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The Relationship Between Emotional Regulation, Language Skills, And Internalising And Externalising Difficulties In Adolescence

by

Jessica Louise Butcher

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ABSTRACT

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THE RELATIONSHIP BETWEEN EMOTIONAL REGULATION, LANGUAGE SKILLS, AND INTERNALISING AND EXTERNALISING DIFFICULTIES IN ADOLESCENCE

Jessica Louise Butcher

Internalising and externalising difficulties are associated with negative outcomes for young people, such as school refusal, school exclusion, educational underachievement, and mental health problems in adulthood. It is therefore important to find ways to support young people with such difficulties. Difficulties in emotional regulation (ER) and language difficulties are reported to be associated with internalising and externalising difficulties in children and young people. However, there has only been a limited amount of research in this area and previous studies were subject to methodological limitations. This thesis had two aims: firstly, to explore the associations between ER strategies and adolescent mental health problems. This issue was examined in a systematic literature review which found that ER strategies were related to internalising and externalising difficulties in adolescents. However, the review highlighted the lack of research in this area, particularly in relation to externalising difficulties. Secondly, the empirical study described in this thesis explored the role of ER strategies and expressive language skills in young people and their associations with internalising and externalising difficulties. Fifty-five participants completed a range of measures exploring their expressive language abilities, use of ER strategies, and an experimental frustration task examining emotional reactivity, recovery and intensity. It was found that the language measures were not associated with internalising or externalising difficulties. However, there was a tentative suggestion that functional language skills may increase adaptive ER strategies and reduce non-adaptive ER strategies. Internalising difficulties were strongly associated with non-adaptive cognitive

ER strategies following stress, whereas externalising difficulties were strongly associated with fewer adaptive ER strategies. Emotional intensity during frustration was related to both internalising and externalising difficulties. Conclusions and implications for educational practice are discussed.

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DECLARATION OF AUTHORSHIP

I,…Jessica Louise Butcher……

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

The Relationship Between Emotional Regulation, Language Skills, And Internalising And Externalising Difficulties In Adolescence

I confirm that:

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Definitions and Abbreviations

α Cronbach Alpha

β Beta coefficient

ER Emotional Regulation

ERQ-CA Emotion Regulation Questionnaire Children and Adolescents

CAMS Children's Sadness Management Scale

CERQ Cognitive Emotion Regulation Questionnaire

CELF Clinical Evaluations of Language Fundamentals

CSMS Children's Anger Management Scale

COPE Coping Orientation to Problems Experienced

DERS Difficulties in Emotion Regulation Scale

F Test statistic for ANOVA

M Mean

MLU Mean Length of Utterance

N Number of participants

NSSI Non-suicidal Self-Injury

p Probability, significance of test statistic

r Pearson correlation coefficient

r_s Spearman Rho correlation coefficient

SEBD Social Emotional and Behavioural Difficulties

SD Standard Deviation

SLCN Speech Language and Communication Needs

t T-test statistic

UK United Kingdom

VAS Visual Analogue Scale

YSR Youth Self Report

z z-score

Chapter 1:

The Role of Emotional Regulation in Internalising and Externalising Difficulties in Adolescents

1.1 Introduction

One in ten children and young people in the UK have a mental health disorder (Ford, Goodman, & Meltzer, 2003). This can also be referred to as psychopathology and can include externalising problems, such as aggression and hyperactivity, and internalising problems, such as anxiety and depression (Garnefski, Kraaij, & van Etten, 2005). There has been a rise in internalising and externalising problems in the UK over the last 25 years (Collishaw, Maughan, Goodman, & Pickles, 2004) and this has led to an increased risk of negative outcomes for children and young people (Hagell, 2012). Negative outcomes can include school refusal, mental health problems in adulthood, school exclusion, and educational underachievement (Collishaw, Maughan, Goodman, & Pickles, 2004; Greenbaum, et al., 1996; Woodward & Fergusson, 2001; King & Bernstein, 2001; Fergusson & Woodward, 2000). Therefore, it is important for educational psychology practice to support young people with internalising and externalising difficulties to improve their outcomes.

Recently, it has been suggested that psychopathology is characterised by difficulties in emotional regulation (ER) (Gross & Jazaieri, 2014), with some theorizing that emotional dysregulation underlies psychopathology (Bradley, 2000). This proposal has been explored more extensively in adults, compared to adolescents (Aldao, Nolen-Hoeksema, & Schweizer, 2010). This review hopes to explore the role that ER may play in internalising and externalising difficulties in adolescence. Firstly, the construct of ER will be outlined to consider its definition, the approaches used to measure it, and its relationship with positive and negative outcomes. Secondly, a systematic search of the current research exploring the association between ER and internalising and externalising difficulties in adolescence will be described.

Emotions and Emotional Regulation

Emotional regulation (ER) has received increased attention from researchers over the last decade (Gross, 2013). ER is a complex construct and there is still considerable debate

about its scientific validity in relation to how to define and measure it (Cole, Martin, & Dennis, 2004). However, before exploring the definition of ER it is important to first consider the role of 'emotion' in ER.

Some researchers argue that emotion and emotional regulation represent a one-factor model, that is that they occur simultaneously and cannot be explored as two distinct constructs (Campos, Frankel, & Camras, 2004). However, this review will explore a two-factor approach that advocates that the generation of emotions and the regulation of emotions are two at least partially separate processes (Cole, et al, 2004; Gross, 2014). In this approach emotions are viewed from a functionalist perspective, which emphases the role of appraisal in emotion (Southam-Gerow, 2013). Therefore emotions serve a function "to tell us what (or who) is important to us and motivates us to maintain or disrupt our relations with people and objects" (Southam-Gerow, 2013, p12). The modal model of emotion (figure 1.1) combines views from a range of perspectives in emotion research to suggest how emotions are generated (Gross, 2014). Firstly, the trigger arises, which can be external (someone shouting) or internal (thinking about what the future may hold). If these triggers are then attended to, they give rise to appraisals, taking into account the person's goals, which then lead to the generation of an emotional response (Gross, 2014). Next we will be consider the role that ER plays once an emotion has been generated.

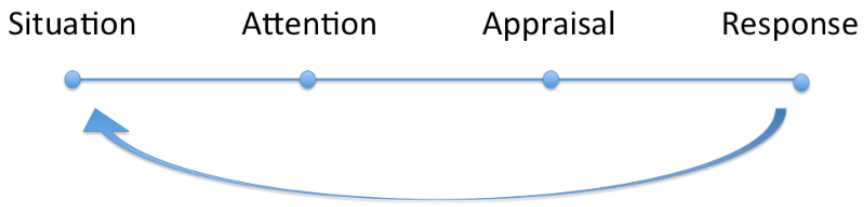

Figure 1. The modal model of emotion (adapted from Gross, 2014).

ER is a difficult construct to define, however one definition is broadly applied (Zeman, Cassano, Perry-Parish, & Stegall, 2006);"extrinsic and intrinsic processes responsible for monitoring, evaluating and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994, p27-28). This definition highlights a few key areas. Firstly, ER can be both intrinsic (regulating your own emotions) and extrinsic (regulating someone else's emotions). Developing this theme, it is advocated that ER also involves both explicit and implicit regulation, with this being

seen as a continuum from conscious effortful regulation to unconscious and automatic regulation (Gross, 2013), for example trying to remain calm before an interview (explicit) or quickly turning away when we see something distressing (implicit). Secondly, ER can involve both up-regulating and down-regulating the intensity and duration of emotions. This highlights that people may attempt to regulate a range of positive or negative emotions to achieve a goal. For example, you may suppress a laugh in a serious meeting. This also links to the third key element of the definition, the importance of a person's goals and the impact that has on how they try to regulate their emotions to achieve a goal. Thus, emotions are generated in response to the appraisal of the environment, and these emotions can then be regulated to change the outcome of the emotion to achieve a goal.

Despite some agreement regarding the definition of ER, it still remains a broad topic, which has made it difficult to operationalize in research to ensure construct validity (Weems & Pina, 2010). This is partially due to the differing theoretical perspectives that researchers bring to the topic, which can impact on the measures chosen to explore the construct (John & Eng, 2014). To attempt to make sense of the complex processes underlying ER, Gross (1998) put forward the process model of ER as a framework to guide research.

The Process Model of ER

The process model is an information-processing model that builds on the modal model of emotions, showing that emotions can be regulated at different points of an emotion's generation (Gross, 2014). This could be before an emotional response has been activated (antecedent-focused), or after an emotion has been experienced (response-focused). The model (see Figure 2) indicates five key areas that form different ways of regulating an emotion (Gross, 1998). Antecedent-focused strategies involve; avoiding or seeking out a situation to regulate emotions (situation selection), active engagement with a situation to change its emotional impact (situation medication), shifting attention to change an emotion (attentional deployment) and finally modifying an appraisal of a situation to influence the emotional significance of an event (cognitive change). Response-focused strategies involve 'response modulation', where once an emotion has been generated a person may attempt to change the experiential, behavioural or physiological aspects of the emotional response, for example controlled breathing.

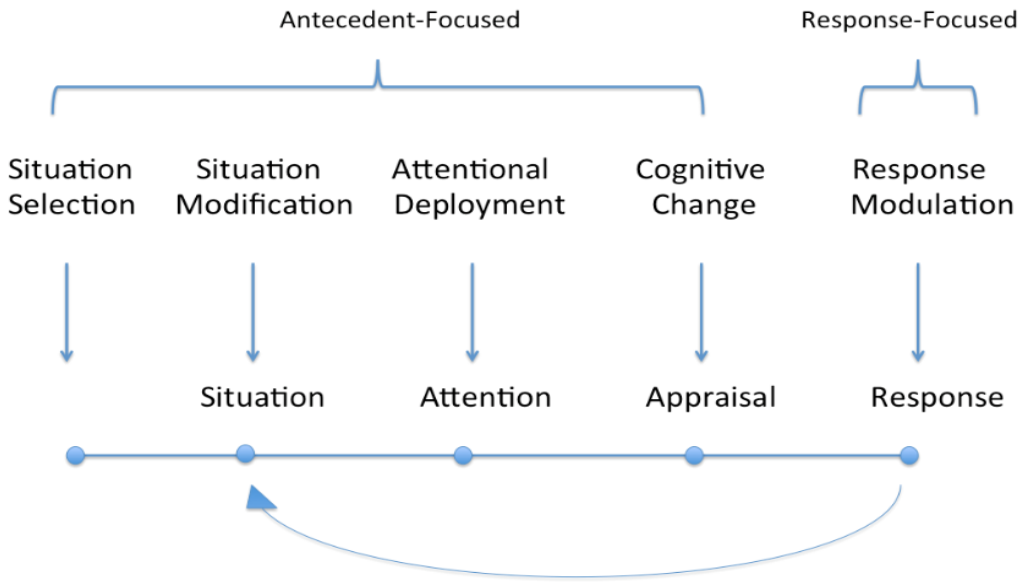

Figure 2. The process model of emotional regulation (adapted from Gross, 2014).

Approaches and Difficulties in Researching ER

There are a range of methods that have been used to investigate ER and its link to a range of outcomes. The focus of the methods is to explore the strategies that people use to regulate their emotions, and these can be defined as "the behavioural and cognitive processes used to modulate or change affective states", (Silk, Steinberg, & Morris, 2003, p.1870). Perhaps part of the difficulty in measuring ER through strategies is that it is agreed that there are likely to be a huge number of potential strategies that could be used (Gross, 1998). John and Eng (2014) reviewed the approaches to investigating ER and suggest that this occurs in three main areas, under the broader umbrella term of 'affect regulation', which are assessed using self-report measures. The first area is the use of specific processes to regulate emotions, which links to Gross' model. This model operationalized two strategies, cognitive reappraisal during the cognitive change stage, and expressive suppression during the response modulation phase of the model (Gross, 1998). Secondly, strategies from the coping literature, which explore the ways that emotions are regulated under stress. Thirdly, emotional competence, which is often explored through measures focusing on emotional dysregulation. This area looks at difficulties within various competencies that are considered important for effective ER, such as emotional awareness, emotional acceptance, and the ability to control impulses to reach goals (Gratz

& Roemer, 2004). Outside of these three main areas researchers also use observational methods, especially when studying ER in young children (Adrian, Zeman, & Veits, 2011), and also emotional dynamics, where ER is investigated by examining changes in emotions. This is measured by asking participants to rate the level of an emotion across tasks. It is advocated that this is a useful approach as ER is seen as a dynamic process that works to regulate emotions (Hoeksma, Oosterlaan, & Schipper, 2004), therefore, the degree of change in the intensity and duration of a range of emotions may be indicative of ER functioning (Neumann, van Lier, Frijns, Meeus, & Koot, 2011).

