. Given that this is the first study of TP in a mental health context, using a clinical sample, it was not possible to carry out a systematic review on this topic. Instead, rumination was chosen as a focus of the narrative synthesis study given that it shares substantial overlap with the theoretical concept of a time perspective bias, and specifically a past-negative temporal bias (PNTP). A PNTP is defined as an inflexible cognitive style where current thinking is substantially influenced by traumatic, negative and adverse experiences of the past (Zimbardo & Boyd, 1999). Time perspective theory predicts that such a bias will impact on healthy functioning negatively, but does not elaborate on this what this. The narrative synthesis is therefore not an exploration of time perspective per se, but investigates the impact of ruminative processing of past negative events, i.e. a concept sharing overlap with a PNTP-bias.

Both studies were written in accordance to the guidance of the British Journal Of Psychology, (Impact factor 2016: 3.139; Journal Citation Reports, Word
Limit: 8000 words) - Adaptations were made due to this document being submitted as part of an academic thesis portfolio. Figures and tables were, thus, included in the main text, rather than separately in a different file or at the end of the main text.
Chapter I: Empirical Study
Who develops depression after trauma?  
Time Perspective as a mediator between childhood trauma and adult depression

Melanie Suettmann

Prof. Kevin Power

Prof. Matthias Schwannauer

Doctorate in Clinical Psychology  
The University of Edinburgh

March 2018

Word Count (excl. abstract, tables, figures, references) : 7203
Abstract

Time Perspective (TP; Zimbardo & Boyd, 1999) measures the extent to which our current thinking is dominated by the past, present, and future. Although TP has not been tested in mental health, it has previously shown to predict a variety of variables, some of which are relevant to depression. These include personality traits and attitudes that may underpin depression, as well as variables that have shown to buffer negative affect, such as nostalgia (Wildschut, 2013). This study explored the impact of childhood trauma on adult depression, using regression analyses and moderated mediation analysis. TP was used as a mediator and compared to emotion regulation, a more well-established predictor of depression. 71 adult outpatients in two Scottish primary care psychological therapies services completed four self-report questionnaires, the Zimbardo Time Perspective Inventory (ZTPI, 1999), Childhood Trauma Questionnaire (CTQ, Bernstein & Fink, 1994), Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) and the Difficulties with Emotion Regulation Scale (DERS, Gratz & Roemer, 2004). Results showed that the path from childhood trauma to adult depression was not direct. Instead, Childhood trauma influenced current thinking style (i.e. TP) which, in turn, impacted on current depression scores, depending on levels of emotion regulation difficulties.

Key Words:
Depression, childhood trauma, Time Perspective, emotion regulation, cognitive avoidance
1. Introduction

Depression is one of the most common mental health problems worldwide (Joorman & Tanivic, 2015; Vos et al., 2013; WHO, 2017) and currently poses a major challenge to public health care (NES, 2011). Research efforts in the field have focused on early intervention and on finding risk factors that may contribute to developing the disorder. Depressed mood can have several consequences for the young adult’s functioning, including disturbances in appetite and mood, loss of energy and motivation and feelings of worthlessness, sadness and suicidal ideation. One of the most well-established vulnerability factors for depression to date is trauma (Mandelli et al., 2015, Schilling et al., 2014), and in particular childhood trauma (Abela & Skitch, 2007; Lok et al., 2013; MacMillan et al., 2001; Widom et al., 2007). The term ‘trauma’ is an umbrella term describing exposure to extremely stressful events that overwhelm an individual’s capacity to cope (Karstens et al., 2017). The DSM-5 currently defines trauma as direct exposure to actual or threatened death, serious injury, or sexual violence, or indirect exposure to such events by witnessing them happening to others, or learning about them happening to close friends or relatives (APS, 2013). Traumatic experiences such as these are common: lifetime exposure to trauma has been estimated to be as high as 89.7% on average, with experiences of multiple trauma being the norm (Kilpatrick et al., 2013). While childhood trauma survivors indeed have significantly higher prevalence rates of depression in their adult years (Infrasca, 2003; Kendler et al, 2000).

However, it is also clear that not all of them will develop psychopathology (for a review, see Kaplan et al., 1999). This points to a current gap in current literature: While vulnerability factors, such as trauma, are well-researched, it is clear that studying these in isolation is insufficient. Instead, considering vulnerability factors in
conjunction with possible mediating factors that may be responsible for buffering the
impact of trauma is of central importance for identifying possible targets for treatment
of depression in this population (Tracy et al., 2014). Guided by the cognitive mode,
the current study aims to fill this gap by identifying potential buffering variables in the
relationship between childhood trauma and depression in adulthood.

The Beckian cognitive model of depression (1967, 2016) on which CBT is based
posits that early life experiences shape our core beliefs and in turn, these beliefs
impact on our rules and assumptions for living. Both are thought to be automatically
activated in everyday situations, influencing current thoughts (Beck et al., 1987;
1993). The model assumes that maladaptive current thoughts are likely to maintain
depression. The assertions of the model have received ample evidence in the
literature (for reviews, see Barnett & Gotlib, 1988; Coyne & Gotlib, 1983; Haaga et
al., 1991; Ruehlman, West & Pasahow, 1985). Cognitive processes, however, that
may be guiding current decision-making, are not necessarily captured by the model.
However, identifying these may be of importance given that it is ultimately current
decision-making that will lead to behaviours (Haaga, Dyck & Ernst, 1991). Individual
differences in cognitive processes such as these may therefore allow for better
prediction of behaviours in depression that have the potential to shape an individual’s
circumstances longer-term. For example, individuals who are more prone to making
current decisions impulsively may lead very different lives to individuals who are
capable of delaying gratification, or tend to make more cautious decisions (Zimbardo
& Boyd, 1999). Similarly, the Beckian cognitive model focuses on associated current
emotion rather than the skills-based processes, such as emotion regulation, that are
also known to regulating current feelings beyond cognition alone. The present study
therefore aimed to extend the cognitive model of depression by adding two individual
difference process variables underpinning and guiding current thoughts and emotions: time perspective and emotion regulation.

Time perspective (Zimbardo & Boyd, 1999) is a cognitive individual difference variable that has been shown to guide current thinking and decision-making. It has been defined as “the relative dominance of past, present or future in a person’s thought” (Hornik & Zakay, 1996). It is not concerned with identifying specific automatic thoughts and cognitive errors, but rather with the underlying tendencies characteristic for an individual that orientate their current thoughts and decisions towards the past, present or future. For example, a predominantly future-oriented person may tend to delay gratification in order to achieve bigger rewards in the future while a present-oriented person may have a preference for instant gratification with little regard for the consequences of their behaviours in the future (Zimbardo, Keough & Boyd, 1997). Indeed, a present orientation has predicted risky driving, for example, while a future orientation made risky behaviours less likely (Keough, Zimbardo & Boyd, 1999) but instead led to higher socio-economic status and education levels. Time perspective theory outlines five time perspectives, past-positive TP, past negative TP, present hedonistic TP, present fatalistic TP and future TP and posits that every individual will be capable to adopt any of these in a given moment. In fact, it further suggests that we need to be able to switch flexibly between them depending on situational demands (Zimbardo & Boyd, 1999). For example, in a work context it may be advantageous to delay gratification in order to achieve future goals (e.g. salary) while leisure time may require an ability to draw on a present-hedonistic perspective, i.e. enjoying the present moment without a strong focus on possible future consequences (Zimbardo, Keough & Boyd, 1997). However, individuals tend to develop relatively stable preferences for certain time perspectives in their lifetime.
which then become characteristic for their personality over time (e.g. workaholic, risk-taker). Where one or two time perspectives habitually get overused regardless of context, however, time perspective biases and associated biased thinking can develop that are believed to lead to maladaptive functioning (Boniwell & Zimbardo, 2010). Time perspective has predicted a range of outcome variables including various behaviours (Keough et al., 1999), habits (Zimbardo & Boyd, 1999), personality traits (Lennings et al, 1998), education and economic status (Guthrie et al., 2009). Despite some limited evidence for time perspective being relevant to mental health, however, no studies to date have looked at whether or not it can also predict depression. For example, predominantly past-negative oriented individuals who show a high dominance of adverse life experiences in their current thinking, are known to score higher in trait depression (Zimbardo & Boyd, 1999) while a high past-positive bias (comparable to nostalgia; Routledge et al., 2008) has been shown to buffer depression.

However, time perspective theory does not explain how such TP biases may develop. However, guided by the cognitive model (Beck, 2016), it is possible that overwhelmingly stressful life experiences, such as trauma, may impact not only on a person’s beliefs and current thoughts, but also on their time perspective preferences. Time perspective theory is also limited by the fact that it does not take into consideration the role of emotion, and the interplay between affect and current thought, which there has been ample evidence for in research on the cognitive model (Ruehlman et al, 1985).

Emotion regulation as a stand-alone concept has been well-researched in the context of trauma and depression. It refers to the ability to influence one’s feelings, and those of others, during ongoing experiences (Gross & Munoz, 1995) via the use of a set of
strategies the individual may employ to manage incoming emotionally arousing stimuli (Thompson, 1991). Exposure to trauma evokes intense emotional responses (i.e. fear, helplessness and horror, American Psychiatric Association, APA, 1994) and it has been suggested that more intense emotional responses require greater emotion regulation skills (Mennin, 2005). Our ability to use emotion regulation strategies therefore determines how well we can cope with such life events (Garnefski et al., 2001, 2006) and how successfully we can prevent stressful levels of negative emotion from building up (Cicchetti et al., 1995).

Strong relationships between the use of emotion regulation skills and emotional difficulties have been found in a number of studies (e.g. Garfenkski et al., 2001, 2002a, 2003; Kraji et al, 2002, 2003, 2004). Across all age groups and several independent samples, Garnefski & Kaaij (2006) found that certain types of cognitive emotion regulation, such as catastrophising, rumination and self-blame, made participants more vulnerable to developing emotional difficulties such as depression, while the use of six other emotion regulation strategies (mitigated the long-term negative effects of stressful life experiences. Not surprisingly, prevalence studies have shown that unhelpful emotion regulation strategies (e.g. catastrophising, rumination, self-blame) were found in higher proportions where psychiatric illness was present (McGee et al, 2001). Catastrophising may be a preoccupancy with the future time frame (future TP), while rumination and self-blame may have an orientation towards past events (Past TP).

Previous mediation analysis revealed that general emotion regulation skills mediated the association between childhood trauma and adult depression severity and depression lifetime persistency in a German and African sample of patients with major depressive disorder (MDD; Crow et al., 2014; Hopfinger et al., 2016). Emotion regulation is believed to be learned early in childhood via interactions with our
caregivers (Cloitre et al., 2005) and interruption of this process is believed to lead to an underdevelopment of adaptive emotion regulation skills (Crow et al., 2014; Raes & Hermans, 2008). In turn, this may lead to increases the likelihood of developing psychopathology if individuals are exposed to significant life stressors in adulthood (Garfenski et al, 2006). Indeed, difficulties in emotion regulation have been found in those who have been exposed to traumatic experiences early in life (Tull et al, 2007), significantly distinguishing this group from adult-onset trauma survivors (Zlotnick et al, 1996) in terms of their capability to recover from subsequent life stressors (McGee et al., 2001). Experiencing trauma in childhood may also be a particularly vulnerable period given the finding that emotion regulation strategies are used progressively more often as individuals get older (McGee et al, 2001). The consensus in the literature regarding emotion regulation skills being key to resilience in the face of adverse life events suggest that the enhancement of such skills in trauma survivors may be an important target for depression interventions (Garnefski et al, 2006).

While cognitive theory takes past events into consideration given that these impact our belief system, and our rules and assumptions for living that may then shape our current thinking, the mechanisms of how this exactly this occurs in the moment are much less clear. Time perspective (TP; Zimbardo & Boyd, 1999) may offer a more direct link between an individual’s past and their current thinking while taking emotion regulation skills into account may enhance the cognitive model in that such skills are currently absent despite evidence in the literature supports its role in the maintenance of negative affect after trauma.
1.1. Rationale for applying Time Perspective to trauma and depression

Time Perspective specifically is investigated as a mediator in the relationship between trauma and depression for three main reasons: First, TP has shown to predict a large variety of outcome variables; some of which are directly relevant to depression and trauma. For example, TP has predicted trait depression, hopelessness, as well as gregariousness and interpersonal support (Zimbardo & Boyd, 1999). In turn, social networks around individuals that have experienced trauma are known to mediate its impact on subsequent depression (Evans et al, 2013; Howard Sharp et al, 2017). Second, some of the five TP's overlap with symptoms of depression, i.e. future TP captures hope and optimism and therefore a weak future-TP should lead to behaviours and attitudes consistent with depression (Wildschut et al, 2013).

Third, it is possible to integrate TP theory with cognitive theories of depression that are routinely used in Cognitive- Behavioural Therapy; the psychological approach NICE (2013, 2016) currently recommends as first line treatment for depression. For example, the CBT model assumes that depression is maintained by the connection between our thinking, behaviour and feelings. The model posits that these three variables influence each other and that change in one of them will have an effect on the remaining two (Beck et al., 1993). Therefore, changing maladaptive time perspective biases should lead to more adaptive behaviours and feelings.

Applied to the relationship between trauma and depression, a predominant past-negative TP may capture a strong influence of past stressful experience on current thinking and decision-making. However, a strong past-positive bias, should buffer the impact of trauma and should therefore lead to less severe depressive symptoms. Nostalgia has, in the past, shown to alleviate symptoms of depression (Routledge &
Wilds, 2013). Equally, a high future TP, reflecting hopefulness in current thinking, may also buffer the impact a negative life event has on current depressive symptomatology.

1.2. Aims

The current study aimed to investigate whether time perspective has predictive utility in a mental health setting, and specifically, whether it mediated the relationship between childhood trauma and adult depression. Given that this was the first time TP was investigated in this context, it was compared to that of emotion regulation.

1.3. Hypotheses

Based on the reviewed evidence, the present study was designed to test two hypotheses. First, it was hypothesised that time perspective would significantly mediate the relationship between childhood trauma and depression in an adult mental health population. Second, it was hypothesised that this mediated relationship is further dependent on participants’ emotion regulation skills, i.e. that it is moderated by their ability to regulate their emotions effectively.

2. Methodology

2.1. Design

The study used a quantitative cross-sectional design. 71 participants completed four standardised self-report questionnaires measuring childhood trauma (CTQ, Bernstein Wildschut, 2013). Equally, a high future TP, reflecting hopefulness in current thinking, may also buffer the impact a negative life event has on current depressive symptomatology.
& Fink, 1995), current depression levels (HADS; Zigmond & Snaith, 1993), Time Perspective (ZTPI; Zimbardo & Boyd, 1999) and difficulties with emotion regulation (DERS; Gratz & Roemer, 2004). The study was conducted in accordance with codes of ethics and conduct specified by the British Psychological Society. Ethical approval was granted by the University of Edinburgh and the NHS Tayside Research Ethics Committee and NHS Research & Development, application reference: 16/ES/0147.

2.2. Power calculation

Power and sample size calculations for mediation analyses present a challenge because the power functions for the test depend on the strength of the associations of the mediator and the outcome, and the independent variable and the distribution of their product (Beasley, 2012). Using a bootstrapping approach, Fritz and MacKinnon (2007) recommend that 71 participants are needed to achieve a power of 0.8 to detect medium effect size of the indirect effect.

2.3. Participants

All participants (45 female, 26 male; aged 21-53) were current outpatients in one of two Scottish primary care psychological therapies services from which they were recruited. Neither stage in treatment, nor presenting difficulties or mental health diagnosis were eligibility criteria, i.e. depression did not have to be their primary presentation. Instead, participants were selected by their clinician in one of their routine appointments. It was up to the clinicians’ judgement to identify patients on their caseload that they believed to experience depressive symptoms at the time of recruitment. 93 participants were approached by their therapists. 12 patients declined
to take part and a further 10 did not complete all four measures, resulting in a total sample of 71 patients.

2.4. Eligibility Criteria

Participants had to meet the following inclusion criteria:

1) Aged 18-65 years
2) Experiencing current depressive symptoms
3) Deemed to have capacity to give informed consent (as assessed by their routine clinician)
4) Fluent in English.

The exclusion criteria were as follows:

1) Clinician deemed patient to have significant current suicidal ideation
2) Clinician deemed patient to have current psychotic symptoms.

2.5. Procedure

All participants were introduced to the study by their regular clinician in one of their routine appointments. In this session, patients were given a broad overview of the study and its purpose and were then given a participant information sheet to take home, if they indicated initial interest. In their next routine appointment, interested participants were asked to sign an informed consent sheet and were then given three questionnaires to complete at home; the ZTPI (1999), DERS (1993) and HADS (1983), along with an envelope that could be sealed in to ensure confidentiality. In their third session, those who returned the sealed envelope with the three
questionnaires filled in the CTQ in the presence of their clinician. This was to minimise the risk of this measure triggering significant levels of distress. Participants were given extra clinic time to complete this where possible and were made aware that their clinician would not see, or be informed of the results on these measures unless the patient chose to talk about these. The CTQ was returned in a second sealed envelope.

2.6. Measures

2.6.1. Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999)

The ZTPI is a 56-item self-report measure designed to assess a person’s time perspective (TP) profile comprised of all five relatively independent TP’s. While each of these are measured with a separate subscale, they are conceptually related. The subscales are: Future (13 items), Present-Hedonistic (15 items), Present-Fatalistic (9 items), Past-Positive (9 items) and Past-Negative (10 items). Example items include the following: “I complete projects on time by making steady progress” and “Fate determines much in my life”. These are rated on a Likert scale from (1) ‘very-non characteristic for me’ to (5) ‘very characteristic for me’. The higher the score, the stronger is the orientation towards the specific time perspective. High scores on one subscale has no implications for scores on other subscales.

The ZTPI is the result of many years of extensive exploratory and confirmatory analyses and has been excessively validated across cultures, languages and age groups (Milfont & Bieniok, 2008; Sircova et al., 2010). As a result, the ZTPI is generally reported to have sound psychometric properties across studies. Internal reliability assessed using Cronbach’s alpha consistently produces values ranging
between 0.7 to 0.8 (e.g. Laghi et al., 2009; Apostolidis, Fieulaine & Soule, 2006; Baumann & Odum, 2012; Milfont & Gouveia, 2006). The ZTPI is estimated to take between 10-15 minutes to complete.

2.6.2. Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)

The DERS is a 36-item self-report measure that assesses an individual's difficulty with regulating emotions through adaptive emotion regulation strategies. All items are rated on a 5-point Likert scale, with 1 indicating 'almost never' and 5 indicating 'almost always'. Example statements include "I am clear about my feelings" and "When I am upset, I feel out of control". An overall score can then be calculated that marks a person's overall difficulties with regulating emotions. Higher scores suggest greater emotion dysregulation. The six subscales can also be calculated along the following dimensions: non-acceptance, goals, impulse, awareness, clarity and strategies. For the purpose of this study, the total score of these is going to be used. The measure was found to have high internal consistency with both clinical (Fox et al., 2007) and non-clinical participants (Bjureberg et al., 2016; Johnson et al., 2008). The internal consistency in two large community samples has been shown to be excellent, with Cronbach alpha ranging from 0.92 to 0.95 (Bjureberg et al., 2016, Fowler et al., 2014). Good construct and internal validity was demonstrated by Fowler and colleagues (2014).

2.6.3. Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983)

Depression rarely is diagnosed as a separate entity and is often accompanied by a
degree of anxiety (Bjelland et al., 2002). Both depression alone, and depression in mixed anxiety and depression disorders are therefore considered for this study. The Hospital Anxiety and Depression Scale (HADS) is a commonly used 14-item self-report screening scale designed to capture the presence of anxiety and depressive states. It contains two 7 item scales, one for anxiety and one for depression, and both on a Likert scale with a score range of 0-21. Example items include "I feel cheerful", "I still enjoy the things I used to enjoy" on the depression subscale and "I get a sudden feeling of panic" and "Worrying thoughts go through my mind" on the anxiety subscale. The HADS has shown a high level of sensitivity and specificity (Barczak, Kane et al., 2002) comparable to other commonly used self rating screening instruments (Bjelland et al. 2002). Its psychometric properties have been found to be high in psychiatric populations in particular (Mykletun et al., 2001) and its factor structure to be robust (Mykletun et al., 2001).

2.6.4. Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998)

The CTQ identifies the occurrence and severity of emotional maltreatment during childhood. This self-report measure consists of 28 items on 5 subscales related to physical, emotional and sexual abuse, as well as emotional and physical neglect. Subjects are asked to complete five questions on a five-point-Likert scale, indicating whether or not this type of event has happened to them and how often. The items relate to the five domains listed above and three additional items related to denial/minimization. The CTQ has demonstrated high test-retest reliability and internal consistency in a clinical sample with Cronbach alpha values ranging between 0.8 to 0.91 for each of its subscales (Grassi-Oliveria et al., 2014). When therapists’
ratings were used as a validity criterion, the CTQ also showed good sensitivity for all forms of childhood abuse, as well as satisfactory or higher levels of specificity (Bernstein et al., 1997).

2.7. Statistical Analysis

2.7.1. Data preparation and Analytic Plan

All data was analysed using IBM SPSS 24. The data set was initially scanned for missing data using Little’s MCAR test. This method showed that values were missing on three subscales of the Zimbardo Time Perspective Inventory (ZTPI, Zimbardo & Boyd, 1999), and that these were missing at random (Chi Square=0.00, DF=259, Sig= 1.0). The missing values were then replaced using the Expectation Maximization Method, as recommended by Schlomer et al (2010). Preliminary analysis confirmed that there were no violations of the assumptions of linearity, homoscedasticity or multicollinearity. All variables were normally distributed.

In order to explore time perspectives’ utility in the prediction of current depression in individuals with a childhood trauma-vulnerability, several analyses were planned. First, descriptive statistics and correlations were conducted in order to explore relationships between variables, and the direction of these. Based on these results, linear regressions were planned to establish which subsets of time perspectives, may be relevant for predicting low mood causally, and to determine the strength of these relationships. The goal of these analyses was to build a statistical mediation model with the significant variables that could account for low mood prediction in adults that have experienced childhood trauma.
Working towards building a predictive model including all measured variables in this study, a linear regression model was fitted next to determine which of the five time perspectives were relevant for the prediction of depression. In line with Zimbardo and Boyd’s (1999) suggestion to study all five time perspectives together, a stepwise regression was conducted with a view of building a model that included only those time perspectives that, together, could predict depression.

In a next step, the two significant time perspectives that were significant in the prediction of depression, were used to build a moderated mediation model based on the available literature reviewed in chapter 1. The relationship between childhood trauma and current adult depression further, conditional process modelling was conducted as part of the analysis. Specifically, it was tested whether the relationship between childhood trauma and depression was mediated by the statistically significant time perspectives that predicted depression in the regression analysis and whether this relationship was moderated by emotion regulation skills.

3. Results

3.1. Descriptive Statistics and Prevalence of Distress

A frequencies check was conducted to check that there were no errors in the data (e.g. out of range data). Means and standard deviations were also checked for all variables (see table 1). In line with what would be expected in a primary care sample, anxiety and depression scales fell within the mild to moderate range (anxiety: M=12.75, SD=3.72; depression: M= 9.97, SD=4.01).

With regards to childhood trauma, Emotional Neglect (M=17.45, SD=5.53) was the most common type of childhood trauma that participants experienced, followed by
physical neglect (M= 13.20, SD=1.75). The time perspective with the highest mean
score was the Past Negative Time Perspective (M=3.67, SD=0.57), i.e. a focus on
traumatic and adverse past events in current thinking. By contrast, the Past Positive
TP (M= 2.94, SD=0.72) yielded the lowest mean score in this same.

Within the Difficulties with Emotion Regulation Strategies (DERS)-questionnaire, the
highest mean score was obtained on the “Strategies” –subscale (M=26.25,
SD=3.28), which measures the belief that there is little one can do to regulate one’s
emotions once upset. By contrast, the emotional regulation strategy participants
indicated they had the least difficulty with was the “Impulse” subscale (M=15.18;
SD=5.43), i.e. difficulty remaining in control of one’s behaviour when experiencing
negative emotions.

<table>
<thead>
<tr>
<th>Table 1: Descriptive Statistics</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTQ Emotional Abuse</td>
<td>11.32</td>
<td>5.06</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>CTQ Physical Abuse</td>
<td>7.59</td>
<td>3.69</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>CTQ Sexual Abuse</td>
<td>6.97</td>
<td>3.64</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>CTQ Emotional Neglect</td>
<td>17.45</td>
<td>5.53</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>CTQ Physical Neglect</td>
<td>13.20</td>
<td>1.75</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>CTQ Total</td>
<td>56.54</td>
<td>7.78</td>
<td>45</td>
<td>92</td>
</tr>
<tr>
<td>HADS anxiety</td>
<td>12.75</td>
<td>3.72</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>(moderate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HADS depression</td>
<td>9.97</td>
<td>4.01</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>(mild)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZTPI Past Negative</td>
<td>3.67</td>
<td>0.57</td>
<td>2.0</td>
<td>4.8</td>
</tr>
<tr>
<td>ZTPI Present Hedonistic</td>
<td>2.95</td>
<td>0.51</td>
<td>1.6</td>
<td>4.2</td>
</tr>
<tr>
<td>ZTPI Future</td>
<td>3.33</td>
<td>0.48</td>
<td>2.31</td>
<td>4.46</td>
</tr>
<tr>
<td>ZTPI Past Positive</td>
<td>2.94</td>
<td>0.72</td>
<td>1</td>
<td>4.6</td>
</tr>
<tr>
<td>ZTPI Present Fatalistic</td>
<td>3.03</td>
<td>0.51</td>
<td>2</td>
<td>4.6</td>
</tr>
<tr>
<td>DERS Non Acceptance</td>
<td>20.45</td>
<td>5.86</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>DERS Goals</td>
<td>17.93</td>
<td>4.15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>DERS Impulse</td>
<td>15.18</td>
<td>5.43</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>DERS Awareness</td>
<td>19.89</td>
<td>4.87</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>DERS Strategies</td>
<td>26.25</td>
<td>3.28</td>
<td>19</td>
<td>32</td>
</tr>
<tr>
<td>DERS Clarity</td>
<td>16.28</td>
<td>3.90</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>DERS Total</td>
<td>115.99</td>
<td>17.41</td>
<td>74</td>
<td>165</td>
</tr>
</tbody>
</table>
3.2. Reliability Analysis

Table 2 lists the Cronbach alpha values and means for each subscale. All subscales were deemed acceptable in terms of their reliability ratings, with the exception of the Physical Neglect Subscale of the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1994).

Table 2: Reliability Analysis

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTQ Emotional Abuse</td>
<td>0.802</td>
</tr>
<tr>
<td>CTQ Physical Abuse</td>
<td>0.733</td>
</tr>
<tr>
<td>CTQ Sexual Abuse</td>
<td>0.872</td>
</tr>
<tr>
<td>CTQ Emotional Neglect</td>
<td>0.919</td>
</tr>
<tr>
<td>CTQ Physical Neglect</td>
<td>-0.457</td>
</tr>
<tr>
<td>HADS anxiety</td>
<td>0.798</td>
</tr>
<tr>
<td>HADS depression</td>
<td>0.802</td>
</tr>
<tr>
<td>ZTPI Past Negative</td>
<td>0.776</td>
</tr>
<tr>
<td>ZTPI Present Hedonistic</td>
<td>0.780</td>
</tr>
<tr>
<td>ZTPI Future</td>
<td>0.668</td>
</tr>
<tr>
<td>ZTPI Past Positive</td>
<td>0.821</td>
</tr>
<tr>
<td>ZTPI Present Fatalistic</td>
<td>0.580</td>
</tr>
<tr>
<td>DERS Non Acceptance</td>
<td>0.882</td>
</tr>
<tr>
<td>DERS Goals</td>
<td>0.829</td>
</tr>
<tr>
<td>DERS Impulse</td>
<td>0.872</td>
</tr>
<tr>
<td>DERS Awareness</td>
<td>0.778</td>
</tr>
<tr>
<td>DERS Strategies</td>
<td>0.858</td>
</tr>
<tr>
<td>DERS Clarity</td>
<td>0.749</td>
</tr>
</tbody>
</table>

The CTQ Physical Neglect Scale reached a Cronbach Alpha value of -0.46. Further analysis indicated that even when some items of this subscale were removed, the best possible outcome would be a Cronbach Alpha value of 0.28 (if item 2 of this subscale was removed). These results indicate that the Physical Neglect sub-scale of the CTQ did not reliably measure a uni-dimensional construct in this sample. Villano et al (2004) conducted Confirmatory Factor Analysis (CFA) after their analysis yielded similar results, i.e. all CTQ subscales being reliable apart from the Physical
Neglect-scale. Similarly, Grassi-Oliveira et al (2014) found the same pattern and explained this with the physical neglect subscale having the fewest items. They recommend to retain the five factor structure given the extensive validation the CTQ has received in terms of its factor structure across populations. This recommendation was followed in the present analysis.

3.3. Correlation Analyses

Pearson’s correlations were conducted between the variables involved in the present study (see table 3). Surprisingly, these showed no significant association between childhood trauma and current depression. A further surprise was that neither future TP nor present fatalistic TP correlated with current depression. Only past negative, past positive and present hedonistic TP were positively associated with current depression, as were difficulties with emotion regulation skills. They remained significant even after Bonferoni adjustment of 0.01, given the 5 subscales on the ZTPI (1999) that was used to assess time perspective. Specifically, the more an individual based their current thinking on negative aspects of the past, the more depressed they indicated they were at time of participation, $r=0.45$, $p<0.001$. Additionally, the less current thinking was based on positive aspects of the past, the more depressive individuals were reporting to be $r=0.309$, $p=0.01$. Finally, a hedonistic present-orientation in current thinking was negatively linked to depression, $r=-(0.43)$, $p<0.001$. Emotion regulation scores were also positively associated with depression in that higher difficulties were linked with higher depression scores, $r=0.3$, $p=0.01$. 
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 HADS anxiety</td>
<td>1</td>
<td>.343</td>
<td>.004</td>
<td>.454*</td>
<td>-.134</td>
<td>.097</td>
<td>-.265*</td>
<td>-.032</td>
<td>.489*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.003</td>
<td>.975</td>
<td>.000</td>
<td>.266</td>
<td>.422</td>
<td>.026</td>
<td>.793</td>
<td>.000</td>
</tr>
<tr>
<td>2 HADS depression</td>
<td>1</td>
<td>.027</td>
<td>.820</td>
<td>.325*</td>
<td>-.427*</td>
<td>.129</td>
<td>-.309</td>
<td>.010</td>
<td>.296*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.006</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.283</td>
<td>.009</td>
<td>.935</td>
<td>.012</td>
</tr>
<tr>
<td>3 CTQ total</td>
<td>1</td>
<td>.328*</td>
<td>.005</td>
<td>-.018</td>
<td>.007</td>
<td>-.239</td>
<td>-.015</td>
<td>.146</td>
<td>.224</td>
</tr>
<tr>
<td>4 Past Negative TP</td>
<td>1</td>
<td></td>
<td>.880</td>
<td>-.018</td>
<td>-.095</td>
<td>-.433</td>
<td>.044</td>
<td>.903</td>
<td>.000</td>
</tr>
<tr>
<td>5 Present hedonistic TP</td>
<td>1</td>
<td></td>
<td>.879</td>
<td>-.095</td>
<td>-.370</td>
<td>.001</td>
<td>.140</td>
<td>.184</td>
<td>.505*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.951</td>
<td>-.433</td>
<td>.000</td>
<td>.000</td>
<td>.125</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>6 Future TP</td>
<td>1</td>
<td></td>
<td>.001</td>
<td>.370</td>
<td>.245</td>
<td>.140</td>
<td>.326*</td>
<td>.006</td>
<td>.045</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.516</td>
<td>.001</td>
<td>.245</td>
<td>.140</td>
<td>.326*</td>
<td>.006</td>
<td>.045</td>
</tr>
<tr>
<td>7 Past Positive TP</td>
<td></td>
<td>1</td>
<td></td>
<td>-.078</td>
<td>-.358*</td>
<td>.002</td>
<td>-.102</td>
<td>.398</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.516</td>
<td>.078</td>
<td>.358*</td>
<td>.002</td>
<td>-.102</td>
<td>.398</td>
<td></td>
</tr>
<tr>
<td>8 Present Fatalistic TP</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>.031</td>
<td>.799</td>
<td>-.336*</td>
<td>.004</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>.031</td>
<td>.799</td>
<td>-.336*</td>
<td>.004</td>
</tr>
<tr>
<td>9 DERS Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>.309*</td>
<td>.009</td>
</tr>
</tbody>
</table>

* Bonferoni adjusted  \( p < 0.01 \)
3.4. Regression Analysis

A stepwise linear regression was conducted to explore time perspective’s relevance in predicting depression scores by investigating which subset of the cognitive styles were predicting low mood in the present sample (see tables 4-8, figure 1).

Results showed that out of the five time perspectives, only Past Negative TP (t(69)= 3.1, p<0.01) and Present Hedonistic TP (t(69)= -4.1, p<0.001) were significant predictors of current depression at a Bonferoni adjusted alpha of p=0.01. The regression coefficients for these variables were in the expected direction. None of the other time perspectives predicted depression scores significantly.

The multiple regression model with all significant predictors produced R²=0.319, F (6,64)= 4.99, p<0.001. The model with both significant time perspectives predicted 31.9% of the variance in depression scores in the present sample. DERS total scores were not significant predictors of depression, but was correlated with Past negative TP (see table 3).