There are positive and negative consequences of using such a wide array of measures to explore ER. The main difficulty may be that researchers are not always explicit about the different measures that they are using. This can impact on the ability to analyse the outcomes from a range of studies, as the measures may not always be evaluating comparable things (Weems & Pina, 2010). Compas et al. (2014) argue that ER strategies from the process model and from coping research share common elements; both are processes of regulation, both involve controlled and purposeful effort, coping explores a subset of ER, that is ER under stress, and they are both temporal processes that change over time. While they share common features they are also different constructs; ER uses both explicit and implicit processes and ER refers to regulation under stress and a wider range of situations (Compas, et al., 2014). Exploring ER using coping measures generally follows two main models. The first is the primary-secondary control model (Rothbaum, Weisz, & Snyder, 1982), where primary coping alters the situation and secondary coping adapts to the situation (John & Eng, 2014). The second is the ways-of-coping model (Lazarus & Folkman, 1984), which identifies two types of strategies, problem-focused, which attempts to modify the stressful situation and emotion-focused, which refers to changing the emotional response to an event. Riediger and Klipker (2014) suggest that primary coping, secondary coping and problem-focused strategies are related to Gross's antecedent-focused strategies, and emotion-focused strategies are related to response-focused strategies within the process model of ER. Including strategies that explore how people regulate emotions under stress may be a useful approach as research has found that multiple negative life events are a risk factor for emotional and behavioural difficulties in adolescence (Appleyard, Egeland, & van Dulmen, 2005; Flouri & Tzavidis, 2008). Understanding how young people regulate their emotions during stressful experiences may support interventions to reduce risk amongst young people experiencing stress or adversity.

Studies may also draw on a wider range of strategies to explore flexibility in ER. While Gross' model is a useful framework to give definition and structure to ER, there are currently only two strategies that have been operationalized for research measures, and Gross indicates it would be useful to explore additional strategies, such as attentional deployment (Gross, 2013). Adlao (2013) argues that only evaluating one or two strategies can overlook the complexities of ER and reduce the ability to draw firm conclusions. For example does a difficulty using one strategy relate to the implementing of just that specific strategy or to a difficulty implementing a range of ER strategies. This is supported by Weems and Pina (2010) who propose that ER is a complex construct; therefore using a range of methods to explore it can be useful to form a multi-perspective and layered approach. For example, it could be beneficial to implement a combination of self-report measures, strategies from different approaches and experimental tasks.

Why is ER Considered a Useful Construct?

Despite the difficulties surrounding defining and measuring ER, it remains a heavily researched area (Gross, 2013). So why is it seen as a useful construct? Cole et al., (2004) suggest that ER is a useful tool because it helps us to understand; "how emotions organise attention, and activity and facilitate strategic, persistent, or powerful actions to overcome obstacles, problem solve and maintain wellbeing at the same time as they impair reasoning and planning, complicate interpersonal interactions and relationships, and endanger health" (p318). Gross (2014) argues that this is because the different ways of regulating emotions lead to different outcomes. Thus, understanding how people regulate their emotions could have implications for supporting well-being. ER strategies are categorised as either being generally maladaptive or adaptive based on different theoretical models such as coping theories and cognitive-behavioural approaches (Adlao, et al., 2010). These can be viewed on a continuum from under-regulation, through adaptive, to over-regulation (Roberton, Daffern, & Bucks, 2012). Under-regulation involves a person being unable to contain an uncomfortable emotion in order to achieve a goal (Roberton et al., 2012), for example not regulating anger resulting in shouting at a friend. Over-regulation involves a person using strategies to stop an emotion from running its course (Roberton et al., 2012). This can involve avoidance, suppression and rumination, which can impact on a person's ability to process an emotion (Gross & Jazaieri, 2014), and increase its duration (Nolen-Hoeksema, 2012). ER strategies that involve more active engagement with a situation and an emotion are generally seen as more adaptive (Compas, Connor-Smith, Saltzman, Thomson, & Wadsworth, 2001).

Gross & John (2003) explored the outcomes of using reappraisal (focusing on changing the personal meaning of an event) and suppression (controlling a emotional response to an event) across five studies using the Emotion Regulation Questionnaire (ERQ), a self-report questionnaire. It was found that people who reported using reappraisal more frequently; experienced and expressed more positive and less negative emotions, were more likely to share their emotions and have closer friendships, and had fewer depressive symptoms and higher well-being. People who reported using suppression more frequently experienced more negative emotions (although they do not express these more), had less emotionally close relationships with others, had lower self-esteem, were less satisfied with life and reported more depressive symptoms. Adlao, et al., (2010) carried out a meta-analysis of 114 studies to explore the relationship of ER strategies with psychopathology. The results from the meta-analysis found that maladaptive strategies (rumination, avoidance and suppression) were significantly associated with higher levels of psychopathology, whereas, adaptive strategies (appraisal, acceptance and problem solving) were significantly associated with lower levels of psychopathology. Further, larger effect sizes were found for the maladaptive strategies and smaller effect sizes for the adaptive strategies. It was also found that ER strategies were more consistently associated with internalising difficulties, compared to externalising difficulties. This has led some to suggest that ER plays more of a role in internalising problems, however others advocate that externalising difficulties have been studied less and may be due to the under- and over-regulation of emotional states, including anger (Roberton, et al., 2012).

While different ER strategies have been linked to positive and negative outcomes, it has been argued that the context around ER plays an important role (Gross, 2014). This is because strategies can be adaptive and maladaptive depending on the context. For example, a child with an emotionally unavailable parent may develop ways to regulate their emotions that are effective in a difficult environment within the home, which then become maladaptive within their broader environments, such as school (Bridges, Denham, & Ganiban, 2004). This highlights that effective ER is not simply about using effective strategies, as these vary depending on the context, but rather being able to flexibly use a range of strategies to regulate emotions to achieve goals (Aldao & Nolen-Hoeksema, 2012; Bonanno, Papa, Lalande, & Coifman, 2004). Another context dependant factor that may influence the type of strategy used is the intensity of the emotion. For example when emotions are at low intensities people prefer reappraisal over suppression, however when the emotional intensity is high people prefer distraction over reappraisal (Sheppes,

Scheibe, Suri, & Gross, 2011). Adlao (2013) highlights that psychopathology is often characterized by a rigid and inflexible pattern of responses to the environment. Therefore, exploring both strategies that lead to psychopathology and having the flexibility to use a range of strategies are important to research methodology.

ER and Adolescence

While there has been a huge rise in research exploring the role of ER in a range of outcomes, the majority of this research has focused on young children and adults (Zimmerman & Iwanski, 2014). Indeed, in the meta-review of 114 studies looking at ER and psychopathology (Aldao et al., 2010), only six studies included an adolescent sample. Exploring the role of ER in the development of psychopathology in adolescence could be important for two key reasons. Firstly, studies have shown that ER strategies change over the course of development, from being regulated by caregivers in early childhood as competences develop, through to more sophisticated regulation strategies emerging throughout development (Zeman, et al., 2006). Further, differences have been found in the ER strategies used between adolescence and adulthood (Zimmerman & Iwanski, 2014). This means that findings from studies exploring ER in early childhood and adulthood may not directly apply to an adolescent population. Secondly, adolescence is a time of change in many domains of functioning. This includes the maturation of neurobiological processes that support cognitive functioning and social and emotional development (Yurgelun-Todd, 2007). Therefore, adolescence can be a time of increased vulnerability as key systems are being reorganised (Steinberg, 2005), alongside experiencing persistent and changeable negative states and an increased tendency towards risky behaviour (Somerville, Jones, & Casey, 2010). Adolescence may then be a key time to explore the role of ER in outcomes in terms of internalising and externalising difficulties, to provide information that might be useful in supporting young people. The aim of this literature review will be to explore the relationship between ER in internalising and externalising difficulties in adolescence.

1.2 Method

Search Strategy

The search was carried out using two databases Psychinfo and Web of Science. Search terms were identified from key papers and using the thesaurus function within Psychinfo to identify related constructs of the key terms. The search terms were; emotion regulation, emotion dysregulation, emotion control and affect regulation, combined with OR. These terms were then combined with adolescent, teenager, youth and young person using the AND search function. Within both databases the search terms were set to a 'title' search. In Web of Science results were limited to English language only, and publication type (journal articles). Any conference papers were also excluded from Web of Science. In Psychinfo results were limited to English language only, peer reviewed journals, and dissertations were excluded. This was to ensure that papers were accessible (written in English) and of high quality (peer reviewed). The search in both databases was also limited to the last 10 years (2004-2014) to explore the most recent research in this area. The search across the two databases returned 144 peer-reviewed journal articles, from these 133 were excluded after applying the exclusion criteria (see Appendix A). A further three papers were included following reference searches. To ensure that a group of papers had not been missed using the title search, the search terms were also entered into the databases using the abstract search. This yielded 607 papers. These were all assessed using the title and abstract. This search identified one additional paper, which explored emotional dysregulation and its relation to adolescent psychopathology. However, this paper was excluded after reviewing its method (see appendix A). This resulted in 14 papers meeting the inclusion and exclusion criteria for the review (see Figure 3 and appendix A)

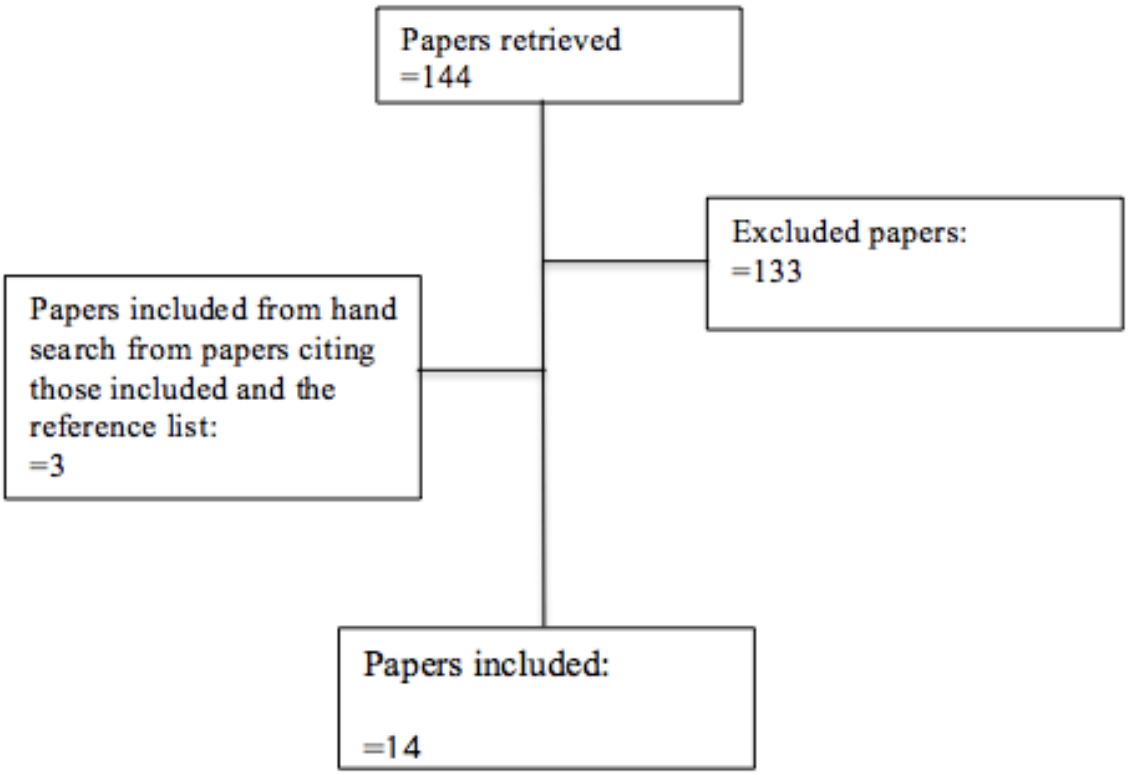

Figure 3: Flowchart of the search process

1.3 Results and Discussion

Participants

The participants across the 14 studies were aged between 11 years and 18 years. Twelve studies examined mixed gender samples, whereas two studies explored a female sample only. Sample sizes across the studies varied widely from 90 to 1984 participants. The socio-economic status of the participants was not reported for the majority of studies. The participants were drawn from a range of countries and studies took place in the USA (*n=6*), Australia (*n=3*), Spain (*n=3*), and the Netherlands (*n=2*). None of the studies were carried out with a UK population.