Table 4: Stepwise Linear Regression: Model Summary

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R Square</th>
<th>Std Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.43ᵃ</td>
<td>0.18</td>
<td>0.17</td>
<td>3.66</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.53ᵇ</td>
<td>0.28</td>
<td>0.26</td>
<td>3.45</td>
<td></td>
</tr>
</tbody>
</table>

ᵃ. Predictors (Constant) ZTP1 Present hedonistic
ᵇ. Predictors; (Constant), ZTP1 Present Hedonistic, Past Negative Time Perspective
ᶜ. Dependent variable: HADS depression
### Table 5: Stepwise Linear Regression: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>205.35</td>
<td>1 205.35</td>
<td>15.36</td>
<td>0.000&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>922.59</td>
<td>69 13.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1127.94</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>318.99</td>
<td>2 159.493</td>
<td>13.41</td>
<td>0.000&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>808.96</td>
<td>68 11.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1127.94</td>
<td>70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Dependent variable: HADS Depression  
<sup>b</sup> Predictors: (Constant), ZTPI Present Hedonistic  
<sup>c</sup> Predictors: (Constant), ZTPI Present hedonistic, Past Negative TP

### Table 6: Stepwise Linear Regression: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>St error</th>
<th>Beta</th>
<th>T</th>
<th>Sig</th>
<th>Zero Order</th>
<th>Partial</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>19.80</td>
<td>2.55</td>
<td>7.78</td>
<td>0.000</td>
<td>0.000</td>
<td>-0.427</td>
<td>-0.427</td>
</tr>
<tr>
<td></td>
<td>ZTPI Present Hedonistic</td>
<td>-3.34</td>
<td>-0.427</td>
<td>-3.92</td>
<td>0.000</td>
<td>-0.427</td>
<td>-0.427</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>11.48</td>
<td>3.61</td>
<td>3.18</td>
<td>0.002</td>
<td>0.000</td>
<td>-0.421</td>
<td>-0.421</td>
</tr>
<tr>
<td></td>
<td>ZTPI Present Hedonistic</td>
<td>-3.29</td>
<td>-0.421</td>
<td>-4.1</td>
<td>0.000</td>
<td>-0.427</td>
<td>-0.427</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZTPI Past Negative</td>
<td>2.23</td>
<td>0.72</td>
<td>0.32</td>
<td>3.1</td>
<td>0.003</td>
<td>0.33</td>
<td>0.35</td>
</tr>
</tbody>
</table>

<sup>a</sup> Dependent variable: HADS Depression
Table 7: Stepwise Linear Regression: Excluded Variables

<table>
<thead>
<tr>
<th>Excluded variables</th>
<th>Model</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Past Negative TP</td>
<td>0.32</td>
<td>3.09</td>
</tr>
<tr>
<td>Past Positive TP</td>
<td>-0.25</td>
<td>-2.39</td>
</tr>
<tr>
<td>DERS Total</td>
<td>0.28</td>
<td>2.65</td>
</tr>
<tr>
<td>ZTPI Future</td>
<td>-0.03</td>
<td>-0.28</td>
</tr>
<tr>
<td>ZTPI Present Fatalistic</td>
<td>0.17</td>
<td>1.46</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Past Negative TP</td>
<td>-0.14</td>
<td>-0.124</td>
</tr>
<tr>
<td>DERS Total</td>
<td>0.16</td>
<td>1.33</td>
</tr>
<tr>
<td>ZTPI Future</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>ZTPI Present fatalistic</td>
<td>0.10</td>
<td>0.93</td>
</tr>
</tbody>
</table>

a. Dependent variable: HADS Depression  
b. Predictors: (Constant), ZTPI Present Hedonistic  
c. Predictors: (Constant), ZTPI Present Hedonistic, Past Negative TP

Table 8: Stepwise Linear Regression: Residual Statistics

<table>
<thead>
<tr>
<th>Residual Statistics</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>St Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Value</td>
<td>5.67</td>
<td>15.82</td>
<td>9.97</td>
<td>2.13</td>
<td>71</td>
</tr>
<tr>
<td>Residual</td>
<td>-7.32</td>
<td>9.48</td>
<td>0.00</td>
<td>3.40</td>
<td>71</td>
</tr>
<tr>
<td>Std. predicted value</td>
<td>-2.01</td>
<td>2.74</td>
<td>0.00</td>
<td>1.0000</td>
<td>71</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-2.12</td>
<td>2.80</td>
<td>0.00</td>
<td>0.99</td>
<td>71</td>
</tr>
</tbody>
</table>

a. Dependent variable: HADS Depression
3.5. Conditional Process Analyses

3.5.1. Past Negative Time Perspective as a Mediator

While linear regression can clarify the strength of individual predictors, relative to others, it cannot test more complex relationships and dynamics between multiple variables. Conditional process analysis (Hayes, 2013) determines direct influences between predictor and outcome variable, while at the same time modelling indirect effects between mediating variables and moderators. Based on the pattern of correlations and regressions, as well as theory, a model was specified prior to analysis which hypothesised that childhood trauma would predict depression via a mediator, past negative time perspective (PNTP). Additionally, the path between childhood trauma and time perspective would be moderated by emotion regulation skills.

A simple moderated mediation analysis was conducted using Model 7 of the PROCESS macro (Hayes, 2013) in IBM SPSS 24. Given that conditional process analysis cannot model multiple outcome variables at the same time, childhood trauma was measured using the total CTQ score, comprised of all sub-domains of the scale. The variable was normally distributed with a mean of 56.54, SD= 7.78 and had a range of 45-92. A diagrammatic representation of the tested model is depicted in figure 1.
The results of the conditional process can be seen in tables 9-13. Overall, the model predicting depression explained 36% of the variance in depression. Surprisingly, childhood trauma did not directly influence depression, $t(68) = -0.73$, $p=0.47$. Instead, early adverse experiences predicted current thinking patterns in the form of PNTP, a cognitive bias towards adverse events in the past, $t(67) = 2.27$, $p=0.03$. In turn, PNTP then impacts on current depression, $t(68) = 2.93$, $p<0.001$.

Given that the interaction effect was significant, this suggested that mediation did indeed occur: The indirect effect of childhood trauma on adult depression was positive, $t(67) = (-2.02)$, $p=0.05$.

In addition to childhood trauma predicting Past Negative Time Perspective, difficulties in emotion regulation (DEReS total scores) also predicted Past Negative time perspective, $t(68) = 2.45$, $p>0.02$. This warranted further investigation as to whether difficulties with emotion regulation indeed was a moderator in the mediated relationship of childhood trauma and depression via past negative time perspective.
Confidence intervals were bootstrapped with 5000 resamples. If the confidence intervals do not contain zero, the effect of the path is considered significant at a $p$ value of less than 0.05. This was the case for the resulting confidence intervals of the Index of mediated moderation point estimate (-0.03, 95% CI= (-0.01), (-0.001)), confirming moderated mediation.

Conditional effects showed that Childhood Trauma only predicts depression via Past Negative Time Perspective for those individuals who have less difficulty regulating emotions, i.e. low emotion regulation difficulty ($W=98.5$, CI= 0.01, 0.24) and average emotion regulation difficulty-scores ($W=115.99$, CI= 0.01, 0.14). A 2.45-unit increase in emotion regulation difficulties, as stated previously, led to a one-point increase in past negative time perspective for these participants. However, for those with the highest emotion regulation difficulties ($W=133.39$) in this sample, it could not with confidence be said that time perspective was mediating the relationship between childhood trauma and depression (CI= (-0.08), 0.05).

Overall, the model suggests that The effect TP has on depression is conditional as it is contingent on a moderator. According to the model, people with more severe childhood abuse may experience lower mood in part because of the effect abuse has on current thinking which in turn impacts on mood. However, this effect is stronger in those that have less emotion regulation skills.
Table 9: Conditional process modelling with PNTP as Mediator I

<table>
<thead>
<tr>
<th>Outcome: PNTP</th>
<th>R</th>
<th>R²</th>
<th>MSE</th>
<th>F</th>
<th>Df1</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.60</td>
<td>0.36</td>
<td>0.22</td>
<td>12.57</td>
<td>3.00</td>
<td>67.00</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coeff</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLC1</th>
<th>ULC1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-7.45</td>
<td>4.12</td>
<td>-1.81</td>
<td>0.08</td>
<td>-15.68</td>
</tr>
<tr>
<td>CTQ Total</td>
<td>0.17</td>
<td>0.07</td>
<td>2.27</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>DERS Total</td>
<td>0.09</td>
<td>0.04</td>
<td>2.45</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Int 1</td>
<td>-0.001</td>
<td>0.000</td>
<td>-2.02</td>
<td>0.05</td>
<td>-0.00</td>
</tr>
</tbody>
</table>

Table 10: Conditional process modelling with PNTP as Mediator II

<table>
<thead>
<tr>
<th>Outcome: HADS Depression</th>
<th>R</th>
<th>R²</th>
<th>MSE</th>
<th>F</th>
<th>Df1</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.34</td>
<td>0.11</td>
<td>14.71</td>
<td>4.32</td>
<td>2.00</td>
<td>68.00</td>
<td>0.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coeff</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLC1</th>
<th>ULC1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.42</td>
<td>3.89</td>
<td>0.88</td>
<td>0.38</td>
<td>-4.35</td>
</tr>
<tr>
<td>PNTP</td>
<td>2.49</td>
<td>0.85</td>
<td>2.93</td>
<td>0.00</td>
<td>0.79</td>
</tr>
<tr>
<td>CTQ Total</td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.73</td>
<td>0.47</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

Table 11: Conditional process modelling with PNTP as Mediator III

<table>
<thead>
<tr>
<th>Direct effect of X on Y</th>
<th>Effect</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLC1</th>
<th>ULC1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.73</td>
<td>0.47</td>
<td>-0.17</td>
<td>0.08</td>
</tr>
</tbody>
</table>
Table 12: Conditional process modelling with PNTP as Mediator IV

Conditional indirect effect(s) of X on Y at values of the moderator(s):

<table>
<thead>
<tr>
<th>Mediator</th>
<th>DERS Total</th>
<th>Effect</th>
<th>Boot SE</th>
<th>Boot LLCI</th>
<th>Boot ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNTP (low)</td>
<td>98.58</td>
<td>0.10</td>
<td>0.06</td>
<td>0.01</td>
<td>0.24</td>
</tr>
<tr>
<td>PNTP (average)</td>
<td>115.99</td>
<td>0.05</td>
<td>0.03</td>
<td>0.01</td>
<td>0.14</td>
</tr>
<tr>
<td>PNTP (high)</td>
<td>133.39</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Values for quantitative moderator are the mean plus/minus one SD from mean
Values for dichotomous moderators are the two values of the moderator.

Table 13: Conditional process modelling with PNTP as Mediator V

Index of Moderated Mediation

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Index</th>
<th>SE (Boot)</th>
<th>Boot LLCI</th>
<th>Boot ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNTP</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
</tbody>
</table>

3.5.2. Present Hedonistic Time Perspective as a Mediator

A second moderated mediation was ran using the same model as above, but with present hedonistic time perspective as a mediator. Present hedonistic time perspective was the only other one of the five time perspectives that was a significant predictor in the regression analysis conducted for the present study. Figure 2 outlines the diagrammatic representation of the model used for this analysis.
Results indicated that childhood trauma did not predict present hedonistic time perspective (PHTP), $t(67)= 0.00, p=1.00$. Additionally, difficulties in emotion regulation also did not significantly predict PHTP, $t(67)= (-0.50), p=0.062$. The interaction effect was also non-significant, indicating that no mediation occurred, $t(67)= (-1.44), p=0.15$. There was therefore also no moderation, with the index of moderated mediation being non-significant and confidence intervals crossing zero accordingly $(0.00, SE= 0.00, CI, (-0.00, 0.01))$. Consequently, childhood trauma does not predict depression depending on an individual's present hedonistic cognitive bias, i.e. a carefree and thrill-seeking attitude towards the present with a disregard for consequences of one's behaviour.
Table 14: Conditional process modelling with PHTP as Mediator I

Outcome: PHTP

<table>
<thead>
<tr>
<th>R</th>
<th>R²</th>
<th>MSE</th>
<th>F</th>
<th>Dfi</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.24</td>
<td>0.06</td>
<td>0.26</td>
<td>0.70</td>
<td>3.00</td>
<td>67.00</td>
<td>0.55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coeff</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.97</td>
<td>0.06</td>
<td>46.36</td>
<td>0.000</td>
<td>2.85</td>
</tr>
<tr>
<td>CTQ Total</td>
<td>0.000</td>
<td>0.01</td>
<td>-0.00</td>
<td>1.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>DERS Total</td>
<td>-0.00</td>
<td>0.00</td>
<td>-0.50</td>
<td>0.62</td>
<td>-0.01</td>
</tr>
<tr>
<td>Int_1</td>
<td>-0.00</td>
<td>0.00</td>
<td>-1.44</td>
<td>0.15</td>
<td>-0.00</td>
</tr>
</tbody>
</table>

Table 15: Conditional process modelling with PHTP as Mediator II

Outcome: HADS Depression

<table>
<thead>
<tr>
<th>R</th>
<th>R²</th>
<th>MSE</th>
<th>F</th>
<th>Dfi</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.43</td>
<td>0.18</td>
<td>13.56</td>
<td>8.03</td>
<td>2.00</td>
<td>68.00</td>
<td>0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coeff</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>19.79</td>
<td>2.58</td>
<td>7.68</td>
<td>0.000</td>
<td>14.65</td>
</tr>
<tr>
<td>PHTP</td>
<td>-3.33</td>
<td>0.86</td>
<td>-3.85</td>
<td>0.00</td>
<td>-5.06</td>
</tr>
<tr>
<td>CTQ Total</td>
<td>0.01</td>
<td>0.09</td>
<td>0.11</td>
<td>0.91</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

Table 16: Conditional process modelling with PHTP as Mediator III

Direct and Indirect Effects

Direct effect of X on Y

<table>
<thead>
<tr>
<th>Effect</th>
<th>SE</th>
<th>T</th>
<th>P</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>0.09</td>
<td>0.11</td>
<td>0.91</td>
<td>-0.17</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Table 17: Conditional process modelling with PHTP as Mediator IV

Conditional indirect effect(s) of X on Y at values of the moderator(s):

<table>
<thead>
<tr>
<th>Mediator</th>
<th>DERS Total</th>
<th>Effect</th>
<th>Boot SE</th>
<th>Boot LLCI</th>
<th>Boot ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHTP (low)</td>
<td>-17.41</td>
<td>-0.08</td>
<td>0.06</td>
<td>-0.21</td>
<td>0.04</td>
</tr>
<tr>
<td>PHTP (average)</td>
<td>0.000</td>
<td>0.00</td>
<td>0.03</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>PHTP (high)</td>
<td>17.41</td>
<td>0.08</td>
<td>0.06</td>
<td>-0.01</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Values for quantitative moderator are the mean plus/minus one SD from mean
Values for dichotomous moderators are the two values of the moderator.

Table 18: Conditional process modelling with PHTP as Mediator V

Index of Moderated Mediation

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Index</th>
<th>SE (Boot)</th>
<th>Boot LLCI</th>
<th>BootULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHTP</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.00</td>
<td>0.01</td>
</tr>
</tbody>
</table>
4. Discussion

The current study investigated the relationship between childhood trauma and adult depression and aimed to test time perspective, a cognitive individual difference variable, and emotion regulation in a moderated mediation model to explain why only some childhood trauma survivors may develop depression in adulthood while others do not (Nanni et al., 2012; Schilling et al., 2014).

A surprise finding was that childhood trauma did not predict depression per se and was not significantly correlated with severity of depressive symptoms in the current sample of adult patients treated for mild to moderate mental health difficulties at time of participation. This is in stark contrast to previous research and a general consensus in the literature (for a review, see Infurna et al, 2016, Mandelli et al., 2015, Nanni et al, 2012) that adverse life events, particularly when experienced early in life, are a risk factor for a range of psychological difficulties, and depression in particular (Chapman et al., 2004, Edwards et al., 2003, Gladstone et al., 1999; Gibb, Chelminski & Zimmerman, 2007; Springer, Kuo, & Carnes, 2007; Widom, DuMont & Czaja, 2007; Zavashi et al., 2006). This apparent contradiction highlights the need for research considering these variables not in isolation but in conjunction with confounding variables. Although contrasting with previous literature, the current findings of this study are very much in line with the cognitive model of depression which emphasises the importance of how events are cognitively processed. The current study extends the model by providing evidence for the importance of cognitive styles, and cognitive emotion regulation, rather than automatic thoughts alone. While Beck (1967) posits that ongoing current thoughts may be faulty or imbalanced when processing events, the present study found that preferences for certain cognitive styles, such as time perspective, which are thoughts to guide these
current thoughts, may also be of major importance. Time perspective theory places emphasis on TP’s link to decision-making and resulting behaviours. For example, a future oriented person has been found to be less likely to engage in risky behaviour than a future oriented person (Boniwell, 2004). It may therefore have the potential to create an individual’s longer-term circumstances that may, in turn, be making the occurrence and maintenance of low mood more or less likely. Indeed, past research has found that future-oriented individuals have more friends, a higher socio-economic status and higher income than predominantly present-orientated individuals. Again, the cognitive model is able to accommodate this, suggesting that our experiences can impact on our core beliefs. Consequently, time perspective, core beliefs and automatic current thoughts may all work together in predicting depression across the lifespan more accurately than current thoughts, or time perspective, alone.

In line with time perspective theory (Zimbardo & Boyd, 1999), the results of the present study indicated that higher self-reported childhood trauma levels led to higher past negative time perspectives, and in turn to higher depression levels. Put differently, the more adverse events an individual reported to have experienced in childhood, the more they based their current thinking and decision-making on the negative and traumatic aspects of their past. Zimbardo & Boyd (1999) suggest that the mechanisms involved between TP and current behaviour is that individuals may, for example, tend to choose more careful actions, basing their current behaviours on adverse events and negative learning experiences. This may then lead to individuals being more socially withdrawn or having a more negative outlook on life (Zimbardo & Boyd, 1999); a further example of how time perspective preferences may shape an individual’s circumstances that may, over time, maintain low mood considered normal as a first response to traumatic events.
Numerous authors have previously suggested that the Beckian cognitive theory of depression is requiring additional elements to increase its predictive utility for depression (e.g. Abramson et al., 1989; Peterson & Seligman, 1984). The present study also investigated the role of emotion regulation as the intersection between cognitive style and decision-making as measured by time perspective.

It has previously been suggested that the processing of childhood trauma is dependent on an individual’s emotion regulation skills. Problematically, the development of these skills is negatively impacted on by early life trauma (Crow et al., 2014; Raes & Hermans, 2008) in that such events can hinder their development. Where these difficulties were most pronounced in the present sample, the model with time perspective as a mediator, or childhood as a direct predictor of adult depression, could not account for current depression levels. The regression analysis further showed that emotion regulation as a mediator also did not directly predict current depression levels, contrary to what would be expected given previous research (Berking et al., 2014, Joorman, 2010). Not all of the five time perspectives were relevant to the prediction of adult depression in this sample, which was surprising given their overlap with depressive symptoms, and previous research. For example, Wildschut et al (2013) found that nostalgia buffers depression and past positive TP shares overlap with nostalgia. Additionally, low future TP captures a lack of optimism for the future and should theoretically overlap with hopelessness, a key feature of depression although it has previously been suggested to be a particular sub-type of depression (Abrahamson et al., 1989) and may therefore not predict depression universally.