Study Designs

The studies used both cross-sectional designs (*n=7*) and longitudinal designs (*n=7*). The cross sectional studies explored ER in relation to the following outcome measures; internalising (depression and anxiety), (n=2), anxiety (n=1), depression (n=1), and internalising and externalising difficulties (n=3). The longitudinal studies repeated measures with participants across a range of timeframes from seven months to three years. The outcome measures for the longitudinal studies were externalising difficulties (n=2), depression (n=1), self-harm (n=3), and internalising and externalising difficulties (n=1).

Measures

The majority of the studies used self-report measures to assess participants' internalising and externalising difficulties (n=13). One study assessed aggression as a dependent variable using both self-reports and peer-reports of aggression. Emotional regulation was assessed using eight different self-report measures across the 14 studies, this included the Emotion Regulation Questionnaire (*n=5),* Difficulties in Emotional Regulation Scale (DERS) (*n=3),* Children's Emotional Management Scale (*n=2),* and the Cognitive Emotion Regulation Questionnaire (CERQ) (*n= 3),* (for a full list of measures see Appendix B). Eleven studies solely used self-report measures to assess emotional regulation, with seven studies using more than one questionnaire to explore ER. Three studies used self-report measures alongside an experimental task. The measures used cover a range of ER strategies and theoretical models of ER including Gross' process model (ERQ), ER following stress (CERQ, COPE), and emotional dysregulation (DERS).

Is ER Associated with Internalising and Externalising Difficulties in Adolescents?

This section will consider if emotional regulation is associated with internalising and externalising difficulties in adolescents. The results from the studies will be grouped to explore the role of emotional regulation in cross sectional studies and longitudinal studies. Finally the review will consider the limitations of the current research.

ER and Internalising and Externalizing Difficulties in Cross-Sectional Research

Three cross-sectional studies used the CERQ to measure ER strategies and then explored these in relation to internalising and externalising difficulties (study 8 and study 13) and internalising problems only (study 12). The CERQ measures conscious cognitive ER strategies following a negative event. Participants are asked to rate each statement to show what they think following a negative or stressful event. Therefore the three studies explore ER strategies used in stressful situations.

Study 13 (Garnefski, Kraaij, & van Etten, 2005) used a cross-sectional design to explore if specific ER strategies were associated with psychopathology. The Youth Self Report (YSR) was used as a measure of psychopathology, which assesses internalising and externalising difficulties. Participants were grouped into four categories for the analysis, no problems (NP), internalising only (IP), internalising and externalising problems (IEP), and externalising only (EP). No effect of age was found, however the effect of gender was significant, with girls reporting more internalising symptoms, and boys more externalising symptoms. The results indicate that the IP and IEP groups had higher scores on rumination and self-blame compared to the EP and NP groups. A significant difference was found in post-hoc tests between the IP and NP group, suggesting that adolescents with internalising difficulties reported using catastrophizing as an ER strategy significantly more. A regression analysis was conducted to explore unique or common predictors of internalising and externalising difficulties. The model was able to account for more of the variance for internalising difficulties (48.8%) compared to externalising difficulties (21.7%). No common correlates were found across internalising and externalising difficulties. Internalising difficulties were uniquely related to more rumination, and self-blame, and less positive reappraisal. The only unique predictor of externalising difficulties was 'positive refocusing'. This is seen as an adaptive strategy and involves thinking about happier things than the stressful event. It may be that using this strategy more frequently can lead to avoidance of an event and increase externalising difficulties. This links to the idea that being flexible in using a range of ER strategies is important for outcomes (Bonanno, et al., 2004).

Study 8 (Pena & Pacheco, 2012) explored the role of ER strategies in relation to aggression and depression in adolescents. ER was assessed using the short version of the CERQ. The same gender differences were found as in study 13, with girls reporting significantly more depression and boys reporting significantly more aggression. Regression analysis was performed to explore the strategies that were related to depression and aggression in the sample as a whole and by gender. Focusing on the results for depression the ER strategies of acceptance, rumination and catastrophizing were significant for both the sample as a whole, accounting for 23.4% of the variance, and for boys alone, accounting for 18% of the variance. For girls the most significant predictors were found to be self-blame and catastrophizing, accounting for 26% of the variance. The results indicate that consistently thinking over a problem, thinking a problem is more severe than it is, and feeling a lack of control over the problem are cognitive processes that are associated with depression. The amount of variance accounted for by the regression model was less than that found in study 13 for internalising problems. Across both studies rumination was found to be a significant predictor, however the other significant predictors varied across each study. For aggression the regression model was able to account for 19% of the variance for boys and 9.8% for the whole sample. Within the regression model, significant predictors of aggression for the whole sample and boys were self-blame and rumination. However, there were no significant predictors for girls. The amount of variance explained for the whole sample is similar to the amount found in study 13, however each study found different predictors of externalising difficulties.

Across both studies, self-blame and rumination were found to be related to more internalising and externalising difficulties. Rumination has been found to be associated with depression in adults across a range of studies (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008) and showed a large effect size when associated with psychopathology (Adlao et al, 2010). Across adult studies it has been found that rumination prolongs negative emotions and decreases positive emotions (Joormann & Vanderlind, 2014). Previous research has found a significant gender difference for rumination, with females significantly more likely to report using this strategy (Nolen-Hoeksema, 2012). It is interesting that rumination was also found to be related to externalising difficulties in males within study 8. Nolen-Hoeksema (2012) reviewed the gender differences in ER and psychopathology. It was found that females report greater rumination for sadness, while males reported more rumination for anger, with anger rumination found to increase anger and angry thoughts, leading to more aggression (Nolen-Hoeksema, 2012). Previous

research also indicates that self-blame is a strategy that can increase negative affect. Self-blame is thought to attribute negative events to internal, stable and global causes (McGee, Wolfe, & Olson, 2001), which can focus attention to factors that can appear difficult to control (Breitenbecher, 2006). Self-blame has been found to increase negative outcomes and psychological distress following traumatic events (Breitenbecher, 2006) and is associated with shame and depression (Tilghman-Osborne, Cole, Felton, & Ciesla, 2008). Therefore, using these two non-adaptive strategies could increase negative affect and reduce positive affect. It is perhaps surprising that acceptance was associated with internalising difficulties, as acceptance of emotions is used in interventions such as mindfulness, where it is used to accept emotions in a non-judgmental way (Brown & Ryan, 2003). This is thought to increase the opportunities to respond to an emotion (Hill & Updegraff, 2012) and has been linked to lower levels of distress (Eifert & Heffner, 2003). Within the CERQ measure it may be that participants interpreted the acceptance scale, for example 'I think that I have to accept that this has happened', as reducing the feelings of control over the situation, leading to hopelessness (Garnefski, et al., 2006).

Study 12 (Tortella-Feliu, Balle, & Sese, 2010) also used the CERQ and explored the relationship between negative affectivity (NA), (incorporating negative affect and sensitivity to punishment) and ER in predicting anxiety and depression. Two models were tested, a non-mediational model, where NA and maladaptive ER strategies made unique contributions to anxiety symptoms, and a mediational model that considered if NA determines maladaptive ER strategies. The last path of the model explored the link from anxiety to depression. The results indicate that the mediational model was significantly more predictive in explaining the data compared to the non-mediational model. Within this model NA accounted for 49.6% of the variance in maladaptive ER strategies, which in turn accounted for 49.2% of the variance in anxiety. This is a similar amount of variance as found for internalising difficulties in study 13. It was found that adolescents reporting increased NA were also more likely to report more maladaptive ER strategies. As described, the CERQ explores ER strategies following negative events, therefore the results of this study may indicate that adolescents who experience more NA following negative events are then more likely to use non-adaptive ER strategies. It may be that non-adaptive strategies are used because using adaptive strategies, such as reappraisal, becomes more difficult when emotions are intense (Sheppes, et al., 2011) and different ER strategies require different cognitive demands, which may influence the choice of a specific strategy (Urry & Gross, 2010). Within the adult literature non-adaptive ER strategies show higher

effect sizes compared to adaptive strategies, in relation to internalising difficulties (Aldao et al., 2010), indicating that they have more of a role in psychopathology. The results of the study may indicate that this is due to increased NA being related to non-adaptive strategies. However the study did not explore whether maladaptive ER strategies increase NA. Finally, the role of adaptive strategies was not explored within the study, which impacts on the ability to draw conclusions about non-adaptive strategies being used *instead* of adaptive strategies.

Study 4 (Mathews, Kerns, & Ciesla, 2014) looked specifically at the role of ER in social and generalized anxiety. The study conceptualized ER as three distinct components; monitoring, evaluation and modification. The monitoring and evaluation components were assessed using the DERS self-report measure. This measure explores emotional competence, rather than ER (John & Eng, 2014). The modification component relates most closely to ER. This was assessed using the COPE self-report measure and an experimental task. The COPE explores coping strategies following negative events and it has been suggested that it contains strategies that are not directly related to ER (John & Eng, 2014). The experimental task explored changes in positive and negative emotions following four child-parent discussion tasks; an everyday event, a recent situation that caused anxiety, a social situation and a happy memory. Two measures were gained from this, firstly reactivity, which was the change in emotional ratings from baseline to following the anxiety situation. Secondly, recovery, which was the change in emotional ratings following the anxiety task to the discussion of a happy memory. The study found one gender difference: girls were more likely to seek social support as a strategy to manage their anxiety compared to boys. All other data analysis was carried out without controlling for age and gender. It was found that ER (monitoring, evaluation and modification) was significantly associated with social anxiety and generalized anxiety. The monitoring subscales showed that social anxiety was related to more avoidant strategies and higher reactivity and recovery for negative emotions following an interaction task. Generalized anxiety was also related to more avoidant strategies, but was not related to emotional reactivity and recovery from negative emotions. This pattern of results could support the general vulnerabilities that are associated with anxiety disorders, such as hypersensitivity to threat and increasing the threats salience (Campbell-Sill, Ellard, & Barlow, 2014). Perceiving an increased threat can then lead a person to avoid the situation that causes them anxiety, leading to higher use of avoidant strategies, which may prevent effective ER

taking place as it reduces the engagement with an emotional stimuli (Campbell-Sill, et al., 2014).

Study 5 (Eastabrook, Flynn, & Hollenstein, 2014), also explored the role of emotional awareness and ER in relation to anxiety and also depression. Emotional awareness was assessed using the DERS, which is comparable to study 4. ER was assessed using the ERQ, which is based on Gross' process model of ER. They found that emotional awareness was positively associated with cognitive reappraisal and negatively associated with expressive suppression. This would suggest that emotional awareness might underlie effective ER strategies. Emotional awareness was also negatively associated with anxiety and depression. This supports the findings of study 4 that evaluation and monitoring of emotions were associated with social and generalized anxiety. This links to a developmental perspective that key skills, such as emotional awareness, are needed for a child to then develop effective ER (Saarni, 1999; Thompson, 2014). In terms of anxiety and depression, it was found that low cognitive reappraisal was linked to depression, and high expressive suppression was linked to anxiety. Previous research with adults has found that lower levels of reappraisal were associated with higher levels of depression in clinical and non-clinical samples (Joorman & Gotlib, 2010). Cognitive reappraisal has been found to reduce negative affect (Urry, 2009) and it results in fewer cognitive costs, such as reduced memory associated non-adaptive strategies (Richards & Gross, 2000). Cognitive reappraisal may be a more problematic strategy for people with depression as depression is characterized by a tendency to view events negatively (Beck A. , 1967). This may impact on the ability to use cognitive reappraisal. Indeed interventions to reduce depression such as cognitive-behavioural therapy (Beck J. , 1995), focus on increasing a person's ability to appraise situations in different ways. In terms of expressive suppression, it has been found to increase negative affect (Gross & John, 2003) and is seen as an avoidant strategy (Aldao, et al., 2010). Recent research suggests that suppression may be associated with anxiety partially because it is used as a way to control emotions when other strategies are thought to be unavailable. It has been found that children and young people with anxiety report a lower perceived ability to control their emotional reactions (Cisler, Olatunji, Feldner, & Forsyth, 2010) and reporting that emotional expression should be controlled partially mediated the association between anxiety and expressive suppression (Spokas, Luterek, & Heimberg, 2009).