Overall, the finding that trauma does not directly lead to depression, despite contradicting existing literature, has high face validity given the fact that not all
trauma sufferers develop psychopathology after childhood trauma, and some manage to achieve post-traumatic growth (for a review, see Zoeller & Maercker, 2006). It suggests that cognitive behavioural therapy (CBT) may be helpful in the aftermath of trauma given its focus on examining and changing maladaptive cognitions with which events are interpret. However, this study also suggests that the effect cognitive biases have on depressive symptomatology also does not exist in isolation, but instead further depends on individuals’ emotion regulation skills. It was not possible to predict participants’ depression levels with time perspective as a mediator for those participants with the highest emotion dysregulation. It may be that cognitive styles, including a focus on negative events such as past trauma, become less important once emotion dysregulation has reached a particularly high point, in line with the idea of a ‘window of tolerance’ in trauma work which posits that individuals may be better able to process ideas cognitively (Ogden et al., 2006; Siegel, 1999). This idea posits that when individuals are too emotionally aroused, their cognitive function will be negatively impacted (Siegel, 1999).

5. Limitations and directions for future research

There are a number of limitations in this study. A possible factor to consider when interpreting the results of the current analysis which differs from previous research in that childhood trauma did not directly predict adult depression in this study is that one of the CTQ subscales, physical neglect, did not demonstrate satisfactory internal reliability in the present sample. Although the same particular subscale has been found to be non-reliable in other studies (Grassi-Oliveira et al., 2014, Villano et al., 2004), the CTQ’s five factor structure has been validated extensively across populations (Bernstein & Fink, 2014; Charak et al., 2017, Paivio & Cramer, 2004,
Spinhoven, et al., 2014) and was therefore kept in the current study. However, this may have confounded results. An additional problem with the available data may have been a floor effect due to relatively little variance in depression scores, with those overall being in the mild range in the present sample. One explanation may be a floor effect limiting the range of depression-scores. This would have limited the variability in the gathered data and findings therefore must be interpreted with some caution and need further investigation. Second, relating to the study design, the use of self-report questionnaires introduces subjective bias that may have been avoided in structured interviews, for example. Third, the sample was predominantly female as may be expected in a primary care mental health service. Fourth, the Childhood Trauma Questionnaire was problematic in terms of the reliability of one of its subscales, physical neglect. This may have reduced the inferences that can be drawn from the measure, and therefore this study, given that total scores were used to measure childhood abuse. A further difficulty was that the design of this study was the cross-sectional design in this study preventing causal inference and an exploration of the dynamics between the involved variables over time. Additionally, the sample was not limited to a particular mental health diagnosis, such as major depressive disorder, and data on these were not gathered. Data on nationality and background of participants were also not gathered so the generalizability of the findings is unknown. Another drawback of this study was that participants were not analysed separately depending on the stage in treatment they were at. This may be meant that it is unknown whether therapy can achieve changes in time perspective over time.

Finally, the ordering of variables in conditional process analysis requires careful interpretation. Their order was based on the results of both correlations and
regression analysis, as well as cognitive theory and the role avoidance plays in psychopathology. This method is limited to investigating one predictor and therefore still assumes a somewhat linear relationship between these variables. With larger samples, it may be possible to investigate the involved factors with Structural Equation Modelling (SEM) which would be able to look at the relationship between several independent and dependent variables at the same time. Future research may also benefit from longitudinal designs that could measure whether time perspective is a relatively stable variable over the course of therapy especially.

6. Implications for clinical practice and research

First and foremost, the results of this present study confirm the importance of cognition in the maintenance of negative affect after trauma given that such life events appear to affect cognition rather than depression directly. This is further evidence for the relevance of CBT for childhood trauma survivors experiencing depression later in life. The present study, however, extends both time perspective theory and the Beckian model of depression. First, it tested and confirmed that time perspective is indeed a predictor of mental health for the first time. Second, it extends the original cognitive model of the disorder by highlighting the importance of considering relatively stable cognitive style, rather than automatic thoughts alone. Time perspective captures the more stable individual difference preferences that underpin and guide current thinking and decision-making; an element that is currently missing in the classic Beckian conceptualisation of depression. Second, although the findings of the current study therefore are only tentative, they suggest that although childhood trauma does have a link to adult depression, this
may not be direct. Therefore, clinicians should not be assessing childhood trauma in isolation, but in conjunction with emotion regulation skills and cognitive preoccupation with adversity in the past. The present study suggests that patients that have high emotion dysregulation may need to work on strategies to enhance these skills first before working on cognitive style, given that time perspective was only predictive of mood for those with higher regulation skills. Using time perspective theory, and knowing that a higher past negative TP leads to depression, treatment may focus on decreasing past negative TP once emotion regulation skills are adequate. Time perspective theory further suggests that having a past negative TP in itself is neither good not bad, and simply needs to be balanced with other TPs (Zimbardo & Boyd, 1999, Boniwell, 2010, 2012). Given that the current findings suggest that a present-hedonistic thinking style may buffer depression, enhancing this style in patients (e.g. reward planning) may be also be helpful for balancing past negative biases, and perhaps especially where therapy has encouraged the temporary increase of past-negative time perspective whilst coming to terms with past trauma.

Our findings may also provide evidence for the notion of a “window of tolerance” in which cognitive work to be meaningful for the client, given that cognitive style was no longer relevant in mood prediction of adult patients when they were highly emotionally dysregulated. By contrast, for those more skilled at regulating negative affect after trauma, cognitive style becomes an important predictor of depression. For this group, it therefore makes sense to tackle their cognitive style, and to consider their preference for particular cognitive style and in particular their past negative time perspective.
7. Conclusions

The preliminary findings investigated time perspective in a mental health context for the first time and confirmed its utility in predicting depression in the context of childhood trauma vulnerability. The tentative findings of the present study suggest that childhood trauma is not directly associated with adult depression in those seeking treatment in mental health services. Instead, it impacts on our current thinking style measured in time perspective, which is dependent on their ability to regulate emotions. In turn, and in line with cognitive theory, current thinking styles leads to depression. Interventions may therefore benefit from assessing childhood trauma, an individuals’ emotion regulation abilities, as well as their dominant time perspectives.
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Chapter II
Processing trauma with rumination in adolescence: What’s the worst that could happen?
A narrative synthesis

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Thesis Abstract

Trauma in childhood and adolescents is common (Häuser, 2013). This is alarming given that such experiences are a well-established vulnerability factor for developing depression later in life. However, it is clear that not everyone who experiences childhood trauma develops depressive symptoms and research on the mediators involved in this relationship is therefore key. In the available literature, rumination has already been identified as such a mediator in the adult literature on trauma and depression. However, findings have been somewhat conflicting and much less is known about adolescents using ruminative processing of traumatic events. This narrative synthesis aimed to fill this gap by investigating what maladaptive outcomes ruminative processing of trauma can have in adolescents. A manual and electronic search of four databases initially yielded 543 relevant articles. Based on the PICOS methodology (CRD, 2009), the selection criteria for this review encompassed population (adolescents aged 10-19), type of trauma (natural or man-made, single event or complex trauma) and measures used (trauma and psychopathology measured with at least one standardised measure). Only empirical research was included but no other restrictions were placed on the studies included. 14 studies with a total of 5002 participants from four countries, who had experienced either man-made or natural disasters, were ultimately reviewed. There was considerable variance between studies in how rumination and trauma were measured and operationalised, limiting their comparability somewhat. Similarly, to the adult literature, the use of rumination in adolescent trauma survivors was found to lead to greater likelihood of developing PTSD, anxiety and depression and this effect was maintained over up to 3.5 years. Adolescents that tended to use rumination before trauma were more likely to process such stressful events with the same emotion regulation style. Only two studies investigated different types of rumination, finding that only intrusive, but not deliberate rumination, led to psychopathology 4.5 years
post-event. Unfortunately, the relatively low quality of the available evidence meant that only preliminary conclusions could be drawn and discussed with regards to their relevance to clinical practice.

**Key words: trauma, rumination, emotion regulation, adolescence**
1. Introduction

Trauma across the lifespan is common. It is estimated that around 14-80% of individuals will experience their first traumatic event in childhood or adolescence (Alisic et al., 2008; Fairbank & Fairbank, 2008; McLaughlin et al., 2013). These figures are particularly alarming given that trauma occurring in childhood and adolescence is associated with a heightened risk for psychopathology later in life (Rauschenberg et al., 2017; Saleh et al., 2017). However, it is clear that not every young person that experiences trauma will develop mental health difficulties. Identifying the mediating factors that determine whether traumatic stress does, or does not, lead to negative mental health difficulties is therefore critical for optimising patient care (Kazdin, 2007). The current review synthesises information on one such mediator, rumination, and aims to answer the question of what negative impact a ruminative processing style of traumatic experiences may have on adolescents’ mental health.

This narrative synthesis adopts the trauma definition of the DSM-5 (APA, 2013), which conceptualises it as direct exposure to actual or threatened death, serious injury, or sexual violence. Trauma may also occur if an individual has been indirectly exposed to such stressful life events; for example, by having witnessed them happening to others, or by having learned about them happening to close friends or relatives (see Appendix 1 for full DSM-5 criteria; APS, 2013). Such severely distressing events may overwhelm individuals’ capacity to cope and, as a result, make it more difficult to integrate the emotions involved in the experience (Storr, 2007).

It has been suggested that young people may be more prone to developing mental health difficulties after such events given that they may not have fully developed cognitive emotion regulation skills yet (Cloitre et al., 2015; Crow et al., 2014; Raes &
The latter are a set of competencies first learned from caregivers in childhood that enable us cope with stress throughout life (Thomson, 1991, Garfenski et al., 2001) and interruption to this process is equally believed to lead to being more vulnerable to life stressors (Garfenski et al, 2006). Nine emotion regulation skills have been identified in the literature: self-blame, other-blame, rumination, catastrophising, putting into perspective, positive refocussing, positive reappraisal, acceptance and planning (Garfenski, 2001; 2002; 2006). All of these have been found to have a positive effect in terms of buffering the impact of stressful life experiences, with the exception of catastrophising, self-blame and rumination which were found to have negative consequences in that they are associated with increased vulnerability to developing emotional difficulties across age groups (Garfenski & Kaij, 2006). However, with regards to rumination specifically, there is some conflicting evidence in the literature.

Rumination can be defined as a repetitive focus on past events, as well as on the causes and consequences of these (Spinhoven, Penninx, Krempeniou, van Hemert, & Elzinga, 2015). It has been suggested that rumination may be a particularly common emotion regulation strategy in young people; especially given that more adaptive emotion regulation strategies, such as problem-solving or outward expression of emotion, may either still be under-developed or could result in adverse reactions from the young person’s environment, and therefore in a potentially escalation of risk (Gellatly & Beck, 2005). Passive strategies such as rumination may therefore feel more adaptive to younger people. In reality, however, attempts to control one’s thoughts in this manner have continuously been found to be counterproductive and detrimental to mental health (Bryant & Guthrie, 2005; Gellatly & Beck, 2016; Holeva et al., 2011). Indeed, adolescents who tend to respond to distress with rumination have been shown to be more likely to suffer anxiety and depression (Armstong, Shakrespeare-Finch & Sochet, 2013; Brown, Mulhern &
Joseph, 2002; Ehring et al., 2008; Ginzburg, Ein-Dor & Solomon, 2009; Broderick and Korteland, 2004; Grabe et al., 2007; Kuyken et al., 2006; Michl et al., 2013; Nolen-Hoeksema et al., 2007; Rood et al., 2009) but also several other issues, such as substance misuse, eating disorders and conduct disorders (Bender et al., 2012; McLaughlin et al., 2011, McLaughlin et al., 2014; Nolen-Hoeksema et al., 2007).

Furthermore, rumination has been linked to the maintenance of overall distress in adults (Armstrong et al., 2013; Zetsche et al., 2009) and PTSD symptoms specifically have been shown to be maintained via rumination over a one-year period in adults, even where initial symptom-levels were controlled for (Michael et al., 2007, Murray et al., 2002). Frequent co-morbidity between depression, anxiety and post-traumatic stress disorder after trauma in this older population has led researchers to suggest that it is likely they share a common vulnerability factor; rumination (Anthony et al., 2002; Fox et al., 2010; Ginzburg et al., 2009; Mitchell et al., 2014; Philips et al., 2002, Taylor et al., 2007; Shigemoto et al., 2016).

Importantly, individuals who have experienced trauma also appear to use rumination more frequently. For example, research has shown that both adults and adolescents that have been abused in childhood tend to ruminate more than those who have never experienced abuse (Conway et al., 2004; Sarin and Nolen-Hoeksema, 2010; Watkins, 2009). A potentially devastating dynamic may therefore develop after trauma where increased rumination may occur post-event, and in turn, this ruminative processing of the event is linked to the development of psychiatric symptoms, feeding into the individual’s vulnerability to future stress.

Apart from these negative outcomes of ruminative processing of trauma, rumination has also been linked to positive outcomes in an emerging line of research within positive psychology. Post traumatic growth (PTG), for example, i.e. benefit-finding in the face of adversity, has been linked to rumination after trauma across age groups (Tedeschi & Calhoun, 1995; Calhoun & Tedeschi, 2013). Specifically, cognitive
therapy and cognitive-behavior therapy studies of PTSD have emphasized that active thinking about traumatic events can change pathological thinking styles and reduce trauma-related fear and PTSD symptoms (Ehlers & Steil, 1995; Paunovic & Öst, 2001), as well as help trauma survivors reconstruct positive meanings in traumatic events, resulting in PTG (Cann et al., 2010; Taku et al., 2008). While PTG is beyond the remit of the present review, it is mentioned here to illustrate the polar ends of the spectrum of possible outcomes where rumination is used to process trauma. Given the above, rumination in itself may not be a uni-dimensional variable, and its different components or variants may lead to significantly different outcomes, depending on what type of rumination an individual employs. Deliberate rumination, for example, has been conceptualized as a protective factor in the prevention of PTSD (Calhoun & Tedeshi. 2013) while 'rumination' in general has been linked to the development and maintenance of PTSD. Other sub-types of rumination that produced differential outcomes in the adult literature were identified by Murray et al (2002) who found that PTSD severity was most closely linked with “why” or “what if..”- type of ruminating. It is unclear how much of the available literature on rumination in adolescents after trauma takes the multi-dimensional aspects of ‘rumination’ into consideration.

1.1. Aim of narrative synthesis

Given that the bulk of research on ruminating after trauma has been conducted in adult populations, the aim of this narrative synthesis is to investigate the adverse outcomes ruminative processing of trauma has on adolescents’ mental health. Early intervention for young people affected by trauma is important to prevent long-term consequences for the survivor’s mental health in adult years. Intervention requires the identification of treatment targets for clinicians, i.e. mediating variables that operate between trauma and psychopathology that can be modified in
psychotherapy. This narrative synthesis aims to examine the available evidence with regards to one such mediating variable, rumination, and the negative effect it may have on adolescent trauma survivors. Rumination was chosen as it is a particularly common cognitive strategy in adolescents processing life events that has previously been found to predict dysphoric mood in young people (Lo et al, 2017). Rumination is reviewed here also because it is already commonly addressed in Cognitive Behavioural Therapy (CBT), the recommended treatment for both depression and trauma (NICE, 2016), and can be adjusted by cognitive restructuring techniques. Given the lack of available studies in this particular field and age group, as well as the variety of methodological approaches used in these studies, this narrative synthesis gives a first comprehensive and systematic overview of the available literature and aims to answer the research question.

2. Method

This narrative synthesis followed guidelines from the Centre for Reviews and Dissemination (CRD, 2009), PRISMA (Moher et al., 2009) and the PICOS methodology (i.e. taking into consideration the population, intervention, comparators, outcomes and study design) when designing the quality checklist criteria especially. As recommended by the CRD (2009), not all of the PICOS criteria are possible to be considered in all narrative syntheses. The ‘comparators’ and ‘interventions’- elements were not considered in this review given that there were no treatment groups or interventions involved in any of the studies included.
2.1. Search Strategy

The systematic search was conducted in June 2017, and re-run in November 2017 to identify whether any further relevant studies had been published. Initially, the Cochrane database was searched to explore relevant systematic reviews in the field to ensure no other reviews had recently been undertaken. Subsequently, the following databases were searched: PsychInfo (1806-March 2017), Your Journals on Ovid, Embase (1974 to 2017), Ovid Medline® EPub ahead of Publication Process and other non-indexed citations, Ovid Medline® Daily and Ovid medliner® (1946 to Present).

A keyword search was undertaken on the following terms: ruminat*, adolescen* or teen* or “young person*” or “Young People*”, pts* or posttrauma* or trauma* or post trauma* stress or posttrauma* stress. The use of * allowed the inclusion of variations in spellings and word endings.

Additionally, duplicates were removed and the search was limited to publications in English due to limited resources for potential translations.

Further to the initial search method, manual searches were undertaken to reduce potential limitations that may have arisen due to the search terms, and the key words used in the relevant papers. All papers referenced in the originally identified studies were examined. Moreover, subsequent publications which cited the included studies, as they appear in Google Scholar, were also screened.

Following SIGN Guideline 50, no hand searches of relevant journals were conducted. Unpublished documents, conference presentations and dissertations were excluded in order to include only peer-reviewed evidence. While this opens up the possibility for publication bias that may be influencing the results of the search, it was felt that only peer reviewed studies should be considered evidence, especially given the population and intention of this narrative synthesis to discuss clinical implications.
2.2. Inclusion and Exclusion criteria

To be included in this study, the papers were required to be empirical research involving adolescents who had experienced traumatic events and rumination needed to be assessed. The sections below detail the inclusions and exclusion criteria in more detail.

2.2.1. Population

Included were articles based on studies that recruited young people aged between 10 and 19 who had experienced at least one traumatic event as assessed by a standardized measure by the authors. Based on this, several studies were excluded due to involving adult samples, or for focusing on therapist or parental impact rather than on the adolescent trauma survivor. All types of trauma (e.g. man-made or natural) and levels of severity were included.

2.2.2. Outcomes

Studies were eligible only if severity of trauma and rumination were assessed using a standardised measure specifically designed to capture these concepts (validated observation, interview protocol or self-report tool). Some of the identified studies used modified standardized measures to assess trauma and these were also included, due to the limited available research in this population. Similarly, some of the studies focused on emotion regulation or cognitive appraisal after trauma and these studies were also included in the initial review process, and only kept in the final selection if rumination was assessed within these strategies to regulate affect.
Where outcomes were measured in biological terms (i.e. cortisol levels), genetics (i.e. genetic protective factors after trauma) or focused on neuropsychological (e.g. hippocampal activity, EEG asymmetry, neurocognitive predictors of depression after trauma) or pharmaceutical and health outcomes (i.e. medication comparisons, physical health after trauma), these studies were excluded. Similarly, where the outcome variables measured was post-traumatic growth, these studies were also not included. All of the above were not included given their unsuitability to answer the research question. In the same vein, evaluations of specific interventions for trauma survivors and evaluations of trauma inventories or theoretical frameworks were excluded as their focus was not on measuring outcomes of the event itself. A study focusing on Buddhism and psychology, and a further on malingering, were excluded given that their focus on outcomes other than the psychological impact trauma had on the survivor.

2.2.3. Study Design

Due to the low number of studies in the field, and the nature of trauma, all study designs were included in this review, regardless of the methodology that was employed. Only peer-reviewed, empirical pieces of research were included in this review to ensure the included work had passed a quality assessment by reviewers. Review articles were excluded, as were editorials, opinion papers and unpublished scripts, following Cochrane guidelines (Hannes, 2011). Dissertations and books were also excluded from this review, as were opinions, scientific sessions abstracts, replies, poster abstracts, discussions of presentations and comments.
2.2.4. Study Selection

The initial electronic database search and manual search yielded 543 results after duplicates had been removed and results had been limited to English language publications. These were screened against the eligibility criteria and 40 further papers were excluded as a result. After scanning titles and key words for studies, 78 papers remained in the extraction pool. In a next step, a further 56 studies were excluded after reading the abstracts. The remaining 22 papers were read in full and this last stage of exclusion led to a total of 13 articles being identified to be included in this review. Given that one of these included 2 studies and these were separately included, the total number of reviewed studies in this review was 14. A visual presentation of the selection process is illustrated in figure 1.

2.2.5. Data extraction

A data extraction spreadsheet was designed for this review, featuring key elements of interest. It was piloted with one of the reviewed studies, Zhen et al., 2016, and modified based on these results (age of participants added). Key characteristics of the studies were: Author, year of publication, country of study, sample size, eligibility criteria, age of participants, methodology and scales used for trauma and rumination and main findings.

2.3. The Quality Criteria

The methodological quality of the eligible studies was assessed using the quality criteria developed for the purpose of this review (Appendix 2). This was based on
recommendations to utilise a checklist format that is multidimensional (Hannes, 2011).

While existing quality criteria were reviewed, they were found to be unsuitable for the present narrative synthesis, given that they were often developed for randomised controlled trials (RCTs), which were not used in any of the available studies under review. Furthermore, the existing review quality criteria were missing items specific to the nature of research within a trauma context (e.g. items relating to the ethics and timing of the studies to be reviewed). Several authors suggest that available quality criteria may need to be adjusted to ensure they meet the requirements of specific review questions (e.g. Coull & Morris, 2011; Mayo-Wilson & Montgomery).

The quality checklist for the current review was subsequently developed based on a combination of the SIGN 50 Quality Checklist for Randomised Controlled trials (2012), CREST, PRISMA 2009 Checklist (Preferred Reporting Items for Systematic reviews and Meta-Analyses; Moher et al., 2009), and the Cochrane Risk of Bias Tool (Higgins & Altman, 2008). Additionally, guidance for the Centre for Reviews and Dissemination (2009) was utilised. Further questions were added to complement the generic tools to capture aspects relevant to trauma and depression specifically (e.g. ethical considerations). The structure of the checklist in particular is in line with the SIGN checklist for controlled trials which separates the checklist into sections measuring Internal validity and overall assessment of the study.

For the ratings of each of the developed criteria, SIGN (2012) guidance was followed and adjusted where necessary. Points between 0 and 2 were given to rate whether the item in question was adequately addressed or not (see each specific item for exact ratings). A total score of 31 could be achieved.

It is worth noting that some authors have warned against the usage of single scores for evaluating the quality of studies in systematic reviews. For example, Liberati and
colleagues (2009) raise the point that a single outcome score simplifies the factors that need to be considered when evaluating studies, to the point of being misleading.

Figure 1: Flow Chart of Data Selection Process

Records identified through database searching (n = 540)

Additional records identified through other sources (n = 3)

Records after books, dissertations, comments, reports and editorials were removed (n = 500)

Records after papers were screened based on title (n = 78)

Records excluded (n = 422)

Records after scanning abstracts for eligibility (n = 22)

Records excluded (n = 56)

Full-text articles after papers were assessed for eligibility (n = 13)

Full-text articles excluded, due to age of participants (n = 9)

Papers included in the present review (n = 13)

Studies included in this review (n = 14)

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3. Results

3.1. Characteristics of included studies

The mean age of participants in the 14 reviewed studies ranged between 10 and 19 years. Sample sizes were generally high, ranging from 59 to 1065 (where the latter is the participant number recruited at baseline); $M=394$, $SD=342$, and varied greatly regardless of overall quality rating-scores being medium or high. Even in the highest scoring studies, sample sizes varied between $N=93$ and $N=1065$. Table 1 lists inclusion and exclusion criteria, which did not include prior and post-event psychological health, socio-economic status, or culture.

Of the 14 included studies, the four scoring “high” overall were conducted in the UK and the USA and all studies conducted in these countries scored the highest independent overall scores in this review; with one exception (Shapero et al. 2013 scoring 15). Five medium-quality studies were conducted in China (including one in Tibet), which all investigated was natural disasters. Three of these were yearly follow-up studies recruiting from two schools in an area affected by the Wenchuan Earthquake which happened in 2008, with the last of this series being 4.5 years after the event. They were three of the lowest overall scores attained in this review.

Similarly, the only two UK studies (Meiser-Stedman and colleagues, 2007; 2009) were both conducted by the same authors and the samples appear to be linked, i.e. both include the 2007-sample and a 6 months follow-up. The remaining seven studies conducted in the USA were independent research projects. Only one of these investigated a natural disaster while all others were ‘man-made’ types of trauma.

In only two of the six prospective studies, data was gathered before and after clearly defined events (Felton et al., 2013 & Jeness et al., 2016), whereas the other studies were prospective ‘snapshots’ in a series of ongoing stressful life events (e.g. peer
victimization; Heleniak et al., 2015, Michl et al., 2013; Stange et al., 2014, Shapero et al., 2013).

3.2. Study design

Of the 14 studies under review, all were quantitative. Six were cross-sectional studies conducted after a traumatic event, six were prospective longitudinal studies, and two retrospective longitudinal. The data in the cross-sectional studies were gathered between 2-4 weeks after the investigated traumatic event (Meiser-Stedman et al., 2009) and 4.5 years post-event (Zhou et al., 2015). The latter was the lowest overall score attained in any of the quality reviews, while the former was among the highest scoring studies. In one exception, Heleniak and colleagues (2015b) gathered data on emotional abuse without specifying whether the traumatic experiences were still ongoing. Within the six prospective longitudinal designs, the time between measurements was between 6 months (Felton et al., 2013) and 25 months (Jeness et al., 2016). In the two longitudinal retrospective designs, the timeframe between measurements was 7 and 24 months and both studies were focusing on specific singular traumatic events (e.g. car accident).

All American and British studies, the highest scoring studies overall, used standardised measures, with the exception of one measure in Meiser-Stedman et al. (2007) being adapted on one subscale to accommodate the setting the recruitment took place in. Similarly, Stange et al., (2014) modified the Adolescents Life Events Questionnaire (ALEQ) without making these modifications available. By contrast, all of the Chinese studies used at least one modified and/or developed new measures to capture the particular natural events that constituted the traumatic event under investigation.
3.3. Quality Assessment

All studies were rated based on the quality criteria that were developed for this thesis specifically (see appendix 2). Scores are noted in the summary table (table 1). The fourth author independently evaluated the quality of a randomly selected third (n=5) of included studies using a randomised sequence generated by random.org. An initial agreement on 50/60 ratings (83.3%) was achieved. Disagreements of more than one point (ratings in individual reviews ranged from 0-3) was present in three ratings. These discrepancies were subsequently discussed between both raters and the criteria amended to increase clarity. A 100% agreement on all ratings was reached after these discussions. As the total of points that could be scored in the quality assessment was 31, the reviewed studies were divided into low (10 points or lower), medium (11-20 points) and high (21 points or higher) quality research.

3.4. Quality of reviewed studies

A summary of key characteristics of the studies included in this review is provided in table 1. In order to establish what effect rumination has on young people that have experienced trauma, the following factors were considered for this summary table: study design, time since trauma occurred at participation, sample size and representativeness, inclusion and exclusion criteria to establish whether all participants in the study were directly affected by trauma and whether important pre-trauma factors (e.g. relevant mental health outcomes) were considered, as well as the outcome measures used and whether these were standardised. Overall, four out of the 14 studies reviewed were of high quality while the remaining 10 were of medium quality.
3.5. Sample representativeness

Recruitment methods varied substantially between the reviewed studies. Three studies used systematic recruitment, two used opportunity samples and the remaining studies under review used convenience samples. Six studies did not have particular eligibility criteria and, for example, recruited all students of schools in affected areas (e.g. Zhen et al, 2015; 2016; Wu et al., 2015). It is therefore unclear how homogenous the samples are in terms of how directly affected participants were by the traumatic event, limiting generalizability. Regardless of overall quality rating-scores, samples appeared to be considerably heterogeneous in the majority of cases: For example, in one study (Jeness et al., 2016), all but three participants were exposed to media coverage of the event, rather than having experienced it themselves. Only in Meiser-Stedman et al (2007; 2009) were participants matched based on the level of injuries they suffered. Previous trauma history was only assessed in four of the reviewed studies; three of these being high quality studies (Heleniak et al., 2015a; Michl et al., 2013; Stange et al., 2014).

3.6. Outcome Measures

There was considerable variation in the number of measures used to capture both trauma and rumination. In the 14 studies reviewed, trauma was measured with 10 different measures, some of which were tailored specifically to the type of traumatic events under investigation (n=4), while others were genetic (n=10). The generic Childhood Trauma Questionnaire (CTQ, Bernard & ink, 1994) was the most commonly used scale used in three studies. However, apart from one exception (Stange et al. 2014), it was unclear how the CTQ was scored (e.g. total scores or
standardized values and whether cut-off scores were used). In two cases, the CTQ was “modified” in not fully disclosed ways. Additionally, all of the medium-scoring Asian studies included used questionnaires that were translated into a foreign language in an undisclosed fashion, rather than being standardised (Zhen et al., 2016, Wu et al. 2015, Jin et al., 2014, Zhou et al. 2016). Validity and reliability of these scales were reported for the original versions. Three scales used were developed by the authors who used them in their study (Zhou et al., 2016, Felton et al. 2013, Zhen et al., 2016) and one research team developed an unclear number of non-standardised questions regarding trauma appraisals (Meiser-Stedman et al., 2007).

In the 14 reviewed studies, across medium- and high scoring studies, rumination was measured with five different measures, with the Childrens’ Response Styles Questionnaire (CRSQ; Abela et al., 2002) being the most commonly used (n=6). These capture rumination as a trait response style while the CERQ can also be used to measure spontaneous “state” type of rumination. However, they assess different types of rumination. The global ruminative response scale distinguishes between “brooding” and “reflection”. The Event Related Rumination inventory, on the other hand, distinguishes between “deliberate rumination” and “intrusive rumination” (Cann et al., 2010). Finally, the CRSQ, only distinguishes between general “rumination” and other coping styles (e.g. Problem-solving).

In two studies (Heleniak et al., 2015 & Meiser-Stedman, 2007, the CRSQ was modified in not fully disclosed ways. In one further study (Felton et al., 2013), the adult version of the RSQ was used. Overall, the trauma-related measures used in five of the 14 studies reviewed were “modified”, while only one study provided the exact wording of the minor changes made to their rumination measure (Felton et al, 2013).
3.7. What negative effect does rumination have in adolescents that have experienced trauma?

3.7.1. Correlational findings

Several of the reviewed studies of both medium and high overall quality found that rumination was more common in adolescents that had experienced trauma. For example, young people in both of two studies by Heleniak and colleagues (2014) who reported having experienced higher levels of child maltreatment as measured with the CTQ also reported engaging in habitual rumination more frequently. Similarly, Stange et al (2014) and Shapero et al (2013) support these findings with their prospective longitudinal studies in which individuals reported higher levels of rumination at follow-up if they also reported having experienced higher levels of emotional abuse, neglect or peer victimization at baseline.

Rumination as a response to stressful events appeared to be relatively stable, with individuals who used this cognitive strategy as an initial response to emotional abuse and peer victimization also reporting higher tendencies to ruminate 7 months later (Michl et al., 2013), compared to controls with lower rumination levels at both points. Similarly, Felton and colleagues (2013) were able to demonstrate in their prospective longitudinal design that those who tended to ruminate before the traumatic event were also more likely to initially respond with this processing style to stressful events in adolescence. Additionally, rumination measured as a cognitive style prior to a terrorist attack positively correlated with PTSD symptoms (Jeness et al., 2016.) after the event, even when controlling for age and sex, as well as pre-trauma internalising and violence exposure before the event.
In turn, a ruminative response after trauma experienced in adolescence was positively associated with psychopathology. Felton et al (2013) found that responding to traumatic events with rumination was associated with higher depression levels. Similarly, ruminating on negative affect triggered by either motor vehicle accidents or physical assault was correlated with Acute Stress Disorder in the immediate aftermath of the trauma, i.e. 2 weeks after the event (Meister-Stedman, 2007). This effect remained when the follow-up period increased: The adolescents who reported higher levels of rumination at 2-4 weeks post accident were followed up after 6 months. At this time, higher rumination levels at baseline were positively linked with post-traumatic stress disorder symptoms (Meiser-Stedman, 2009). In the same vein, adolescents who initially responded to natural trauma with higher rumination had higher PTSD-symptoms levels 3.5 years after a single event trauma (Zhen et al., 2016), as well as higher depression and anxiety levels over a 6-9 months follow-up period (Felton et al. 2013; Michl et al., 2013 & Stange et al., 2014). However, it has to be noted that the studies with the longest follow-up periods were among the lowest scoring studies in this review.

Where authors differentiated between different types of rumination, it was found that these correlated with opposite outcomes in terms of how individuals were making sense of the events. More specifically, intrusive rumination and deliberate rumination were investigated separately. Intrusive rumination was more common with age (Zhou, 2016) and individuals were more likely to respond with this cognitive style the more intensely they rated the impact of the traumatic experience (Zhou et al., 2016). In turn, intrusive rumination was always (at 6, 12 and 18 months after an earthquake) positively linked to post traumatic stress symptoms and never with post-traumatic growth in this longitudinal research. Two further cross-sectional studies further found this relationship in adolescents 3.5 years (Zhou et al., 2015) and 4.5 years (Zhou et al., 2016) after they had experienced a natural disaster. Intrusive rumination was
furthermore positively correlated with PTSD symptoms levels "soon after" the event in a further study by Wu and colleagues (2015), although the authors did not clarify the length of this time frame, i.e. when their data were collected.

Additionally, intrusive rumination was positively correlated with Post-Traumatic growth when captured in a cross-sectional design 4.5 years after an earthquake (Zhou et al., 2015), although, again, this study obtained some of the lowest quality criteria-scores.

By contrast, deliberate rumination was used less with increasing age (Zhou, 2016) but more with subjective increased trauma severity (Zhou, 2016). Where an individual initially (6 months post-event) had intrusive rumination, but deliberately ruminated more at at 12 months follow-up, they were more likely to reach Post Traumatic Growth 18 months after an earthquake, whereas those who only had higher intrusive rumination at 6 and 12 months after the event had higher PTSD levels at 18 months (Zhou et al, 2015).

Where rumination was measured as a undimensional factor, it was positively related to a variety of further outcome variables such as self-reported trauma severity (Zhen et al., 2016, Jeness et al., 2016) and in both cross-sectional and longitudinal studies, those who reported ruminating more also scored higher on internalising and externalising psychopathology (Heleniak, 2015; Jeness et al, 2016).Some of the variables rumination was positively associated with were not clearly operationalized by authors; namely "dependent achievement" , “independent interpersonal events” and “dependent personal events” in a study by Stange et al (2014); one of the highest-scoring studies in this review.
3.7.2. Predictive models

Beyond correlations, all studies used linear regression, mediation models or structural equation modelling to examine which factors predict the effect of rumination in the aftermath of trauma experienced in adolescence. The reviewed studies differentiated between the effects of different types of rumination and trauma. All of the four highest rating studies examined rumination as a homogenous trait variable, while several medium-quality studies differentiated between different types of rumination, e.g. intrusive and deliberate. For example, Zhou and colleagues (2015) found that trauma had a direct positive effect on both Post Traumatic Stress Disorder (PTSD) and Post Traumatic Growth (PTG). Each of these opposite outcomes, however, was mediated by a different type of rumination. More specifically, trauma predicted PTSD through intrusive rumination while PTG was mediated by deliberate rumination 4.5 years after a group of adolescents had experience an earthquake in their home town. Wu et al (2015) had found that the same predictive relationship between these variables in these adolescents persisted a year earlier. The overall quality-score for both of these studies were among the lowest in this review.

Furthermore, Stange and colleagues (2014) found that higher rumination levels interacted with several types of stressors occurring in young peoples’ lives to predict depression, but not anxiety: Rumination was more strongly related to increases in depression following the occurrence of relational victimization at 9 months follow-up. However, it did so only in girls who may therefore be particularly at risk of developing depressive symptoms after peer-related victimization in adolescence. Where an individual initially (6 months post-event) responded with higher intrusive rumination, but used deliberate rumination at at 12 months, they were more likely to reach Post Traumatic Growth 18 months after an earthquake, whereas those who
only experienced intrusive rumination at 6 and 12 months after the event developed higher PTSD levels at 18 months (Zhou et al, 2015).