Study 1 (Fussner, Luebbe, & Bell, 2014) used an experimental task to explore the role of ER on positive affect and its links to depression. Participants took part in a reward

task and a conflict task with their parent. They were asked to rate their emotions before and after each task, and participant's behaviour (e.g. smiling, laughing), and positive and negative statements used after each task were coded from videos. These measures were used to assess the participants' regulation of positive affect across four areas; experience, expression, response and persistence, following an event. The results indicate that positive affect experience, expression and reduced positive affect persistence was strongly associated with depressive symptoms in specific contexts. The strongest association was found following a conflict task, but not a reward task. The authors suggest that adolescents with higher levels of depression may have a reduced ability to recover following an experience involving negative emotions (e.g. conflict task), leading to lower levels of positive affect. A review of ER and depression identified that regulating positive affect may play a key role in depression (Joormann & Vanderlind, 2014). Understanding when maintaining positive affect is more problematic for those with depression could therefore be useful for targeted interventions. Indeed, the importance of positive emotions is supported by the broaden-and-build theory of positive emotions (Fredrickson, 2001), which shows that negative emotions are linked to action tendencies, which restrict thoughts ready for action. Conversely, positive emotions lead to a broader range of thoughts and actions, which can increase personal resources (Tugade & Fredrickson, 2007).

Finally, study 9 (Lougheed & Hollenstein, 2012) explored the role of ER strategies on internalising difficulties in adolescents. Specifically, it explored if ER impacted on positive outcomes through utilizing a range of possible strategies. It has been argued that flexibility in ER is important as whether strategies are considered adaptive or non-adaptive depends on the context and the goals of the individual (Bonanno, et al., 2004). The study used three self-report measures of ER, the ERQ, the DERS and the concealing and adjusting subscales of the Affective Style Questionnaire (ASQ). These were analyzed in relation to self-report scales of anxiety, social anxiety and depression. The analysis identified six different groups in relation to ER strategy use, for example 'average strategy group', 'no strategies', 'concealing/suppression', and 'emotionally disengaged' groups. Overall the results showed that ER profiles that utilized a lower range of strategies were associated with internalising difficulties (anxiety and depression), whereas ER profiles that showed use of a higher range of strategies were associated with lower levels of internalising difficulties. This is supported by research with adults, which found that adaptive strategies have a compensatory role; these strategies only become significant predictors of psychopathology when maladaptive strategies were either high or low (Aldao

& Nolen-Hoeksema, 2012). This supports the idea that having a range of strategies to draw upon is important for effective outcomes.

Limitations of Cross-Sectional Designs

Cross-sectional studies are able to explore associations between variables, however they do not show the direction of the relationship. Therefore the results from the cross sectional studies could indicate that ER impacts on internalising or externalising difficulties, or that these difficulties cause emotional dysregulation, or changes in ER strategies. If non-adaptive ER precedes internalising or externalising difficulties then this would indicate that teaching effective or adaptive ER strategies may be beneficial for treatment outcomes. However if ER is not causally related to internalising or externalising problems or even represents a consequence of them then another area may need to be the focus for interventions. In the next section the possible direction of the relationship will be explored by considering longitudinal studies.

ER and Internalising and Externalizing Difficulties in Longitudinal Research

Study11 (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011) used a longitudinal design to address the question of the direction of the relationship between ER and internalising and externalising difficulties. Specific self-report measures were used to assess each of the areas of anxiety, depression, aggressive behaviour and eating pathology. To assess ER a broad view was taken and self-report measures focused on emotional understanding, dysregulated emotion expression and rumination. Emotional understanding was assessed using the Emotion Expression Scale for Children (EESC), rumination using the Children's Response Styles Questionnaire (CRSQ), and dysregulated emotion expression using the Children's Sadness Management Scale (CSMS) and Anger Management Scale (CAMS). The CSMS and CAMS assess both adaptive and non-adaptive emotional expression and regulation, and the study used only the non-adaptive subscale for each. The study found that ER deficits at time one predicted changes seven months later at time two for anxiety, aggression and eating pathology, but not for depression. Looking at the opposite relationship, psychopathology was not found to predict changes in ER across the two time points, indicating that ER deficits are a risk factor for anxiety, aggression and eating pathology rather than a consequence of such problems. As previously stated, the study took a broad view of ER. It was found that using all three measures, emotional understanding, dysregulated emotion expression and rumination, as an indicator of ER resulted in a model with a stronger fit to the data compared with loading

each of the three indicators of ER as separate factors. The authors argue that this suggests that adolescents who are more aware of their emotions are then better equipped to use adaptive strategies to manage a range of emotions.

Study 10 (Larsen, et al., 2013) explored whether use of the ER strategy of suppression predicted depression over a one-year period. A self-report measure was used for depression. Suppression was assessed using the ERQ. It should be noted that only the suppression scale from the ERQ was used which contains only four-items. The results found that depressive symptoms at time one were significantly associated with an increased use of suppression at time two. The relationship was not significant in the reverse direction. This would indicate that depression leads to an increased use of suppression. This result agrees with the findings of study 11, which also found that ER strategies did not predict the development of depression over time. However, using only one ER strategy allows the outcome to be related to just that strategy rather than to a range of strategies (Aldao, 2013). For example, Folk, Zeman, Poon, and Dallaire (2014), examined if ER strategy use predicted increases in anxiety and depression over time in childhood (9 year olds). Using a longitudinal design, it was found that suppression predicted anxiety, but not depression, over time, whereas lower coping predicted rises in depression. Therefore, specific strategies may be important in the development of anxiety and depression. This study also provides a possible indication of the direction of the relationship for the findings of study 5, which identified the same pattern in a cross-sectional design.

Studies 2 (Voon, Hasking, & Martin, 2014), 3 (Voon, Hasking, & Martin, 2014) and 14 (Voon, Hasking, & Martin, 2014) all report data from the same large-scale research project exploring non-suicidal self-injury (NSSI) in relation to negative life events, psychological distress and ER strategies. Participants completed a range of self-report measures to assess self-harm behaviours, psychological distress, and stressful life events. ER was assessed using the Emotion Regulation Questionnaire (ERQ) and the Ruminative Thought Style Questionnaire (RTSQ). Results found that participants who engage in NSSI behaviours had experienced more adverse life events at baseline and over the course of the three-year study, compared to participants who did not report NSSI. Only higher cognitive reappraisal at baseline was found to be significantly associated with NSSI, resulting in lower medical severity and frequency in NSSI, when controlling for other variables, such as adverse life events and psychological distress. Over time cognitive reappraisal was significantly associated with reduced medical severity of NSSI only. The results would

indicate that cognitive reappraisal may be a protective factor against NSSI. The authors suggest that NSSI may be used as a form of ER, and used more when other more adaptive, such as cognitive reappraisal, are not available. Strategies considered as more maladaptive, such as rumination and suppression, were not associated with NSSI over time.

Study 6 (Herts, McLaughlin, & Hatzenbeuhler, 2012) investigated the longitudinal associations between peer victimization and stressful life events with ER and aggression. Peer victimization, the extent to which participants felt that aggression had been directed towards them, and stressful life experiences, were assessed using self-report measures. Emotional dysregulation was assessed using measures of emotional understanding, and dysregulated emotional expression, and rumination. The EESC was used to assess emotional understanding; rumination was assessed using the CRSQ, and the dysregulation subscales of the CSMS and CAMS, which explore the extent to which participants engage in maladaptive expressions of emotions for anger and sadness. There were three waves of data collection completed over a seven-month period. It was found that emotional dysregulation mediated the relationship over time between stressful life events, and peer victimization with increases in aggressive behavior, for both males and females. It was noted that exposure to stress and peer victimization at time one was associated with increases in response-focused emotion dysregulation, i.e. a decrease in the ability to modulate the intensity or length of an emotional experience. Increased emotional intensity, and emotional duration, where emotional reactions are increased or overly reduced is related to psychopathology (Gross & Jazaieri, 2014). Using adaptive strategies before an emotion becomes too intense has been found to reduce the amount of negative affect (Gross, 2013). Strategies such as cognitive reappraisal are antecedent-focused so can reduce the intensity of an emotional reaction before the emotion is fully generated. This review has shown that cognitive reappraisal has been linked to reduced internalising difficulties in adolescents. In adults, cognitive reappraisal has been found to reduce aggression (Barlett & Anderson, 2011). However, to date no study has explored if cognitive reappraisal is associated with reduced externalising difficulties in adolescents. It would be predicted that it should, as it reduces negative affect and the intensity of an emotion.

Study 7 (Calvete & Orue, 2012) investigated the role of adaptive ER in reducing aggression. The authors tested if ER had a moderating role in the relationship between elements of social information processing, anger and hostile interpretation, and aggressive behavior, and if there were gender differences. This was assessed for both reactive

aggression, i.e. unplanned and impulsive aggression, and proactive aggression, i.e. planned and calculated violence. At time one participants completed measures of aggression, and peers' views on participants' aggression were gained through anonymous nominations. ER was assessed using the Social Information Processing Questionnaire (SIP). This gave participants different scenarios followed by questions such as attributing an emotion to the person, considering their own emotion and finally what strategies they would use to regulate the emotion. The final question assessed their ER, for example 'if you felt angry, can you think of something that could make you feel better?'. Participants' responses to the ER questions were coded as adaptive or maladaptive. It was found that adaptive ER strategies predicted a reduction in proactive and reactive aggression over time. Further, adaptive ER strategies were found to moderate the relationship between anger and aggression, where adolescents who scored highly on adaptive ER showed a reduction in reactive aggression following anger. This would suggest that adaptive ER influences the way that an adolescent deals with their anger. This supports the idea that cognitive reappraisal would be a useful strategy to explore in relation to externalising difficulties as using this ER strategy should reduce the intensity of anger, leading to less aggression. Gender differences were found in the study. It was reported that when given a negative scenario males reported higher levels of anger and females reported higher levels of sadness. In the mediation model males were higher in reactive aggression compared to females, and this was mediated by anger and adaptive ER strategies, i.e. males who used fewer adaptive ER strategies and experienced more anger were then more aggressive. Females reported using more adaptive ER strategies, compared to boys including searching for solutions and employing cognitive strategies.

1.4 Limitations

Across the 14 studies there were a number of limitations, which could impact on the ability to compare results across the studies and in evaluating the strength of the findings. Specific limitations have already been highlighted, and general limitations across the 14 studies will now be discussed.

Firstly, the majority of studies relied on self-report measures (n=12). This is consistent with the general pattern within this field, with self-report measures being most frequently used within an older age range (Adrian, et al., 2011). This could be a useful approach as it allows for participants to report on the range of ER strategies that they use and report on areas that may be harder to explore through observational methods. Furthermore, other people may not be aware of the strategies that young people use, as this

requires an element of introspection. It has been found that children are able to effectively report on their emotions using self-report scales (Durbin, 2010), and during adolescence correlations of emotional and behavioural difficulties reduce between informants compared to younger children. (Achenbach, McConaughy, & Howell, 1987). However, solely using self-report measures may lead to methodological biases, which can influence the responses and the findings of the research (Podsakoff, 2003). In the ER field, there is a general consensus that an ER strategy can be seen as adaptive or maladaptive depending on the context and goals of the individual (Aldao, 2013). While self-report measures do allow participants to report *generally* on the types of strategies that they use, this may reduce the ability to capture some of the specific situational goals and motivations that influence their choice of strategy across a range of situations. Garnefski et al. (2005) advocate that future research should utilize self-report measures alongside other forms of data collection, such as experimental and observational tasks. As ER is a complex construct using multiple methods and a layered approach may be useful (Weems & Pina, 2010).

Secondly, the different conceptualization of ER across the studies makes the comparison between findings more difficult (Eisenberg, Champion, & Ma, 2004). Across the 14 studies reviewed here, there were a variety of approaches used, which were considered to fall under the umbrella term of ER.

Four studies used the Difficulties in Emotion Regulation Scale (DERS), alongside other measures; the COPE, and the ERQ. The DERS has four subscales; non-acceptance of emotional responses, impulse control, lack of emotional awareness and limited access to ER strategies. John and Eng (2014) suggest that this scale explores emotional competence, under the broader term 'affect regulation' rather than ER itself. This is built on Saarni's eight broad skills that are suggested to underlie emotional competence, including awareness of one's emotional state, emotional self-efficacy and capacity for adaptive coping (Saarni, 1999). It is suggested that while many of these skills are pre-requisites for effective ER, only the adaptive coping relates to the ER definition of regulating emotions (John & Eng, 2014). Therefore, the studies, that used this approach, are likely exploring the skills underlying effective ER, rather than ER itself for three of the four subscales. Two of the studies did separate emotional awareness from ER, which makes interpretation of the results clearer.

Two of the studies used the CSMS and CAMS, which are measures that explore ER in relation to two emotions, anger, and sadness. This could be a useful approach as there may be specific developmental changes across different emotions (Zimmerman & Iwanski,

2014), which fits with the functionalist approach that emotions serve a specific purpose (Southam-Gerow, 2013). However, the papers generally report the results in relation to ER rather than the ER of two specific emotions. This makes it harder to compare to other studies where the focus has been on ER more generally. It also reduces the insight into positive emotions, which may also play a role in internalising and externalising difficulties (Fussner, Luebbe, & Bell, 2014).