In addition to rumination predicting psychopathology, Shapero and colleagues (2013) also found reverse relationships where rumination-levels predicted self-reported trauma in the form of peer victimization and emotional abuse by both peer and parents in a prospective longitudinal design; although this study had one of the lowest quality review- scores. Rumination was a better predictor of both than depression and anxiety in this context than the level of self-reported trauma. At the same time, the effect of rumination on trauma was heightened in individuals who were depressed, i.e. adolescents who were depressed and ruminated more indicated that they were experiencing higher levels of peer victimization and parental emotional abuse at 9 months’ follow-up (Shapero et al, 2013).

A further important factor that was investigated in the reviewed studies was trait rumination, as opposed to ‘state’ rumination occurring as a reaction to an event. Their prospective longitudinal design allowed Jenesse and colleagues (2015) to study the effect pre-trauma rumination levels had on adolescents’ response to a terrorist attack. They found that greater tendencies to ruminate prior to the event predicted onset of PTSD-symptoms (measured by higher scores on the Impact of Events Scale) 4 weeks after the attack, even after controlling for pre-trauma internalizing and violence exposure (Jenesse et al., 2015).

Pre-trauma rumination measured as a uni-dimensional construct furthermore predicted post-trauma rumination with a moderate effect and, in turn, exacerbated the effect trauma had on depression (Felton et al., 2013). The authors further differentiated this finding by adding that this relationship was only significant with increasing age in their participants; specifically, from the age of 11.5. This finding
therefore suggests that a diathesis stress-model of rumination and trauma only becomes significant in adolescence (Felton et al., 2013).

Other than pre-trauma rumination levels, longitudinal designs across medium to high overall quality-scores also showed that individuals’ mental health before the experience of stressful life events has consequences for how trauma is processed. For example, one study found that depression before the event predicted rumination levels after singular stressful events (Felton et al., 2013), even when pre-trauma depression was controlled for. Similarly, a prospective longitudinal design allowing for two follow-ups showed that both higher rumination levels and depression levels at wave one predicted higher levels of both familial abuse at both follow-ups (Shapero et al., 2013). Where initial rumination-levels were high but depression was low, participants furthermore reported experiencing less shame after 9 months of having experienced peer victimization and familial abuse (Shapero et al., 2013).

Similarly, emotional neglect predicted depression more strongly at 9 months follow-up in those who had higher rumination levels at baseline (Stange et al., 2014). The authors attempted to differentiate between different types of traumatic events finding that “dependent interpersonal events” predicted depression more strongly among adolescents who reported higher rumination levels. However, they failed to define what such events entailed.

A further factor that has been considered in both medium and higher quality studies regarding the interaction between psychopathology and rumination after trauma was the severity of the event itself. Felton and colleagues (2013) showed that both the severity of a flood and post-event rumination levels remained significant predictors post-event depression, even when controlling for depression prior to the flood. Again, the diathesis-stress model for this relationship appeared to begin taking effect only
from the age of 11.5 and did not apply to children below the age of 10.5. Specifically, rumination levels in participants over this age began to moderate the effect of severity of the traumatic event on depression, such that only for those individuals who tended to ruminate before the event did the stress of trauma predict depression (Felton et al., 2013). Before this age, the severity of trauma only predicted depression, regardless of whether participants tended to ruminate prior to the event or not.

Finally, both medium and high overall scoring studies identified that trauma severity predicted rumination levels after a singular traumatic event (Zhen et al., 2016, Zhou et al., 2015; Meiser-Stedman et al., 2009) across adolescence (Heleniak et al., 2015, Michl et al, 2013). In a linear regression analysis, rumination was positively associated with internalizing and externalizing psychopathology as rated by both adolescents and their parents independently (Heleniak et al., 2015). The authors concluded that trauma shapes the maladaptive responses to severe stress which is then a vulnerability factors for both externalising and internalising psychopathology. Meiser-Stedman et al (2009) also distinguished that it was subjective trauma severity, rather than objective indicators of the event, that predicted rumination levels over a 4 months follow-up period in prospective designs (Meiser-Stedman et al, 2007, 2009) giving further support for the interaction between trauma and rumination in adolescence being long-lasting, as opposed to a short-term initial reaction to stress.
Table 1: Summary Table of Findings

<table>
<thead>
<tr>
<th>Citation</th>
<th>Study Design/Method/Participants</th>
<th>Type of trauma</th>
<th>Inclusion/Exclusion Criteria</th>
<th>Type of rumination</th>
<th>Measures</th>
<th>Key</th>
<th>Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felton, Cole &amp; Martin (2013) USA</td>
<td>Study Design: Prospective longitudinal (10 days and 6.5 months follow up) Method: Self-report questionnaires</td>
<td>Natural single event (flood)</td>
<td>Not specified</td>
<td>Response Style</td>
<td>Trauma 1) Flood Experience: Flood Events Questionnaire (FEQ) Rummation 1) The Response Styles Questionnaire (RSQ)</td>
<td>-Pre-and post-flood rumination positively correlated with depression at wave 1 and 2</td>
<td>19</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Pre-flood depressive symptoms correlated with post-flood depression</td>
<td></td>
</tr>
<tr>
<td>Heleniak, Jenness, Van der Stoep, McCauley &amp; McLaughlin (2015a) USA</td>
<td>Study Design: Cross-sectional Method: Self-report questionnaires</td>
<td>Man-made complex trauma (Childhood maltreatment)</td>
<td>Exclusion based on severe cognitive impairment (n=1) and developmental disorder (n=1)</td>
<td>Habitual rumination</td>
<td>Trauma 1) Childhood Trauma Questionnaire (CTQ) 2) Childhood Care and Abuse Interview</td>
<td>-Physical, sexual and emotional abuse were associated with greater habitual use of rumination</td>
<td>21</td>
</tr>
<tr>
<td>Study Design</td>
<td>Man-made complex trauma (Childhood maltreatment)</td>
<td>Not specified</td>
<td>Habitual rumination</td>
<td>Trauma 1) Non-standardized questions</td>
<td>Ruminations remained stable over follow-up period</td>
<td>Child maltreatment was associated with higher use of rumination over 5 years</td>
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<td></td>
</tr>
<tr>
<td>Study Design: Cross-sectional Method: Self-report questionnaires</td>
<td>N=439</td>
<td>52.4% male 47.6% female</td>
<td>Age range =unclear</td>
<td>Habitual rumination responses to distress</td>
<td>Habitual rumination</td>
<td>Habitual rumination</td>
<td></td>
</tr>
<tr>
<td>Heleniak, Jenness, Van der Stoep, McCauley &amp; McLaughlin (2015b) USA</td>
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<td></td>
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</tbody>
</table>

<p>| Study Design: Prospective longitudinal &quot;within 2 years before&quot; | Man-made single event (Terrorist attack) | Inclusion criteria | Trait rumination | Trauma 1) Media Exposure post attack (2) Non-standardize | Ruminations was positively correlated with | |
| Jenesse, Jager, Hyman, Heleniak, Beck, Sheridan &amp; | | | | | | 20 |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Method</th>
<th>Tools Used</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>McLaughlin (2016) USA</td>
<td>Case-control</td>
<td>Self-report questionnaire</td>
<td>Pre-trauma violence exposure screen, adolescent violence exposure scale (SAVE), impact of events scale-6 (ISE-6), rumination</td>
<td>Pre-trauma rumination predicted PTSD following attack</td>
</tr>
<tr>
<td>Jin &amp; Wang (2014) Tibet</td>
<td>Cross-sectional</td>
<td>Self-report</td>
<td>PTSD checklist, civilian version (PCL-C), deliberate rumination thinking</td>
<td>Negative correlation between deliberate rumination and PTSD Deliberate rumination predicted PTSD</td>
</tr>
<tr>
<td>Study</td>
<td>Design: Cross-sectional</td>
<td>Method: Self-report questionnaire</td>
<td>N=850</td>
<td>44.8% male 55.2% female</td>
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</tr>
<tr>
<td>Meiser-Stedman, Dalgeish, Smith, Yule &amp; Glucksman (2007) UK</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Design: Cross-sectional</th>
<th>Method: Self-report questionnaire</th>
<th>Severe LD, organic brain disorder, sexual assault, investigation of family by social work, inability to Speak English.</th>
<th>Trait rumination</th>
<th>Trauma Disorders Schedule for the DSM-IV: Child and Parent Version (ADIS-C)</th>
<th>Rumination was positively linked with PTSD at 6 months, even when controlling for Post-Traumatic Stress at 2-4 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-made single event (Road Traffic Accident)</td>
<td></td>
<td></td>
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</tbody>
</table>

Rumination 1) Global Ruminative Response Scale (RBS)

1) Global Ruminative Response Scale (RBS)

Rumination 1) Acute Stress Disorder Anxiety Disorders Schedule for the DSM-IV:

1) APTSS RIES-C

Rumination was positively linked with PTSD at 6 months, even when controlling for Post-Traumatic Stress at 2-4 weeks

1) Adapted versions of RSQ Rumination Subscale of CRSQ

19
<table>
<thead>
<tr>
<th>Meiser-Stedman, Dalgleish, Glucksmn a, Yule &amp; Smith (2009)</th>
<th>Study Design: Cross-sectional</th>
<th>Man-made single event (Road Traffic Accident)</th>
<th>Brain injury, LD, Sexual Assault, Investigation by social services into family circumstances, inability to speak English, physical assault by an adult living at home</th>
<th>Trait rumination</th>
<th>Trauma 1) Children’s Revised Impact of Event Scale (CRIES) 2) Trauma Memory Quality Questionnaire (TMQQ)</th>
<th>Rumination was positively linked with PTSD at 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>N=59</td>
<td>45.8 % male 54.2 % female</td>
<td>Age range =10-16</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Michl, McLaughli n, Shepherd &amp; Nolen-Hoeksema (2013)</th>
<th>Study Design: Prospective longitudinal (follow-up at 4 and 7 months)</th>
<th>“Stressful life events” Not specified</th>
<th>Response Style</th>
<th>Trauma 1) Stressful life events: The Life Events Scale for Children Ruminati on 1) Children’s Response Styles Questionnaire (CRSQ)</th>
<th>Depression and anxiety were correlated positively with rumination at T 1,2 &amp; 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Method: Self-report questionnaire</td>
<td>N=1065</td>
<td>44% male 56 % female</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

101
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Method</th>
<th>N</th>
<th>Age range</th>
<th>Response style</th>
<th>Trauma</th>
<th>Rumination</th>
</tr>
</thead>
</table>
2) Childhood Trauma Questionnaire (modified version; CTQ-EM) | correlated with anxiety and depression at T1, as well as with symptoms and levels of emotional abuse and peer victimization |
| Stange, Hamilton, Abrahams on & Alloy (2014) | Prospective longitudinal with 9 months follow-up | -Inclusion: Complex, Man-made (Peer victimization and emotional neglect) | 15 | Inclusion: Age, Nationality, mother willing to participate in interview
-Exclusion: No female | “Response style to sad affect” | 1) Not available modified version of the Adolescent Life Events | positively correlated with depression and anxiety at T1 and T2 |
<p>| Study Design: unclear, appears to be part of a longitudinal follow-up as uses | Caregiver available, did not speak English, severe developmental disorder, &quot;severe learning disability or other cognitive impairment&quot;, psychosis, &quot;any other medical or psychiatric problem that would prevent either of them from completing the study assessments&quot; | Questionnaire (ALEQ LEI) 2) Relational Peer Victimization The Social Experience Questionnaire (SEQ) 3) Emotional abuse and emotional neglect The EA and EN subscales of the Childhood Trauma Questionnaire (CTQ) Ruminations prospectively predicted higher levels of depression 2) Peer victimization predicted depressive symptoms more strongly among girls who had higher levels of rumination than those who had lower | Wu, Zhou, Wu &amp; An (2015) China | None, everyone in 2 schools invited Intrusive rumination and deliberate rumination Trauma Symptom Scale 1) Child PTSD Ruminations positively linked with both deliberate and intrusive rumination, 16 |</p>
<table>
<thead>
<tr>
<th>pre-existing data</th>
<th>1) Modified version of ERRI</th>
<th>at both time points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method:</td>
<td></td>
<td>Those who experienced more intrusive rumination soon after event exhibited more severe PTSD symptoms</td>
</tr>
<tr>
<td>Self-report</td>
<td></td>
<td>Higher amounts of initial intrusive rumination post-event predicted PTSD via recent intrusive rumination</td>
</tr>
<tr>
<td>questionnaires</td>
<td></td>
<td>Recent deliberate rumination positively predicted PTSD and initial rumination post-event predicted PTSD via deliberate rumination</td>
</tr>
<tr>
<td>N=376</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.3% male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52.7% female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>=13-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Design: Cross-sectional</td>
<td>Natural event (Rainstorm)</td>
<td>No exclusion criteria, randomly selected from areas heavily affected by rainfall</td>
</tr>
<tr>
<td>-----------------------------</td>
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</tr>
<tr>
<td>Zhen, Quan, Yao &amp; Zhou (2016)</td>
<td>Method: Self-report Questionnaire</td>
<td>N=951</td>
</tr>
<tr>
<td>Zhou, Wu, Fu &amp; An (2015)</td>
<td>Study Design: Cross-sectional</td>
<td>Natural event</td>
</tr>
</tbody>
</table>
China (followed-up annually by authors in separate study)

Method:
Self-report questionnaire

N=354
56.5% male 53.5% female
Age range =14-19

Rumination over past 2 weeks

Symptom Scale
Rumination:
1) Event Related Rumination Inventory (ERRI), modified by the authors

positively linked to self-reported trauma severity

Intrusive rumination was linked positively with PTSD
Intrusive rumination partly mediated the relationship between self-reported trauma severity and PTSD

Zhou & Wu (2016)

China

Study Design: Retrospective Longitudinal

Natural single event (earthquake)

No exclusion criteria

intrusive and deliberate rumination

Trauma 1) Trauma severity questionnaire
2) The Child PTSD Symptom Scale (CPSS, adapted to the Chinese population (Ying et al., 2014).

PTSD at T3 was positively correlated with intrusive rumination at T1 & T2 and deliberate rumination at T2

Deliberate rumination at time 2 did not mediate the relationship
| Age range | 1) Event-Related Rumination Inventory (ERRI), modified by authors | between intrusive rumination at T1 and PTSD at T3 |
| Author                  | Introduction Max Score =3 | Methodology Max Score= 15 | Analysis Max Score = 4 | Results/Discussion Max Score= 7 | Ethical Considerations Max Score= 2 | Total =31 |  |
|------------------------|---------------------------|---------------------------|-------------------------|---------------------------------|-----------------------------------|----------|
| Felton et al. 2013     | 2                         | 9                         | 2                       | 6                               | 0                                 | 19       |
| Heleniak et al. (2015a)| 2                         | 8                         | 3                       | 7                               | 0                                 | 21       |
| Heleniak et al (2015b) | 2                         | 11                        | 2                       | 4                               | 0                                 | 19       |
| Jenesse et al (2016)   | 2                         | 8                         | 3                       | 6                               | 1                                 | 20       |
| Jin et al (2014)       | 1                         | 8                         | 2                       | 3                               | 0                                 | 14       |
| Meiser Stedman et al (2009)| 3                     | 9                         | 4                       | 6                               | 1                                 | 23       |
| Meiser- Stedman et al (2007)| 2                  | 10                        | 2                       | 4                               | 1                                 | 19       |
| Michl et al (2013)     | 2                         | 10                        | 4                       | 5                               | 1                                 | 22       |
| Shapero et al (2013)   | 2                         | 4                         | 4                       | 4                               | 1                                 | 15       |
| Stange et al (2014)    | 3                         | 10                        | 2                       | 7                               | 0                                 | 22       |
| Wu et al (2015)        | 2                         | 8                         | 2                       | 4                               | 0                                 | 16       |
| Zhen et al., (2016)    | 2                         | 5                         | 2                       | 6                               | 1                                 | 16       |
| Zhou et al (2015)      | 2                         | 6                         | 2                       | 4                               | 1                                 | 15       |
| Zhou et al (2016)      | 2                         | 7                         | 2                       | 5                               | 1                                 | 17       |
4. Discussion

This narrative synthesis aimed to answer the question of what negative outcome a ruminative processing style in the aftermath of trauma may have on a young person’s mental health. The available literature synthesised in this review reached medium to high-quality standards as rated by the quality checklist tool designed for this synthesis, with the vast majority of research scoring in the medium range. Overall, studies supported the hypothesis that a greater habitual tendency to ruminate in adolescence makes it more likely for them to process trauma with this cognitive response style. In turn, a ruminative processing of stressful life events is associated with a heightened risk of developing psychopathology; a similar effect to that observed in adult populations (Hopfinger et al., 2016). This is unsurprising given that the results of this synthesis suggest that the effect ruminative processing of trauma has on adolescents’ mental health appears to be long-lasting and can be maintained over a number of years.

The following sections will initially compare and contrast medium versus high-quality studies in order to highlight the variance of study designs this narrative synthesis is based on. This will be followed by a synthesis of results across all studies in order to link the various outcomes, given that overall, there were no major contradictions among findings.

High quality studies included two prospective longitudinal designs and two cross-sectional studies. The authors of both prospective studies (Michl et al., 2013; Stange et al., 2014) compared one point of measurement pre-trauma with post-event scores, limiting the validity of their findings in that it is unclear how much of the variance in pre-and post-event outcomes may be due to individual differences, such
as naturally occurring fluctuations in anxiety in depression in the adolescent participants. Even the highest scoring studies reviewed here were therefore limited in terms of their validity. High quality studies also differed significantly in terms of the type of trauma they investigated, i.e. single-event (Meiser-Stedman et al., 2009) versus complex trauma (Michl et al., 2013), and in terms of how recently the traumatic events occurred, further limiting the validity of high quality studies. For example, Michl and colleagues (2013) investigated lifetime occurrence of traumatic events whereas Meister-Stedman et al. (2007) measured the effect of a single traumatic event that had occurred 2-4 weeks before participation in the study. The conclusions that can be drawn from a review synthesising such diverse designs can therefore only be tentative.