Three studies used the CERQ. This measure is based on coping strategies within ER, which means that it is assessing ER following stress. The CERQ focuses on the cognitive and conscious ways that people regulate their emotions (Garnefski & Kraaji, 2007) and ask participants to consider how they respond after a negative event. This means that that it does not explore the more unconscious, behavioural, automatic processes thought to be involved in ER, and focuses on the responses to stress, rather than ER to a range of situations. This can be an advantage as it gives a more concrete focus to the measure (John & Eng, 2014). However, this should be made more explicit when using and reporting the CERQ to explore ER, e.g. that the study is exploring ER following negative events specifically.

Three studies used the Emotional Regulation Questionnaire (ERQ), which focuses on two of the ER strategies within Gross' process model. This does allow results to be considered within a framework, and previous research with adults indicates that the two strategies do lead to different outcomes (Gross & John, 2003). However, as previously discussed it is not that either strategy necessarily leads to positive or negative outcomes as it is context-dependent, instead it is more relevant to consider the amount that a strategy is used, i.e. frequently or rarely (John & Eng, 2014). While the ERQ does allow ER strategies to be considered within a framework it only allows for two specific strategies to be considered. Other types of strategy within the model, such as attention deployment, have not yet been operationalized within a questionnaire measure. Exploring a limited range of strategies may impact upon the findings. For example is there a specific difficulty in applying a single strategy or a general difficulty in applying any ER strategy (Aldao, 2013). The latter would seem to be a greater risk factor for psychopathology.

Indeed, two of the studies only assessed and reported the strategies seen as more maladaptive from the CERQ (study 12) and the ERQ (study10). While maladaptive strategies have been found to be associated with psychopathology with large effect sizes (Aldao, et al., 2010), adaptive strategies could be useful as well (Aldao, 2013). For example, some studies only found unique effects of adaptive strategies on outcomes (study

2, 3), whereas others found that strategies that were considered adaptive increased externalising difficulties (study 13). This suggests that is useful to explore the range of strategies when taking about ER generally. This can give an insight into the strategies that may be risk factors and protective factors for psychopathology.

Finally, three studies also used experimental tasks to explore ER. Both studies 1 and 4 explored ER using emotional dynamics, with only study 4 also using self-report measures alongside this (DERS). Emotional dynamics involves exploring the intensity and variability in emotions across tasks, or time. Neumann, et al., (2011) suggest that: "emotional experiences and behaviours that are too little, too much or not appropriate for the situation at hand are signs of dysregulation", (p658). Therefore, it is not the ER strategies that are directly explored but rather the outcome of these. This view supports the definition of ER discussed at the start of this review, as regulation is seen as changing the dynamics of emotions, that is the intensity, duration and escalation of an emotional response to achieve a goal (Thompson, 2014). Using this method the studies explored both positive and negative emotions and found that they were linked to outcomes. This is useful as it gives an indication for those supporting young people that being aware of the intensity and variability of their emotions may give an early warning to possible psychopathology. However, only one study linked this to self-report measures, and in this case it was using the DERS, which as discussed previously focuses more on the underlying skills for ER, rather than ER itself. Therefore, it would be useful for future research to explore if emotional dynamics are linked to specific strategies as well. Study 7 used an experimental task, which asked young people to describe how they would regulate their emotions for specific examples in an open question format. This focused on ER in specific contexts, which could be useful as effective ER depends on the context and person's goals (Gross, 2013). The authors suggest that future research may explore if strategies given in an open format are related to the ER strategies assessed through self-report measures. As discussed ER is a complex construct, using a range of methods to explore it, and further understanding about how these measures relate to each other, may be a useful direction for future research.

1.5 Conclusions and Implications for Practice and Future Research

The aim of the literature review was to investigate if ER strategies were associated with internalising and externalising difficulties during adolescence. Despite the limitations highlighted in this review, the results of the literature review indicate that ER does play a role in the development of internalising and externalising difficulties in adolescence. In

terms of practice, the results suggest that supporting young people to develop the skills underlying ER, such as emotional awareness, should develop more effective ER strategies. Adaptive ER strategies were related to reduced internalising and externalising difficulties, while maladaptive strategies were related to higher levels of internalising and externalising difficulties. However, having a range of strategies led to more positive outcomes. The longitudinal studies indicate that difficulties with ER strategies precede psychopathology. However, specific strategies are related to different outcomes, such as suppression with anxiety and low cognitive appraisal with depression. This would suggest that supporting young people to increase their range of adaptive strategies would be useful, while supporting them to reduce maladaptive strategies. Understanding if specific strategies are more related to psychopathology could be useful to help target interventions more directly (Garnefski, Kraaij, & van Etten, 2005).

The evidence base exploring this topic is still limited and there are currently no studies within the UK. Further, the current studies exploring ER in adolescents draw on a range of conceptualisations of ER, which makes comparisons between studies more problematic. Future research should address the limitations within the current studies. This includes the over-reliance on self-report measures. While self-report measures are useful to explore the range of strategies that young people use these should be carried out alongside experimental tasks that allow ER to be assessed within a specific context. This may be particularly relevant to further exploration of externalising difficulties, which are less represented within the research and have been found to show less association with classic ER strategies, such as reappraisal compared to internalising difficulties. However, it may be useful to use the ERQ self-report measure with adolescents with externalising difficulties, as this has not been done before and cognitive reappraisal has been found to reduce aggressive behaviour in. adults (Barlett & Anderson, 2011).

Limitations of the Literature Review

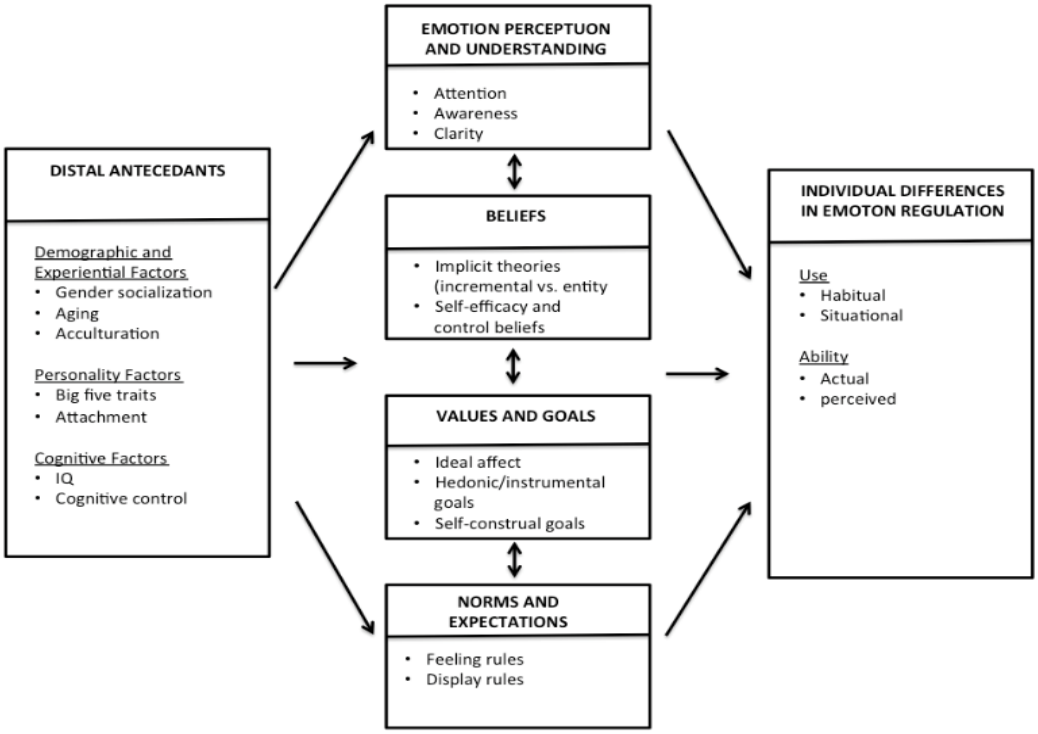

Figure 4. Examples of factors that can influence ER, adapted from John and Eng (2014).

This review was able to explore the role of ER in internalising and externalising difficulties in adolescence, which is an age range that is not often explored consistently within the ER literature (Adrian, et al., 2011). However, there are limitations that should be considered when interpreting the findings. Firstly, the wide range of measures used within the studies were drawn from three main areas of ER; the ER process model, coping strategies in response to stress and emotional competence (emotional dysregulation). This makes the comparison of findings between studies more problematic. Secondly, the review looked at a specific area within the ER literature. It is acknowledged that this represents a limited focus and within the complex construct of ER there are many other factors that could influence ER and then adolescent outcomes. This includes areas such as the importance of the young person's environment in supporting them to develop effective ER (Zeman, et al., 2006), and the role that their environment can have in priming young people to feel that certain emotions may be useful, which can lead to an increased

motivation to up-regulate emotions (Tamir, Bigman, Rhodes, Salerno, & Schreier, 2014). John and Eng (2014) suggest a framework to highlight and explore the large number of factors that are likely to influence and impact on ER (Figure 4), which highlights the complexities in exploring ER. Within the model this review focused on individual differences in ER.

Chapter 2:

The Relationship Between Emotion Regulation, Language Skills, and Internalising and Externalising Difficulties in Adolescence

2.1 Introduction

In children and young people difficulties in emotional regulation (ER) and speech, language and communication needs (SLCN) are reported to be associated with internalising and externalising difficulties (Benner, Nelson, & Epstein, 2002; Conti-Ramsden, Mok, Pickles, & Durkin, 2013; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Pena & Pacheco, 2012). Internalising and externalising difficulties can lead to negative outcomes, such as mental health problems in adulthood, school refusal, school exclusion, substance misuse and educational underachievement (Collishaw, Maughan, Goodman, & Pickles, 2004; Greenbaum, et al., 1996; Fergusson & Woodward, 2000; King, & Bernstein, 2001; Woodward & Fergusson, 2001). Exploring the associations that ER and language may have with internalising and externalising difficulties could be important in terms of targeting support to improve outcomes for young people. This may be particularly useful in a sample from a disadvantaged area as SLCN and emotional and behavioural difficulties tend to be more pronounced in such populations (Spencer, Clegg, & Stackhouse, 2012; Farrell, 2003). While language and ER typically develop alongside each other in early development, these two areas have generally been studied separately (Cole, Armstrong, & Pemberton, 2010). This paper will explore the associations between ER and adolescent mental health outcomes, before considering the role that language may play in ER, and finally setting out the study's aims.

Emotional Regulation

Emotional regulation (ER) has been defined as: "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features to accomplish one's goals" (Thompson, 1994, p28). It can be a useful construct to explore outcomes, as different ER strategies can lead to positive and negative outcomes (Gross & John, 2003). This is because being able to process and make sense of emotions, or contain potentially overpowering emotions is important for adaptation and wellbeing (Greenberg, 2004; Greenberg, Elliot, & Pos,

2007). It is argued that this keeps people in a 'window of tolerance', which promotes good social functioning and goal-directed behaviour (Shore, 2003). Overwhelming negative emotions, can lead to reduced cognitive functioning (Richards & Gross, 2000) and a narrowing of action-tendencies, i.e., fight/flight reactions (Fredrickson & Branigan, 2005). Whereas maintaining positive emotions can help to develop personal resources, by broadening thought-action tendencies to engage in a range of goals i.e. playing, exploring (Fredrickson, 1998, 2001). Generally, adaptive ER strategies support a person to process an emotion, while non-adaptive strategies reduce the engagement with the emotion (e.g. suppression, avoidance), or increase the negative emotion (e.g. rumination) (Compas, Connar-Smith, Saltzam, Thomson & Wadworth, 2001; Gross & Jazaieri, 2014; Nolen-Hoeksema, 2012; Roberton, Daffern & Bucks, 2012). However, strategies can be adaptive or non-adaptive depending on a specific context, therefore flexibility is seen as key (Aldao, 2013; Bonanno, Papa, Lalande, & Coifman, 2004).

Adolescence is a key time for emotional and cognitive change (Steinberg, 2005; Somerville, Jones, & Casey, 2010; Tortella-Feliu, Balle, & Sese, 2010), however the research exploring the associations of ER with adolescent outcomes is limited (Bariola, Gullone, & Hughes, 2011; Gullone & Taffe, 2012). As discussed in Chapter One, there remain challenges in the conceptualisation and measurement of ER, which can make the integration of findings across studies problematic (Bariola, et al., 2011). This in part reflects the array of conscious and unconscious mechanisms and strategies that are likely to be involved as highlighted in recent models.