With regards to their findings, nearly all high-quality studies measured different outcomes (e.g. various forms of psychopathology) and were therefore generally neither conflicting nor confirming each other's findings. Results showed that adolescents had a greater tendency to ruminate when they experienced trauma in childhood (Heleniak et al., 2015a) or adolescence (Stange et al., 2014) and those with greater tendencies to ruminate pre-event also had a higher chance of developing anxiety, depression (Michl et al., 2013; Stange et al, 2014) and PTSD (Meiser-Stedman et al., 2009) post-event.

With regards to their design, medium quality-studies (scoring between 15-20 out of 37 points) were more homogenous than high quality studies in that the majority were related to single event trauma due to natural disasters that occurred in Asia (Felton et al., 2013; Jin et al., 2014; Wu et al., 2015; Zhen et al., 2016; Zhou et al., 2015, 2016). With the exception of a UK-based study by Meiser-Stedmann et al. (2007), the participants in these studies were not matched in terms of how directly they were
affected by the event, or in terms of previous exposure to similar events, limiting the validity of findings substantially.

The results of this group of reviewed studies did not contradict those of the higher quality research. They, too, found that adolescents with a higher tendency to ruminate had a higher chance of developing anxiety, depression and PTSD after experiencing single-event trauma (Jenesse et al., 2016; Jin et al., 2014; Meister-Stedman et al., 2007). This relationship was observed for both greater tendencies to ruminate pre- or post-event, and the effect appeared to be stable over time, with the longest follow-up period being 4.5 years (Zhou et al., 2016). Wu et al (2015) and Zhou et al. (2016) distinguished further between intrusive and deliberate rumination and both highlighted that the former led to more severe PTSD scores after trauma. Just like in higher-quality studies in this narrative synthesis, the more severe adolescents rated either single-event trauma (Zhou et al., 2015) or complex trauma (Shapero et al., 2013), the more habitually they also reported to ruminate.

When considered together, the results of all studies included in this narrative synthesis allowed for a preliminary synthesis to illustrate the potential steps involved in the path towards psychopathology after stressful life events in adolescence. First, adolescents that habitually ruminated more before a traumatic event occurred are more prone to responding to life stressors with this cognitive style (Felton et al., 2013; Wu, 2015). Second, Jenesse and colleagues (2016) add that a ruminative response style in the face of trauma may then make the adolescent more vulnerable to psychopathology. In their study, those participants that indicated they were processing a single stressful life event with rumination were more likely to develop PTSD than those who did not (Jenesse et al., 2016). Zhen et al (2016) were also
able to replicate this finding with a longitudinal design which showed that this effect was maintained 3.5 years after a single and natural traumatic event, i.e. adolescents processing a single natural traumatic event with rumination were more likely to have post-traumatic stress symptoms for this time. The authors suggest that this processing style may therefore be maintaining psychopathology long after the original stressor. Apart from studies on PTSD, a greater tendency to respond to trauma with ruminating has also been linked to a heightened risk of developing other mental health difficulties in longitudinal studies, such as depression and anxiety (Felton et al., 2016; Michl et al., 2013; Stange et al., 2014).

Problematically, previous research has highlighted that in time of severe stress, adolescents are more prone to rely heavily on rumination as an emotion regulation strategy (Conway et al., 2004). However, as several authors (Jin et al., 2014; Wu et al., 2015; Zhou et al., 2016) show, rumination as an initial response is common and not necessarily leading to negative mental health outcomes. Instead, authors such as Calhoun & Tedeshi (2013) suggest a distinction has to be made between deliberately engaging in thinking about past adverse events, and involuntary rumination. Further, they stipulate that deliberate rumination on trauma memories may function as a type of exposure that may eventually lead to making sense of the event and taking positive meaning from the experience. By contrast, involuntary rumination on event memories can increase psychological distress (Calhoun & Tedeshi, 2013). This finding may be in contrast to Jin & Wang (2014) who posit that “deliberation” in this way lead to the opposite, i.e. greater PTSD symptoms, rather than post-traumatic growth. However, it is somewhat unclear whether “deliberation” is the same as deliberate rumination. This may point to a further limitation of the available literature.
in this field, i.e. the terminology to describe different types of rumination may vary between authors.

In summary, the evidence in the field currently suggests that habitual tendencies to ruminate in adolescence appears to lead to this processing style being used in the face of traumatic events. This, in turn, increases the risk of developing psychopathology. Additionally, the experience of trauma in itself also leads to increased use of rumination leaving the young person particularly vulnerable to developing psychopathology in the face of trauma (Hankin, 2008). The results are consistent with a diathesis-stress model of psychopathology where life stressors may aggravate individual difference factors, such as the tendency to ruminate, that can then either increase or decrease the likelihood of psychopathology developing. Given these long-term mental health outcomes, rumination may therefore be an important treatment target for trauma therapy in young people.

There were no major contradictions in the reviewed literature. Given the diversity in the measures used, types of trauma investigated, as well as context and variety of cultures across studies, this may point to the effect rumination has in processing trauma in adolescence being relatively robust. A further second strength of the reviewed literature is that it included several different designs, including cross-sectional and longitudinal designs. Finally, the majority of samples were moderate to large, giving further credence to the robustness of the effects measured across contexts. Bearing in mind the moderate quality of the majority studies in this review, and the diversity in the measures used and types of trauma included, however, the conclusions drawn from this narrative synthesis as a whole can only be preliminary, warranting further systematic investigations.
5. Implications for Clinical Practice

The results of the studies included in this review, are consistent with the diathesis stress model of psychopathology which outlines that stressful life events interact with individuals’ predispositions to determine vulnerability to mental health difficulties. Clients that have experiences traumatic events should therefore be treated individually, based on their individual coping skills. The review at hand suggests that their tendency to ruminate should be included in these and considered as a potential factor that may maintain psychopathology at the time when they access mental health services. Intrusive rumination in particular appears to be problematic, leading to a higher likelihood of developing depression, anxiety and PTSD. Two studies in this review suggest that if intrusive rumination can be replaced by deliberate rumination at 6 months post-event, this may serve as a type of ‘exposure’ to trauma that may help break the cycle involved in psychopathology maintenance. However, given the diversity of the reviewed studies, the small pool of available literature and the mostly moderate quality of studies mean that further investigations are needed before firm recommendations for practice can be made.

With regards to theoretical models, this narrative synthesis suggests that rumination, a cognitive style, should perhaps also be considered along fleeting automatic negative thoughts with regards to the maintenance of distress after trauma in adolescence.

6. Limitations of this narrative synthesis

First and foremost, the lack of consensus, homogeneity and standardisation in the reviewed field precludes a full meta-analysis which meant that statistical analysis could not be conducted. Instead, a narrative synthesis was conducted that includes a
variety of different types of trauma due to the limited amount of available data. They include man-made and natural events, single events and complex trauma. The external validity of the findings is therefore limited. Second, the available studies use a considerable amount of differing measures, and several use at least one non-standardized measure that in most cases is not made available (Jenness et al., 2016; Shapero et al., 2013; Stange et al., 2014; Zhou et al., 2015; Wu et al., 2015, Zhou et al., 2016), restricting both validity and reliability of these findings further. Third, the type of rumination investigated consequently also varies, with some studies looking at general rumination (e.g. Jenness et al., 2016, Stange et al., 2014) while others differentiated between deliberate and intrusive rumination (Wu et al., 2015; Zhou et al., 2015; 2016). Fourth, pre-trauma history was mostly not assessed, meaning that data may have been gathered capturing a single event, but had pre-trauma been assessed, some participants may have experienced further trauma. Exposure to single events rather than a series of events can have significantly different mental health outcomes (for a review, see Green et al., 2000).

Based on the available data, it is therefore near impossible to generalise findings. Conclusions drawn from the available data can only be tentative and illustrative at this stage.

7. Directions for future research

Future reviews on the topic may expand the search terms to include specific types of trauma that may not have been captured in this review. It may also be helpful to compare and contrast the effect rumination has on the processing of different types of trauma, e.g. compare man-made trauma to natural disasters. Additionally, it may be beneficial to compare the effect different types of rumination have on either post-
traumatic growth or post-traumatic stress which was beyond the scope of this review, but would enhance the clinical utility of the current results.

8. Conclusions

No firm conclusions can be drawn from the available pool of evidence on ruminative processing of trauma at this time given the quality of available evidence. At present, the limited number of studies and their use of a variety of different outcome measures has meant that research in the field is somewhat disjointed, rather than accumulative in nature. Further greatly limiting their generalizability is the fact that the types of trauma investigated differ greatly, and participants’ pre-trauma characteristics are largely unknown, including important variables such as pre-trauma exposure to similar events and baseline distress. Furthermore, generalizability is greatly limited given the considerable amount of studies that use unstandardized measures which have not been made available.
List of references


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- Taku, Calhoun, Cann, & Tedeschi, 2008


Appendices

Appendix 1: DSM-5 Criteria for Trauma
Appendix 2: Quality Criteria Checklist
Appendix 3: Author Instructions for the British Journal Of Psychology
Appendix 4: IRAS Ethical Approval Letter for the Empirical Study
Appendix 5: The Childhood Trauma Questionnaire (for reference only)
Appendix 6: The Zimbardo Time Perspective Inventory
Appendix 7: The Difficulties with Emotions Questionnaire
Appendix 8: The Hospital Anxiety and Depression Scale
Appendix 9: Participant Information sheet
Appendix 10: Informed Consent sheet
Appendix 1: DSM-5 Criteria of Trauma

A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:

- Directly experiencing the traumatic event(s).
- Witnessing, in person, the event(s) as it occurred to others.
- Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
- Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse).

B. Intrusion symptoms (One or more needed)

* Recurrent, involuntary, intrusive, distressing memories.
* Recurrent, distressing dreams related to the event/s.
* Dissociative reactions (e.g. flashbacks), the individual feels or acts as though the traumatic event was recurring.
* Intense or prolonged psychological distress at exposure to internal or external cues that are reminders of the traumatic event/s.
* Marked physiological reactions to internal or external cues that are reminders of the traumatic event/s.

C. Persistent avoidance of stimuli (One or more needed)* Avoidance of, or efforts to avoid, distressing memories, thoughts, or feelings, about or closely related with the traumatic events.
* Avoidance of or efforts to avoid external reminders (people, places, objects, activities, conversations, situations) that arouse distressing thoughts, feelings, or memories about or closely related with the traumatic events.

D. Negative changes in cognition, mood (Two or more needed)

* Inability to remember an important aspect of the event(s) (due to dissociative amnesia, not to other factors such as injury, alcohol).
* Persistent and exaggerated negative beliefs about oneself, others, or the world (e.g., “I am bad,” “No one can be trusted”).
* Persistent, distorted cognitions about the causes/consequences of the event(s) that lead the individual to blame him/herself or others.
* Persistent negative emotions (e.g., fear, horror, anger, guilt, shame).
* Markedly diminished interest or participation in significant activities.
* Feelings of detachment or estrangement from others.
* Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).

E. Changes in arousal, reactivity (Two or more needed)
* Irritable behaviour and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects.
* Reckless or self-destructive behaviour.
* Hypervigilance.
* Exaggerated startle response.
* Problems with concentration.
* Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep).

F. Duration of symptoms is 1 month or more.

G. Clinically significant distress or impairment.
**Design**

**Study suitable for inclusion?**

**Summary**

Objectives:

Sample:

Methods:

State or trait rumination measured?

Measure used for rumination?

Measures used:

Hypotheses:

Key findings:

Conclusions:

Limitations:

Strong points:

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| Literature is critically appraised (beyond identifying gaps in the literature) | Yes= 1 | No= 0 |
| Objectives/ Hypotheses clearly stated | Yes= 1  
| | No/unclear= 0 |
| Hypotheses are based on available evidence/ theory | Yes= 1  
| | No/ N/A = 0 |

### 2. Methodology

#### 2.1. Sample

| Eligibility criteria stated and appropriate | Yes= 2  
| | Eligibility criteria not appropriate or unclear justification/ Inclusion or exclusion criteria stated= 1  
| | No= 0 |
| Participant characteristics described sufficiently for potential replication | Yes= 1  
| | No= 0 |
| Response rate stated | Yes= 1  
| | No= 0 |
| Attrition rates stated | Yes or N/A= 1  
| | No= 0 |
| Characteristics of withdrawn participants do not differ from those who remained in study | True= 2  
| | Partly true= 1  
| | Untrue/not considered=0 |
| Missing data explained | Yes= 1  
| | No = 0 |

#### 2.2. Procedure

| Enough information is given to replicate the procedure, i.e. information about country, setting, age group, method etc are described | Yes= 1  
| | No= 0 |
| Where the study is carried out at more than one site, the obtained results are comparable for all sites | Yes/not applicable= 1  
| | No/not considered= 0 |

#### 2.3. Measures

| All relevant outcomes are measured using standardised and validated measures | Yes= 1  
| | No= 0 |
| Validity and reliability of measures in the sample investigated is reported and above 0.7 | Yes= 1  
| | No= 0 |
| Non-standardised measures are included in appendix or freely available | Yes or N/A = 1<br>No= 0 |
| Measures used appropriate for age group | Yes= 1<br>No= 0 |
| Was prior trauma history assessed? (Prior to participation or the single event studied in the research) | Yes=1<br>No/unclear=0 |

2.4. Analysis

| Analysis would be replicable in a new sample based on the information provided | Yes= 1<br>No= 0 |
| Statistical Analysis appropriate to answer research question | Yes= 1<br>No= 0 |
| Power calculation or justification for small sample size included | Yes= 1<br>No= 0 |
| Missing data explained (e.g. for drop-outs or incomplete data) | Yes= 1<br>No/inconsistent/not mentioned= 0 |

3. Results /Discussion

| Conclusions follow from data | Yes= 2<br>Unclear=1<br>No= 0 |
| Conclusions drawn appropriate for study design | Yes= 1<br>No= 0 |
| Possible sources of bias considered | Yes= 1<br>No= 0 |
| Conclusions drawn follow from data are discussed with reference to existing evidence and theory | Yes= 1<br>No/very limited= 0 |
| Limitations of the study clearly discussed | Yes= 1<br>No= 0 |
| Recommendations and/or implications for clinical practice are discussed | Yes= 1<br>No= 0 |

4. Ethical considerations

| Informed consent gained from participants and caregiver | Yes=1<br>Unclear/no= 0 |
| Professional support was provided for participants | Yes=1<br>Unclear/no= 0 |

Overall Score
Appendix 3

Author Guidelines

The Editorial Board of the British Journal of Psychology is prepared to consider for publication:

(a) reports of empirical studies likely to further our understanding of psychology

(b) critical reviews of the literature

(c) theoretical contributions Papers will be evaluated by the Editorial Board and referees in terms of scientific merit, readability, and interest to a general readership.

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

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Papers should normally be no more than 8000 words (excluding the abstract, reference list, tables and figures), although the Editor retains discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Submission and reviewing

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. You may like to use this template. When entering the author names into Editorial Manager, the corresponding author will be asked to provide a CRediT contributor role to classify the role that each author played in creating the manuscript. Please see the Project CRediT website for a list of roles.

• 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 articles should be preceded by an Abstract of between 100 and 200 words, giving a concise statement of the intention, results or conclusions of the article.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.

• SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.

• 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.

If you need more information about submitting your manuscript for publication, please email Melanie Seddon, Managing Editor (bjop@wiley.com) or phone +44 (0) 1243 770 108.

5. Supporting Information

BJOP is happy to accept articles with supporting information supplied for online only publication. This may include appendices, supplementary figures, sound files, videoclips etc. These will be posted on Wiley Online Library with the article. The print version will have a note indicating that extra material is available online. Please indicate clearly on submission which material is for online only publication. Please note that extra online only material is published as supplied by the author in the same file format and is not copyedited or typeset. Further information about this service can be found at http://authorservices.wiley.com/bauthor/suppmat.asp

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7. Colour illustrations

Colour illustrations can be accepted for publication online. These would be reproduced in greyscale in the print version. If authors would like these figures to be reproduced in colour in print at their expense they should request this by completing a Colour Work Agreement form upon acceptance of the paper. A copy of the Colour Work Agreement form can be downloaded here.

8. Pre-submission English-language editing

Authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

9. OnlineOpen

OnlineOpen is available to authors of primary research articles who wish to make their article available to non-subscribers on publication, or whose funding agency requires grantees to archive the final version of their article. With OnlineOpen, the author, the author’s funding agency, or the author’s institution pays a fee to ensure that the article is made available to non-subscribers upon publication via Wiley Online Library, as well as deposited in the funding agency’s preferred archive. For the full list of terms and conditions, see http://wileyonlinelibrary.com/onlineopen#OnlineOpen_Terms

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11. The Later Stages

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Further information about the process of peer review and production can be found in this document: What happens to my paper? Appeals are handled according to the procedure recommended by COPE.
Appendix 4: IRAS Ethical Approval Letter for the Empirical Study

East of Scotland Research Ethics Service (EoSRES)

Research Ethics Service
Miss Melanie Suettmann
Trainee Clinical Psychologist
NHS Tayside
15 Dudhope Terrace
Dundee

Dear Miss Suettmann

Ninewells Hospital and Medical School Dundee D D1 9SY
Date: 27 February 2017
Your
Ref: LR/AG
Enquiries
to: Arlene Grubb
Direct Line: 01382 383848
Email: eosres.tayside@nhs.net

Study title: What buffers low mood after stressful life experiences?
REC reference: 16/ES/0147
Protocol number: 16/ES/0147
IRAS project ID: 196095

Thank you for your letter of 24 February 2017, responding to the Committee’s request for further information on the above research and submitting revised documentation.