The Process Model of ER

The process model of ER (Gross, 1998) suggests that ER strategies will have different consequences because they impact on an emotion at different points across its generation (Gross, 2013). This could be before an emotional response has been activated (antecedent-focused), or after an emotion has been experienced (response-focused). To test the model's assumptions a self-report questionnaire, the Emotion Regulation Questionnaire (ERQ) was devised to explore two strategies from different points within the model. Firstly, cognitive reappraisal, which is an antecedent-focused strategy, which involves changing the way an event is thought about to change its emotional impact. Secondly, suppression, which is a response-focused strategy that involves suppressing an emotional response once it has been activated. Cognitive reappraisal has been found to decrease negative affect, while suppression has been found to increase it (Gross, 1998b; Gross & John, 2003). Further, people who report using more cognitive reappraisal have been found

to experience and express more positive emotion, have closer friendships and higher well-being (Gross and John, 2003). Higher cognitive reappraisal also leads to lower levels of self harm in adolescents (Voon, Hasking, & Martin, 2014). In contrast, people who report more use of suppression have fewer emotionally close friendships, lower self-esteem, and report being less satisfied with life (Gross & John, 2003).

In adults, studies have found that low cognitive reappraisal is associated with depression (Joorman & Gotlib, 2010) and high suppression with anxiety (Spokas, Luterek & Heimberg, 2009). These finding has been replicated with adolescents (Eastabrook, Flynn & Hollenstien, 2014), and low cognitive reappraisal and high suppression being reported by young people who refuse to go to school (Hughes, Gullone, Dudley, & Tonge, 2010). Depression is characterized by a tendency to view events negatively (Beck, 1967), which may make cognitive reappraisal more problematic. Indeed interventions to reduce depression, such as cognitive behavioural therapy (CBT), can focus on increasing a person's ability to appraise situations in different ways (Hofmann & Asmundson, 2008). Recent research suggests that suppression may be associated with anxiety partially because it is used as a way to control emotions when other strategies are thought to be unavailable. (Cisler, Olatunji, Feldner, & Forsyth, 2010; Spokas, Luterek, & Heimberg, 2009).

While cognitive reappraisal and suppression have been explored in relation to a range of outcomes, including internalising difficulties, they have been investigated far less in relation to externalising difficulties. In adults cognitive reappraisal has been linked to lower levels of aggression (Barlett & Anderson, 2011), with adults who reported using more cognitive reappraisal also reporting less anger, fewer negative emotions, and more positive emotions (Mauss, Cook, Cheng, & Gross, 2007). Ray, Wilhelm, and Gross (2008) investigated the difference in reported anger following either rumination or cognitive reappraisal after a negative event. It was found that cognitive reappraisal led to less anger compared to rumination. The authors suggest that cognitive reappraisal reduces the intensity of the negative event by reinterpreting the meaning of it. To the authors knowledge there are currently no studies exploring the association between cognitive reappraisal and suppression and externalising difficulties in adolescence. This would be an interesting area to explore given these preliminary findings in adults.

Coping Strategies and ER

The coping literature explores how people adapt to stress, in the way that they regulate their emotions, direct their behaviour, and manage their arousal (Compas et al., 2001). Looking at how people regulate emotions under stress may be useful as research has found that multiple negative life events are a risk factor for emotional and behavioural difficulties in adolescence (Appleyard, Egeland, & van Dulmen, 2005; Flouri & Tzavidis, 2008).

Coping strategies are viewed as purposeful and can be aimed at modifying the source of stress (problem-focused) or managing an emotional reaction following stress (emotion-focused) (Compas et al., 2001). Riediger and Klipker (2014) suggest that problem-focused strategies are related to antecedent-focused strategies, and emotion-focused strategies are related to response-focused strategies within the process model of ER. Aldao, Nolen-Hoeksema and Schweizer (2010) carried out a meta-analysis to examine the relationship between emotion regulation strategies and psychopathology, looking at strategies from the coping literature. It was found that maladaptive strategies were related to higher levels of psychopathology (anxiety, depression, eating and substance disorders), and adaptive strategies to lower levels of psychopathology. Individual strategies showed stronger associations than others, with a large effect size for rumination, a medium effect size for avoidance, problem-solving, and suppression and a small to medium effect size for acceptance and positive reappraisal. This may indicate that the presence of more maladaptive strategies leads to psychopathology rather than the lack of adaptive strategies. Problem-solving showed the largest effect size of the adaptive strategies and may be a strategy that reduces the development of maladaptive strategies being used (Aldao et al., 2010).

Over the course of development it has been found that there are age related changes, with adolescents using increasingly complex cognitive emotional regulation strategies (Zimmer-Gembeck & Skinner, 2011). Cognitive ER strategies refer to the regulation of emotions through thoughts or cognitions, and people differ in the types of thoughts they use to regulate their emotions (Garnefski & Kraaji, 2007). To investigate the role of cognitive ER strategies on outcomes the Cognitive Emotion Regulation Questionnaire (CERQ) was devised, which explores adaptive and maladaptive strategies (Garnefski, Kraaij, & Spinhoven, 2001).

Using the CERQ with adults it has been found that higher levels of self-blame, rumination, catastrophizing, and lower positive reappraisal are related to depression (Garnefski & Kraaij, 2006) and anxiety (Garnefski, et al., 2002). Similarly, in adolescents self-blame, rumination and less positive reappraisal have been associated with internalising difficulties (Garnefski, Kraaij, & van Etten, 2005). Although other studies have found slightly different pattern of results, whereby only non-adaptive strategies were found to be the key significant predictors of female internalising difficulties (Pena & Pacheco, 2012). The role of cognitive ER strategies has been explored less frequently in externalising difficulties. In adults, rumination, catastrophizing, and lower positive reappraisal are related to more reported anger (Martin & Dahlen, 2005). In adolescents, higher externalising difficulties were associated with more reported, self-blame and rumination strategies (Pena & Pacheco, 2012) and the adaptive strategy 'positive refocusing' (Garnefski, Kraaji, & van Etten, 2005). In adults rumination has been found to increase anger (Ray et al., 2008) and adolescents who report higher use of maladaptive strategies also report higher negative affect (Tortella-Feliu, Balle & Sese, 2010). It is surprising that positive refocusing (thinking about happier things than a stressful event) was related to more externalising difficulties. While, this is seen as an adaptive strategy it may be that using this strategy frequently can lead to the avoidance of the emotional consequences of the event, which could reduce the processing of it. Generally, it has been found that cognitive ER strategies are more related to internalising difficulties than externalising difficulties (Garnefski et al., 2005; Pena & Pacheco, 2012), which may indicate that other ER strategies are more important for externalising difficulties.

Recent research limitations

Despite ER strategies being identified as predictors of adolescent internalising and externalising difficulties, there has only been a limited amount of research in this age group (Gresham, & Gullone, 2012). Overall, research suggests ER has more of a role in internalising difficulties, however this may reflect the fact that fewer studies have examined externalising difficulties. It would be interesting to use both the CERQ and the ERQ to explore which strategies are most strongly associated with internalising and externalising difficulties. A further limitation of the previous research is that ER studies focusing on adolescents have largely relied on self-report measures (Adrian, Zeman, & Veits, 2011). Using a behavioural measure of ER alongside self-report measures could support the understanding of factors that influence internalising and externalising difficulties. This could explore reactivity and recovery following a stressful event. Both

reactivity and recovery could be seen as related to ER according to the process model. High reactivity could indicate that antecedent-focused strategies have not been used effectively, i.e. before an emotional response has been generated. Whereas, inadequate recovery to baseline levels could indicate that response-focused ER strategies have not been activated or are ineffective. In adolescents only one study has used a behavioural measure of ER in relation to anxiety (Mathews et al., 2014). It was found that adolescents with high anxiety reported higher reactivity and recovery following a discussion about a worrying event, with negative emotional reactivity being a significant predictor of social anxiety. The following section of the chapter will focus on language and emotional regulation.

Language and Emotional Regulation

ER and language are both developed through early attachment relationships (Morris, Silk, Stenberg, Myers, & Robinson, 2007; Murray & Yingling, 2000; Leigh, Nievar, & Nathans, 2011). While these two important skills typically develop alongside each other they have historically been investigated separately (Cole et al., 2010). However, a large body of research indicates that they may be associated. Researchers have found that pupils with specific language impairment (SLI) are at greater risk for developing internalising and externalising difficulties (Conti-Ramsden, Mok, Pickles, & Durkin, 2013) (Durkin & Conti-Ramsden, 2010; Yew & O'Kearney, 2013), compared to their typically developing peers. It has also been found that children and young people with social, emotional and behavioural difficulties (SEBD) are more likely to have unidentified speech, language and communication needs (SLCN) (Benner, Nelson, & Epstein, 2002; Cohen, Farnia, & Im-Bolter, 2013).

In a review of the literature on SLCN and SEBD expressive and receptive language skills were found to be impaired within the SEBD population (Brenner, et al., 2002). However research that has explored the areas separately suggests that certain aspects of language may be more closely associated with SEBD than others. Ripley & Yuill (2005) found that expressive language skills were more strongly linked to emotional symptoms than receptive language skills in excluded pupils. Beitchman, Brownlie, and Wilson (1996) found that once the mother's ratings of depression and anxiety had been controlled for, the next best predictor of psychiatric outcomes at 12 years was expressive language difficulties.

The Role of Language in Developing Emotional Regulation

Emotional regulation is not an innate skill but is learnt (Gerhardt, 2013). Initially this learning occurs in the context of attachment relationships within the family environment (Mikulincer, Shaver, & Pereg, 2003; Morris, Silk, Steinberg, Myers, & Robinson, 2007), with a secure attachment associated with more effective ER (Bariola, Gullone, & Hughes, 2011; Waters, et al., 2010). Language abilities also develop through early attachment relationships. It has been found that a secure attachment and parental sensitivity is associated with greater language ability (Cusson, 2003; Murray & Yingling, 2000; Leigh, et al., 2011) and factors that can reduce interactions during early childhood, for example parental depression, are associated with reduced language ability (Sohr-Preston & Scaramella, 2006).

These early interactions influence the development of language and emotional skills. Indeed, the amount of converstions between parents and children about their feeling states at three years old predicts their ability to make judgements about others' emotions at six years old (Dunn, Brown, & Beardsall, 1991) and maternal linguistic input has been found to be important for emotional understanding (Rosnay, Pons, Harris, & Morrell, 2004). Similarly, the research exploring the factors that impact on the development of ER have found that higher levels of communication between a parent and child predict more cognitive reapprisal and less use of suppression (Gresham & Gullone, 2012) and parental expression of their emotions supports children's developing ER skills (Bariola, et al., 2011)

As a child develops language begins to play a more significant role in ER, and language skills provide a child with a means of communicating about their needs and this supports their ability to understand their own and others' emotions (Cole, et al., 2010). This enables a shift to the cognitive interpretation of emotions, which can further support emotional regulation (Havighurst, Harley, & Prior, 2004). Thus language provides a tool for both interpersonal function (social relationships) and intrapersonal function (cognitive functioning) (Dale, 1996). Kopp (1989) suggests that; "Language offers young children a multi-purpose vehicle for dealing with emotions and moving towards effective ER. With language, children can state their feelings to others, obtain verbal feedback about the appropriateness of their emotions, and hear and think about ways to manage them", (p349).

Consequently, language difficulties may limit children's ability to use language to modulate their emotions, express feelings, and delay actions (Dale, 1996). Indeed, pre-

schoolers' language skills have been positively correlated with their ability to use distraction during a frustrating task (Stansbury & Zimmermann, 1999).

The Role of Language in Later Development

While the role of language in ER skills has been examined in younger children, to date there have not been any studies exploring this in adolescence. Language may play a role in ER later in development as a symbolic tool to reflect on experiences and self-regulate (Bucci, 1997; Cole et al, 2010). Pennebaker's Writing Paradigm (WP) (Pennebaker, 1997) also supports the role of language as a tool to make sense of our emotions and experiences, and to guide behaviour. The WP has resulted in improved physical health and psychological well-being and these findings have been reported in 200 studies across age, gender, culture, and social class (Pennebaker & Seagal, 1999). Pennebaker and Seagal (1999) carried out an analysis of the narratives written across a number of studies. It was found that the process of producing a narrative allowed a person to organise events whilst integrating thoughts and feelings. This changes the person's emotions for an event as it is reshaped within the mind (Pennebaker & Ferrell, 2013). This would suggest that narrative ability provides a way for people to use language to make sense of their experiences and suggests that it supports the way that they manage their emotions, linking to emotional regulation.