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

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

Confirmation of ethical opinion

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

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

You should notify the REC once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. Revised documents should be submitted to the REC electronically from IRAS. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which you can make available to host organisations to facilitate the permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

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

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise). Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

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

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

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

Registration of Clinical Trials

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

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

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.
If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non-registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

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

Ethical review of research sites

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

Approved documents

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

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<th>Document</th>
<th>Version Date</th>
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<td>Summary CV for supervisor (student research) [CV Matthias Schwannauer]</td>
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<td>Validated questionnaire [Zimbardo Time Perspective Inventory]</td>
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<td>Validated questionnaire [LEC]</td>
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<td>Validated questionnaire [CTQ]</td>
<td>1st November 2016</td>
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<tr>
<td>Validated questionnaire [DERS ]</td>
<td>29th December 2016</td>
</tr>
<tr>
<td>Validated questionnaire [HADS ]</td>
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</tbody>
</table>
Statement of compliance

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

After ethical review

Reporting requirements

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

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

Notifying the end of the study

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

User Feedback

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

HRA Training

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

[16/ES/0147 Please quote this number on all correspondence]

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

Yours sincerely PP Dr Robert Rea
Chair

Email: eosres.tayside@nhs.net

Enclosures: “After ethical review – guidance for researchers” [SL-AR2]

Copy to: Ms Charlotte Smith
NHS Tayside R & D office
### Appendix 5: The CTQ (for reference only)

#### CTQ

<table>
<thead>
<tr>
<th>When I was growing up ...</th>
<th>Never True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>Very Often True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I didn't have enough to eat.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>2. I knew that there was someone to take care of me and protect me.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>3. People in my family called me things like &quot;stupid,&quot; &quot;ugly,&quot; or &quot;ugly.&quot;</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>4. My parents were too drunk or high to take care of the family.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>5. There was someone in my family who helped me feel that I was important or special.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>6. I had to wear dirty clothes.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>7. I felt loved.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>8. I thought that my parents wished I had never been born.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>9. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>10. There was nothing I wanted to change about my family.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>11. People in my family hit me so hard that it left me with bruises or marks.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>12. I was punished with a belt, a board, a cord, or some other hard object.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>13. People in my family looked out for each other.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>14. People in my family said hurtful or insulting things to me.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>15. I believe that I was physically abused.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>16. I had the perfect childhood.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>18. I felt that someone in my family hated me.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>19. People in my family felt close to each other.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>20. Someone tried to touch me in a sexual way, or tried to make me touch them.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>22. I had the best family in the world.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>23. Someone tried to make me do sexual things or watch sexual things.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>24. Someone molested me.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>25. I believe that I was emotionally abused.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>26. There was someone to take me to the doctor if I needed it.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>27. I believe that I was sexually abused.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
<tr>
<td>28. My family was a source of strength and support.</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
<td>● ● ● ● ●</td>
</tr>
</tbody>
</table>
Appendix 6: Zimbardo Time Perspective Inventory

(All items are rated from 1-5, 1= very untrue, 5= very true)

Subject Number: ________

Read each item and, as honestly as you can, answer the question: “How characteristic or true is this of you?” Check the appropriate box using the scale. Please answer ALL of the following questions on both sides.

1. I believe that getting together with one’s friends to party is one of life’s important pleasures.
2. Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.
3. Fate determines much in my life.
4. I often think of what I should have done differently in my life.
5. My decisions are mostly influenced by people and things around me.
6. I believe that a person’s day should be planned ahead each morning.
7. It gives me pleasure to think about my past.
8. I do things impulsively.
9. If things don’t get done on time, I don’t worry about it.
10. When I want to achieve something, I set goals and consider specific means for reaching those goals.
11. On balance, there is much more good to recall than bad in my past.
12. When listening to my favorite music, I often lose all track of time.
13. Meeting tomorrow’s deadlines and doing other necessary work comes before tonight’s play.
14. Since whatever will be will be, it doesn’t really matter what I do.
15. I enjoy stories about how things used to be in the “good old times.”
16. Painful past experiences keep being replayed in my mind.
17. I try to live my life as fully as possible, one day at a time.
18. It upsets me to be late for appointments.
19. Ideally, I would live each day as if it were my last.
20. Happy memories of good times spring readily to mind.
21. I meet my obligations to friends and authorities on time.
22. I’ve taken my share of abuse and rejection in the past.
23. I make decisions on the spur of the moment.
24. I take each day as it is rather than try to plan it out.
25. The past has too many unpleasant memories that I prefer not to think about.
26. It is important to put excitement in my life.
27. I’ve made mistakes in the past that I wish I could undo.
28. I feel that it’s more important to enjoy what you’re doing than to get work done on time.
29. I get nostalgic about my childhood.
30. Before making a decision, I weigh the costs against the benefits.
31. Taking risks keeps my life from becoming boring.
32. It is more important for me to enjoy life’s journey than to focus only on the destination.
33. Things rarely work out as I expected.
34. It’s hard for me to forget unpleasant images of my youth.
35. It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.
36. Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
37. You can’t really plan for the future because things change so much.
38. My life path is controlled by forces I cannot influence.
39. It doesn’t make sense to worry about the future, since there is nothing that I can do about it anyway.
40. I complete projects on time by making steady progress.
41. I find myself tuning out when family members talk about the way things used to be.
42. I take risks to put excitement in my life.
43. I make lists of things to do.
44. I often follow my heart more than my head.
45. I am able to resist temptations when I know that there is work to be done.
46. I find myself getting swept up in the excitement of the moment.
47. Life today is too complicated; I would prefer the simpler life of the past.
48. I prefer friends who are spontaneous rather than predictable.
49. I like family rituals and traditions that are regularly repeated.
50. I think about the bad things that have happened to me in the past.
51. I keep working at difficult, uninteresting tasks if they will help me get ahead.
52. Spending what I earn on pleasures today is better than saving for tomorrow’s security.
53. Often luck pays off better than hard work.
54. I think about the good things that I have missed out on in my life.
55. I like my close relationships to be passionate.
56. There will always be time to catch up on my work.
Appendix 7: The Difficulties with Emotion Regulation Scale

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>almost never</td>
<td>sometimes</td>
<td>about half the time</td>
<td>most of the time</td>
<td>almost always</td>
</tr>
</tbody>
</table>

1) I am clear about my feelings.
2) I pay attention to how I feel.
3) I experience my emotions as overwhelming and out of control.
4) I have no idea how I am feeling.
5) I have difficulty making sense out of my feelings.
6) I am attentive to my feelings.
7) I know exactly how I am feeling.
8) I care about what I am feeling.
9) I am confused about how I feel.
10) When I’m upset, I acknowledge my emotions.
11) When I’m upset, I become angry with myself for feeling that way.
12) When I’m upset, I become embarrassed for feeling that way.
13) When I’m upset, I have difficulty getting work done.
14) When I’m upset, I become out of control.
15) When I’m upset, I believe that I will remain that way for a long time.
16) When I’m upset, I believe that I will end up feeling very depressed.
17) When I’m upset, I believe that my feelings are valid and important.
18) When I’m upset, I have difficulty focusing on other things.
19) When I’m upset, I feel out of control.
20) When I’m upset, I can still get things done.
21) When I’m upset, I feel ashamed at myself for feeling that way.
22) When I’m upset, I know that I can find a way to eventually feel better.
23) When I’m upset, I feel like I am weak.
24) When I’m upset, I feel like I can remain in control of my behaviors.
25) When I’m upset, I feel guilty for feeling that way.
26) When I’m upset, I have difficulty concentrating.
27) When I’m upset, I have difficulty controlling my behaviors.
28) When I’m upset, I believe there is nothing I can do to make myself feel better.
29) When I’m upset, I become irritated at myself for feeling that way.
30) When I’m upset, I start to feel very bad about myself.
31) When I’m upset, I believe that wallowing in it is all I can do.
32) When I’m upset, I lose control over my behavior.
33) When I’m upset, I have difficulty thinking about anything else.
34) When I’m upset I take time to figure out what I’m really feeling.
35) When I’m upset, it takes me a long time to feel better.
When I’m upset, my emotions feel overwhelming.

Appendix 8: The Hospital Anxiety and Depression Scale

Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week. Don’t take too long over your replies: your immediate is best.

<table>
<thead>
<tr>
<th>D</th>
<th>A</th>
<th>D</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>I feel tense or ‘wound up’:</td>
<td>3</td>
<td>I feel as if I am slowed down:</td>
</tr>
<tr>
<td>2</td>
<td>Most of the time</td>
<td>2</td>
<td>Nearly all the time</td>
</tr>
<tr>
<td>1</td>
<td>A lot of the time</td>
<td>1</td>
<td>Very often</td>
</tr>
<tr>
<td>0</td>
<td>Not at all</td>
<td>0</td>
<td>Sometimes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Occasionally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Quite Often</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

I still enjoy the things I used to enjoy:

| 0 | Definitely as much |
| 1 | Not quite so much |
| 2 | Only a little |
| 3 | Hardly at all |

I get a sort of frightened feeling like ‘butterflies’ in the stomach:

| 0 | Not at all |
| 1 | Occasional |
| 2 | Quite Often |
| 3 | Very Often |

I get a sort of frightened feeling as if something awful is about to happen:

| 0 | Not at all |
| 1 | Somewhat |
| 2 | Quite Often |
| 3 | Hardly at all |

I have lost interest in my appearance:

| 0 | Not at all |
| 1 | Somewhat |
| 2 | Only a little |
| 3 | Definitely |

I can laugh and see the funny side of things:

| 0 | As much as I always could |
| 1 | Not quite so much now |
| 2 | Definitely not so much now |
| 3 | Hardly at all |

Worrying thoughts go through my mind:

| 0 | As much as I ever did |
| 1 | Rather less than I used to |
| 2 | Definitely less than I used to |
| 3 | Hardly at all |

I feel cheerful:

| 3 | Not at all |
| 2 | Not often |
| 1 | Sometimes |
| 0 | Most of the time |

I feel restless as I have to be on the move:

| 3 | Very much indeed |
| 2 | Quite a lot |
| 1 | Not very much |
| 0 | Not at all |

I look forward with enjoyment to things:

| 0 | As much as I ever did |
| 1 | Rather less than I used to |
| 2 | Definitely less than I used to |
| 3 | Hardly at all |

Please check you have answered all the questions

Scoring:

Total score: Depression (D) _________ Anxiety (A) _________

0-7 = Normal
8-10 = Borderline abnormal (borderline case)
11-21 = Abnormal (case)
Participant Information Sheet

Title of study: “What buffers low mood after stressful life experiences?”
Version 2, Date: 18th December 2016

Thank you for your interest in our study!
My name is Melanie Suettmann and as part of my course I am carrying out this study and I would like to invite you to take part. However, before you decide to do so, I need to be sure that you understand firstly why I am doing it, and secondly what it would involve if you agreed. I am therefore providing you with the following information. Please read it carefully and be sure to ask any questions you might have and, if you want, discuss it with others including your friends and family. I will do my best to explain the project to you and provide you with any further information you may ask for now or later.

What is this study about?
In everyday life, we often experience stressful events or situations. At times, such events can make us feel low. However, this is not always the case and some people do not develop low mood after they have had difficult experiences. This study looks into factors that may be responsible for cushioning the impact major negative life events have on us. More specifically, this study investigates our preferred thinking styles and the ways in which we regulate our emotions to see if these can buffer the impact stressful experiences can have on our mood. Knowing what these factors are can help us understand how to prevent low mood, or to reduce its impact on our lives where it occurs.

Why have I been invited?
We are recruiting adults between 18-65 years currently accessing NHS Tayside Psychological Therapies Services and are experiencing symptoms of low mood.

Do I have to take part in the research?
No. Taking part in this research is completely voluntary and will in no way affect the care you receive. You are free to change your mind and withdraw from taking part in the research at any time, even after you have already returned questionnaires to us. You may do so by contacting us directly (see email addresses provided below) and without giving a reason. It is important that you keep your participant number indicated on this information sheet as we will need this number in order to delete your responses from our records.

Will my participation affect my therapy?
Your decision of whether or not you would like to take part in this study will in no way affect your therapy. Your therapist is not directly involved in this study. Their role is to introduce our project to you and to allow you to fill in two of the questionnaires involved in one of your
appointments. This should not take longer than 10 minutes and you may be able to arrange for this time to be added to your usual therapy session so that you will not lose out on your usual time with your clinician. You do not have to share your answers with your clinician and they will not be informed of your results.

What will be involved if I do decide to take part?
- **Step 1:** If you are interested in taking part, you will be asked to sign two informed consent sheets in your next appointment: One of them will be for your own records and one will be retained by your clinician. Signing the consent form does not mean you have to take part; it simply means that you will be given the first three questionnaires to take home with you where you can decide if you would like to complete them.
- **Step 2:** Once you are at home, please have a closer look at the first 3 questionnaires you have been given. If you decide that you would like to take part, please fill these in, put them in the provided envelope, seal it and bring it along to your next routine appointment with your therapist.
- **Step 3:** At your next routine appointment, your clinician will give you two more questionnaires on stressful life experiences that people may experience at different times in their lives. One of these measures, the Childhood Trauma Questionnaire, specifically asks about childhood abuse. Remember, there is no pressure to fill in the questionnaires. Your data will automatically be excluded from the study if you have not filled in all five measures. This marks the end of your participation— you do not need to do anything after this point. However, should these questionnaires bring up any unpleasant memories at any point, you may discuss these with your clinician in your appointments, including the one today.

How long will my participation take?
Step 1 at home may take approximately 20 minutes while Step 2, filling in the remaining questionnaires before your next appointment, should take 10 minutes.

Will my answers be identifiable to anyone? What will happen to my data?
Your answers will be completely anonymous. If you decide to take part, you will be given a participant number that you will need to quote should you withdraw from the study at any point. There is no need to put your name or any identifiable information on your questionnaires. Once the envelopes from all participants have been collected, they will be stored anonymously on a password-protected computer at the University of Edinburgh. They may only be accessed by the researcher, Melanie Suettmann, PhD, and her supervisors at NHS Tayside and the University of Edinburgh and may be stored for up to five years.

Are there any risks involved for me?
We do not expect that there are any risks involved for you. However, some of the questionnaires ask you about your mood and about stressful life events you may have experienced which can sometimes bring up unpleasant memories. Two of these questionnaires will ask you about childhood abuse and they will be completed in one of your next routine appointments so that you have the option to talk to talk to your therapist about any unpleasant memories that may come up, should you wish to do so. Should the three questionnaires you take home with you bring up any unpleasant memories for you that you would like to talk about, you may also consider contacting the Samaritans (Free phone: 116 123) or NHS 24 (Free phone: 111) via phone.

What are the benefits of taking part?
Your responses are greatly appreciated as they allow us to understand low mood and the factors that may help to cushion its impact on our lives. This knowledge may be used to help us manage depression in the future. This research is voluntary and unpaid. However, if you
would like to be informed of the overall results of the study once it is completed in 2017, you may contact the researcher at the email address provided below.

**Who is organising the research?**
This research is organised by Melanie Suettmann, PhD, as part of a doctorate degree in Clinical Psychology with both NHS Tayside and the University of Edinburgh. The project will also be supervised by Prof. Kevin Power, Area Head of Psychology, and Prof. Matthias Schwannauer, Head of the Department of Clinical Psychology at the University of Edinburgh.

**Who has reviewed the study?**
The East of Scotland Research Ethics Service REC 1, which has responsibility for scrutinising all proposals for research on humans in Tayside, has examined the proposal and has raised no objections from the point of view of research ethics. It is a requirement that your records in this research, together with any relevant research records, be made available for scrutiny by monitors from NHS Tayside, whose role is to check that research is properly conducted and the interests of those taking part are adequately protected.

**Who can I contact if I have further questions about this study?**
If you have any further questions about the study please contact Melanie Suettmann, Trainee Clinical Psychologist: m.suettmann@nhs.net
or
Prof. Kevin Power, NHS Tayside: kevin.power@nhs.net
Prof. M. Schwannauer, University of Edinburgh: m.schwannauer@ac.ed.ac.uk

If you would like to discuss this study with someone independent of the study team please contact Angus MacBeth, University of Edinburgh: amacbeth@ed.ac.uk

**Complaints**
If you believe that you have been harmed in any way by taking part in this study, you have the right to pursue a complaint and seek any resulting compensation through the University of Edinburgh who are acting as the research sponsor. Details about this are available from the research team. Also, as a patient of the NHS, you have the right to pursue a complaint through the usual NHS process. To do so, you can submit a written complaint to the Complaints And Feedback Team, NHS Tayside, Ninewells Hospital, Dundee, DD1 9SY (Free Phone 08000275507). Note that the NHS has no legal liability for non-negligent harm. However, if you are harmed and this is due to someone’s negligence, you may have grounds for a legal action against NHS Tayside but you may have to pay your legal costs.

*Thank you for taking the time to read the information sheet and considering taking part in this study!* 

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Appendix 10: Informed Consent Sheet

CONSENT FORM FOR PARTICIPANTS
Title of research study: “What buffers low mood after stressful life experiences?”
Version 3, Date: 17th January 2017

Please confirm the following by signing your initials in the blue boxes below:

1. I confirm that I have read and understood the Participant Information Sheet (Version 3, 17th January 2017) for the study titled “What buffers low mood after stressful life experiences?”. I have had the opportunity to consider the information, ask questions and receive satisfactory answers.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without having to give a reason.

3. I confirm that I am between 18 and 65 years old, and I agree to take part in the above research.

4. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from the regulatory authorities and from the Sponsor(s) (NHS Lothian and the University of Edinburgh) or from the/other NHS Board(s) where it is relevant to my taking part in this research. I give permission for those individuals to have access to my records

Name of Participant
________________________
Signature
________________________
Date
________________________

Name of Person taking Consent
________________________
Signature
________________________
Date
________________________

Please keep a copy of this for your own records to remind yourself of your participant number, should you wish to withdraw from the study at a later point.

Original (x1) to be retained in site file. Copy (x1) to be included in patient notes. Copy (x1) to be retained by the participant.