The Current Study

In summary, it is clear that there are important theoretical links between language skills, emotional regulation and internalising and externalising problems. However, the relationships between these factors have not been examined in an adolescent sample. Language appears to provide a foundation for the development of ER skills in early childhood, however it is unknown to what extent this extends into adolescence. The current study will examine these factors in an enriched sample that targets adolescents who are more likely to present with a range of SLCN and SEBD (Spencer, Clegg, & Stackhouse, 2012; Farrell, 2003).

The research has two aims. Firstly, to test whether expressive language ability is related to ER during adolescence. Secondly, to examine the relationship between ER and externalising and internalising difficulties in an adolescent sample. Importantly, this study will go beyond self-report measures of ER and will include a behavioural measure of emotion recovery and regulation. The behavioural task will explore emotional reactivity, recovery and intensity of positive and negative emotions in response to frustration. This

will examine the outcome of ER, rather than the process of ER. The study will test the following hypotheses;

1) Lower language ability will be associated with higher internalising and externalising difficulties.
2) Higher language ability will be associated with more adaptive ER strategies, and less emotional reactivity, increased recovery and lower intensity of emotions.
3) Adaptive ER strategies will be associated with lower levels of internalising and externalising difficulties.
4) Maladaptive ER strategies will be associated with higher levels of internalising and externalising difficulties.
5) Higher emotional reactivity, reduced recovery to normal levels of affect, and high emotional intensity will be associated with higher levels of internalising and externalising difficulties.
6) Emotional reactivity, recovery and intensity will be associated with ER strategies. Specifically, adaptive strategies will be associated with more positive and fewer negative emotions, whereas maladaptive strategies will be associated with more negative and fewer positive emotions.

2.2 Method

Participants

Fifty-five participants were recruited from years 10 and 11 in mainstream secondary schools and pupil referral units (PRUs) in the south of the UK. Twenty-eight members of the sample were female and 27 were male, with an age range of 14 to 16 years (M = 14.82, SD = 0.70). The two mainstream schools that took part in the study had a higher level of pupils eligible for pupil premium compared to the national average. The pupil premium is funding given to schools to support disadvantaged pupils who are eligible for free school meals and/or have been looked after for six months by the local authority. Four PRUs took part in the study. These provide alternative educational provision for pupils with social, emotional and behavioural difficulties who are either excluded from mainstream schools or are unable to attend mainstream education (e.g., due to mental health problems or school refusal). Four hundred consent forms were sent out across the two secondary school, and 95 consent forms across the PRUs to all year 10 and year 11 pupils. From the mainstream schools 44 consent forms were returned. One participant was excluded as English was not their first language, and two participants were absent when the testing took place. All participants who returned consent forms from the PRUs took part in the study. This resulted in 55 participants in total, with 41 from mainstream schools and 14 from the PRUs.

Design

A cross-sectional design was used to explore the relationship between expressive language ability and emotional regulation strategies (independent predictor variables) and internalising and externalising behaviour (dependent variables). An enriched sample was used, whereby participants were drawn from both mainstream secondary schools and PRUs. This was done to increase sampling of adolescents with a range of externalising difficulties and consequently provide a stronger test of the study hypotheses.

Measures

Youth Self Report (YSR, Achenbach & Rescorla, 2001). This measure explores emotional and behavioural difficulties in 11-18 year olds. The syndrome scales section of the YSR was used in the study. This asks participants to rate 119 statements on a three-point scale (not true, sometimes true, often true) to describe themselves within the last six months. Seven of the items are not scored within the scale and reflect positive items, such

as ‘I enjoy a good joke’. The remaining 105 items make up the nine syndrome scales. These scales can be combined to form higher order internalising and externalising scales. The internalising difficulties scale comprises three subscales; anxious/depressed, withdrawn/depressed, and somatic complaints. The externalising difficulties scale comprises of two subscales; aggressive behaviour and rule-breaking behaviour. Examples of the items include- ‘I feel lonely’, ‘I worry a lot’, ‘I have a hot temper’, ‘I get into many fights’. The reliability for the YSR within the current study was very good for internalising difficulties (α=.95), and externalising difficulties (α=.94). Participants’ raw scores for internalising and externalising difficulties were converted into t-scores using the YSR profile. The t-scores can be used to explore if participants are in the normal range (26-59), the borderline clinical range (60-63) and the clinical range (64-100) on each scale.

Language

Participants’ expressive language skills were assessed as previous research indicates that expressive language may have a stronger association with internalising and externalising difficulties compared to receptive language skills (Beitchman et al.. 1996; Ripley and Yull, 2005). Two measures were used to assess expressive language;

The Clinical Evaluation of Language Fundamentals 4 (CELF4); (Semel, Wiig, & Secord, 2003), recalling sentences subtest. Participants were asked to repeat increasingly complex sentences and this gives an indication of their expressive language abilities. Previous research has found that recalling sentences is the most sensitive tool for identifying language difficulties, showing a high level of sensitivity (90%), specificity (85) and accuracy (88%) for identifying specific language impairment (SLI) (Conti- Ramsden, Botting, & Faragher, 2001). Responses were recorded using a dictaphone and coded afterwards to ensure accurate analysis. Following coding each participant was compared to their age norms to give their percentile score. This measures gives an indication of the participant’s complex expressive language skills.

Expressive and Receptive Recall of Narrative Instrument (ERRNI), (Bishop, 2004). The short version of the beach story assessment was used, where participants are asked to tell a story using 15 pictures. First, participants were shown a warm-up picture and asked to describe what was going on in the picture. Following this participants were asked to look through the 15 pictures to familiarise themselves with the story. Whilst looking through the pictures no verbal comments were made, however the researcher pointed to salient points in the story. The narrative was recorded using a dictaphone and

transcribed. The ERRNI provides norms for two areas; mean length of utterance (MLU), and narrative skills. The narrative transcription is divided into clauses, and the number of utterances then divides the total number of words. The MLU gives an indication of the level of complexity in expressive language, however it does not assess syntactic errors within the narrative. Secondly, the measure assesses story content, which gives an index of how effectively a participant can communicate complex narrative information. The narrative is scored to assess the key points in the story, and higher scores reflect more effective narrative skills. Following coding each participant was compared to their age norms to give their percentile score for MLU and narrative. The narrative measure was found to have good internal consistency (α=.85). Within the current study the reliability for the narrative measure was acceptable (α=.63). The MLU gives an indication of functional expressive language skills, and the narrative scores shows narrative skills.

Non-verbal Reasoning

The Wechsler Abbreviated Scale of Intelligence, second edition (WASI-ll, (Wechsler, 2011). The matrix-reasoning subtest was used to gain a measure of participants' non-verbal reasoning skills. This took around 5 minutes to complete and raw scores were converted into a percentile for each participant.

Emotional Regulation

ER was explored using multiple measures to profile component processes outlined in recent theoretical models.

The Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA) (Gullone & Taffe, 2012). This is a self-report questionnaire that contains 10 items. It explores two ER strategies from Gross' process model of ER; cognitive reappraisal (CR) and expression suppression (ES). There are six items, which assess CR, such as "when I want to feel happier, I think about something different", and four items, which assess ES, such as "I control my feelings by not showing them". Participants were instructed to read each statement and circle the response that seems most true for them. Responses could be made on a five point scale from strongly disagree to strongly agree. The measure has been found to be a valid and reliable way to assess the two ER strategies in children and adolescents for CR (α=.83), and for ES (α=.75), (Gullone & Taffe, 2012). Within the current study the ERQ showed good reliability overall (α=.70), and for CR (α=.78) and ES specifically (α=.65). Higher scores indicate more use of each ER strategy.

The Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski, Kraaij, & Spinhoven, 2002): The 36-item CERQ assesses individual differences in ER strategies. It assesses the conscious cognitive processes used in regulating emotions following a negative situation. The strategies are across nine subscales, with four items for each one: self-blame (e.g. 'I think that it's all caused by me'), blaming others (e.g. I think that others are to blame'), acceptance (e.g. 'I think that I have to accept it'), refocusing on planning (e.g. 'I think about what would be best for me to do'), positive refocusing (e.g. 'I think of nicer things that have nothing to do with it'), rumination (e.g. 'again and again, I think of how I feel about it'), positive reappraisal ('I think that there are good sides to it as well'), putting into perspective (e.g. 'I think that there are worse things in the world'), and catastrophizing (e.g. 'all the time I think that this is the worst thing that can happen to you'). Participants were asked to rate each statement to show what they thought following a negative situation and they could respond to each statement on a five-point scale from 'never' to 'always'. The younger version of the CERQ was used because it used simpler language, which would be easier for the participants to understand. Within the present study the CERQ showed very good reliability overall (α=.93), as well as for the non-adaptive strategies (α=.91) and adaptive strategies (α=.91). Higher scores indicate more use of each ER strategy.

Behavioural Task

An experimental measure was used to assess emotional reactivity, recovery and intensity of positive and negative emotions, following a frustration task. Exploring the changes in the intensity and duration of a range of emotions can indicate if ER is taking place (Neumann, Van Lier, Frijns, Meeus, & Koot, 2011), by examining the outcome of this.

Participants were asked to rate their emotions (happy, relaxed, angry, annoyed) before and after a frustrating task using a visual analogue scale (VAS). For each VAS the participants rated their emotions on a scale from 'not at all' to 'extremely' to show how they felt 'right now' by marking a continuous line. The order of the tasks is shown in Figure 5. The frustration task involved participants taking part in a five-minute computer game, designed to be mildly frustrating (adapted from the procedure used in Fairchild, et al., 2008). The game involved hitting moving coloured targets, with a 'target indicator' showing them which colour they should aim for. The game required fast responses to hit the target during each short trial. The game was fixed to ensure that participants never

reached the points target to win the game. This occurred through the target indicator changing colour when they clicked on the correct target, or through the mouse becoming unresponsive at different times. After the frustration task participants took part in a five-minute breathing focus task (adapted from the procedure used in Hirsch, Hayes, & Mathews, 2009). This meant that participants took part in a neutral task for five minutes before rating their emotions again. The breathing task was also completed before the frustrating task to familiarise the participants with the procedure.

Emotional reactivity was the amount that participants' emotions changed between time one and time two. Here, positive numbers show that the strength of the emotion increased and negative numbers indicate a decrease. Emotional recovery was the amount that participants' emotions changed between time two and time three. Here, negative numbers showed an increase in an emotion and positive numbers showed a decrease. Emotional intensity was the level of an emotion that was rated across all three-time points (see Figure 5), where higher numbers show higher levels of each emotion across the task.

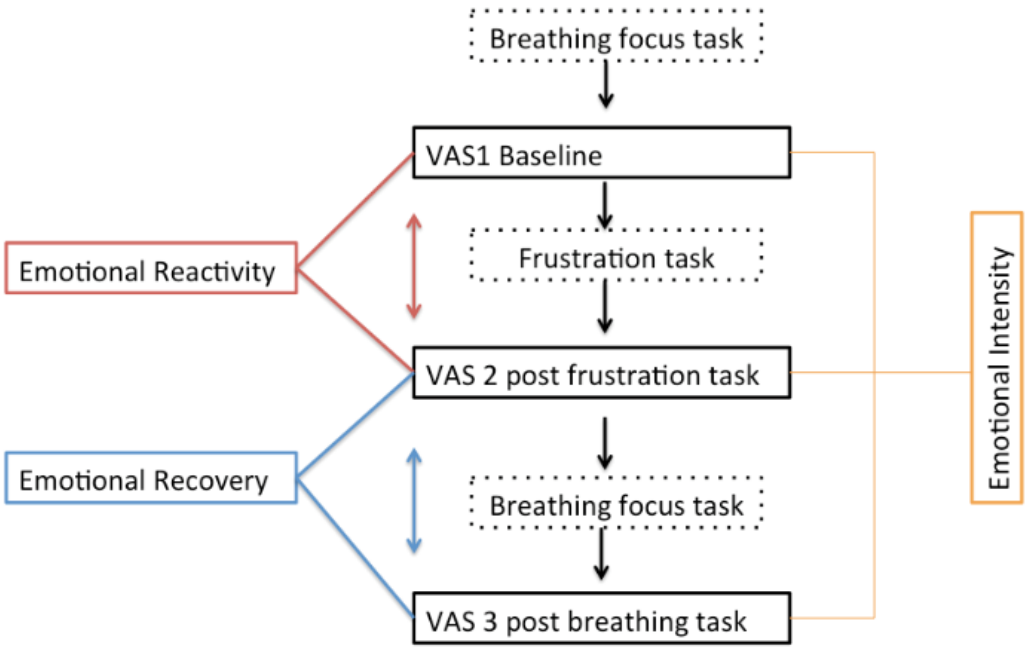

Figure 5: Flow chart to show the order of measures within the experimental session and how the emotional measures were calculated.

Procedure

Parents were sent an information sheet about the study and a consent form, which were returned to the school. At the start of each session participants were informed about the aims of the study and completed assent forms. Participants completed the measures

with the researcher in a quiet room at their school in one session lasting around an hour. The self-report measures, language measures and non-verbal reasoning measure were completed first followed by the frustration task. At the end of the session each participant was debriefed about the aims of the study and given a £10 voucher as a thank you for taking part.

Ethical considerations

Ethical approval was gained from the University of Southampton Ethics Committee, followed by approval from the Research Governance Office. Parental consent and child assent was gained for each participant. Participants were not informed about the aim of the frustration task before taking part. However all participants were fully debriefed at the end of the session. Following the debrief all participants said that they were happy that they had not been told about the frustration task before taking part.

Data Analysis

Data was analysed using SPSS (version 20.0). Preliminary analysis of the data involved exploring normality of the variables. Wilcoxon signed rank tests were used to test if the frustration task had caused changes in the participants' emotions. Correlational analyses were conducted to examine associations between the measures. Regression analysis was also conducted to explore unique predictors of internalising and externalising difficulties.

2.3 Results

Descriptive Statistics

The variables were assessed for normal distribution using the Kolmogorov-Smirnov test. The YSR internalising and externalising scales, and CERQ adaptive and non-adaptive scales were all normally distributed. However, the ERQ variables, language measures, non-verbal reasoning measure and behavioural measures of ER, were all non-normal. Therefore parametric and non-parametric tests were used to analyse the data, as appropriate. Percentile scores from the CELF-RS, which is a sensitive measure off language difficulties, indicated that there was a high level of language difficulties within the sample. The frequencies can be seen in Table 1. The YSR subscales showed that participants reported a high level of internalising difficulties and a medium level of externalising difficulties on average. The frequencies can be seen in Table 2. The means, standard deviations and ranges for the outcome measures (internalising and externalising scores) and predictor measures are presented in Table 3.

Table 1

Frequency of language (CELF-RS) percentile scores across the sample

Percentile Range	Frequency	Percent of sample
0-25	43	78.2
26-50	8	14.5
51-75	3	5.5
76-100	1	1.8
Total	55	100

Table 2

Frequencies for internalising and externalising difficulties within the sample from the YSR

	Range	Frequency	Percent of sample
Internalising	Normal	30	54.5
	Borderline	5	9.1
	Clinical	20	36.4
Total		55	100
Externalizing	Normal	39	70.9
	Borderline	3	5.5
	Clinical	13	23.6
Total		55	100

Group differences

There were no significant gender differences for externalising difficulties, t(53) = 1.09, p =.28, although females (M=57.07, SD=14.60) reported slightly higher levels than males (M=53.37, SD=10.14). There were significant gender differences for internalising difficulties t(53)=2.44, p=.018, with females (M=61.71, SD=14.25) reporting significantly higher levels than males (M=53.00, SD=12.11). Participants from the mainstream schools and the PRUs reported similar levels of internalising difficulties (M=57.59, SD=12.71; M=57.00, SD=17.26). However, as expected, the PRU participants reported significantly more externalising difficulties compared to the participants recruited from mainstream schools, t(53)=-3.45, p=.001 (M=64.43, SD=12.11; M=52.12, SD=11.31 respectively).

Table 3

Means, Standard Deviations and Ranges for outcome and predictor measures for standardized tests and questionnaires.

Measure	Mean n=55	SD	Range (min-max)	Possible range of scores
YSR Internalizing	57.44	13.84	35-88	26-100
YSR Externalizing	55.25	12.63	29-90	26-100
CELF RS	20.22*	19.70	0-84	0-100
ERRNI narrative	35.35*	23.53	1-89	0-100
ERRNI MLU	37.42*	31.45	0-98	0-100
WASI matrices	44.31*	21.90	28-67	0-100
ERQ CR	18.85	3.58	6-25	6-30
ERQ-ES	11.65	2.76	6-18	4-20
CERQ adaptive	55.93**	14.37	26-79	20-100
CERQ non-adaptive	41.87**	12.43	23-70	16-80

. **percentile score; **n= 54*

Behavioural ER measure

Subjective rating data from the frustration task were examined to see if there were changes over time. Means, standard deviations and the range are shown in Table 4.

Table 4

Means, Standard Deviations and Ranges for behavioral ER task

Measure	Mean n=55	Median	SD	Range (min-max)
Anger reactivity	24.02	7.00	34.79	-6-127
Anger recovery	21.84	4.00	30.35	-6-113
Annoyed reactivity	38.40	36.00	38.50	-36-144
Annoyed recovery	35.80	35.00	31.38	-2-136
Happy reactivity	-10.84	-3.00	38.64	-112-114
Happy recovery	-11.69	-3.00	20.01	-116-44
Relaxed reactivity	-12.45	-3.00	34.32	-93-65
Relaxed recovery	-12.84	-3.00	34.28	-105-120
Happy intensity	253.53	275.00	120.55	20-467
Relaxed Intensity	267.69	295.00	114.94	22-454
Anger Intensity	85.05	52.00	100.67	0-457
Annoyed Intensity	114.15	83.00	92.02	0-401

Frustration task: A Wilcoxon signed-rank test was used to explore any significant changes in positive emotions (happy, relaxed) and negative emotions (angry, annoyed) following the frustration task. Changes in emotions were examined from baseline (time1) to immediately after the frustration task (time2), followed by changes after the frustration task (time 2) to after the breathing task (time3). There were significant changes from time 1 to time 2 in all the emotions, with an increase in anger (z=-5.08, p=<.001), and annoyance (z=-5.69, p=<.001), and a decrease in happiness (z=-2.02, p=.044) and relaxed (z=-2.27, p=.023). There were also significant changes from time 2 to time 3 for all emotions, with a reduction for anger (-5.07, p=<.001), and annoyance (-6.126, p=<.001),

and an increase in happiness (-3.04, p=.002) and relaxed (-3.10, p=.002). As shown in Figures 6 and 7. This demonstrates that the task was effective in frustrating participants therefore the reactivity (time 1 to time 2) and recovery (time 2 and time 3) scores are included in further analysis.

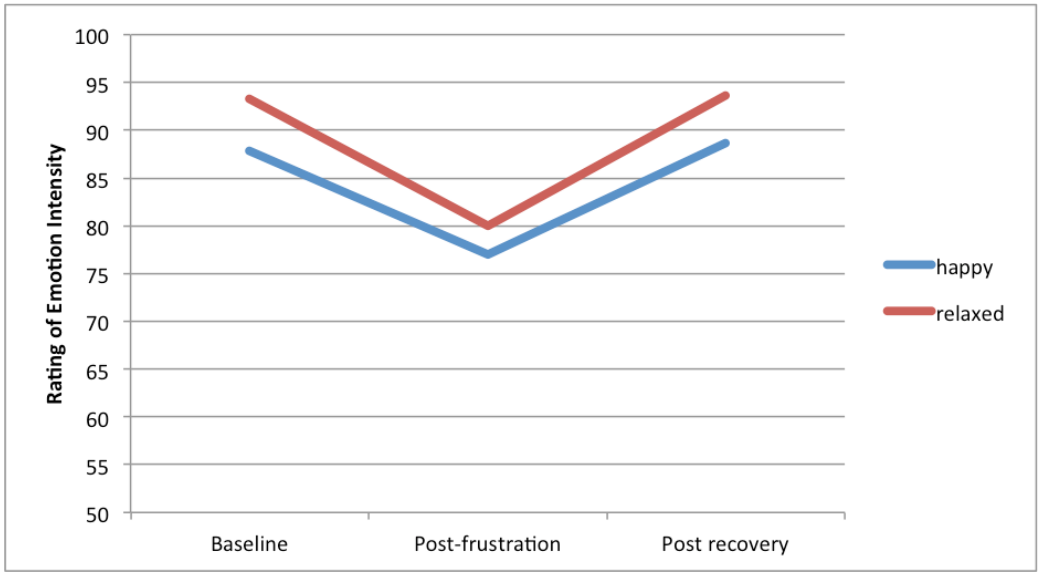

Figure 6: Subjective ratings for happy and relaxed emotions across the experiment.

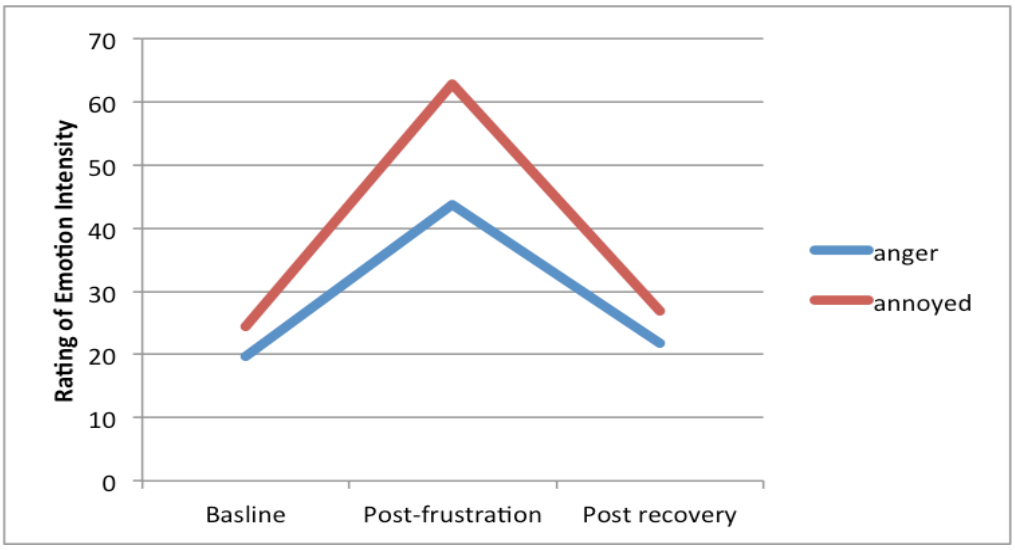

Figure 7: Subjective ratings for angry and annoyed emotions across the experiment.

Associations between measures

We performed correlations to explore the associations between the independent and dependent variables. Pearson's correlations were employed for measures that were normally distributed, whereas Spearman's Rho correlations were used for measures that did not meet assumptions of normality. When performing correlations between the language measures and other variables, we controlled for non-verbal reasoning ability. This was to ensure that results were focused specifically on language difficulties. Correlational analysis was used to examine the significance and direction of the relationship between the variables. However this approach could only explore the contribution of each variable independently. Regression analyses were also conducted to determine the amount of variance in the dependent variables (internalising and externalising difficulties) that could be explained by several of the independent variables, and the relative contribution of each predictor within each model. Each hypothesis will be addressed in turn.

Hypothesis one: Lower language ability will be associated with higher internalising and externalising difficulties.

There were no significant correlations between internalising difficulties and complex language skills ($r_s(52)=.17$, $p=.23$), functional language skills ($r_s(52)=-.16$, $p=.24$), and narrative skills ($r_s(52)=-.21$, $p=.12$). There were also no significant correlations between externalising difficulties and the complex language skills ($r_s(52)=.20$, $p=.17$), MLU ($r_s(52)=-.22$, $p=.10$), and narrative skills ($r_s(52)=-.20$, $p=.14$). Therefore, contrary to predictions there was no evidence to support hypothesis one. This may have partially due to the general low language levels within the sample (Table 1), which reduced the variability within the scores. As the language measures showed no significant correlations with internalising or externalising difficulties they were not included in any further analysis.

Hypothesis two: Higher language ability will be associated with more adaptive ER strategies, and less emotional reactivity, increased recovery and lower intensity of emotions.

Hypothesis two was also examined through correlations. Surprisingly, the complex language skills showed a significant positive correlation with happy reactivity ($r_s(5)=-.31$, $p=.02$), and a significant negative correlation with positive refocusing ($r_s(51)=-.33$, $p=.02$).

This suggests that participants who had higher complex language ability, also reported less happiness following the frustration task and reported less positive refocusing. Functional language skills showed a significant negative correlation with anger reactivity ($r_s(52)=-.34$, $p=.01$), and a significant positive correlation with the refocus on planning strategy ($r_s(51)=-.38$, $p=.01$). Indicating that participants with a higher functional language skills reported less anger following the frustration task and reported using more of the 'refocus on planning' strategy. Narrative skills displayed a significant negative correlation with the catastrophizing strategy ($r_s(51)=-.36$, $p=.01$), where participants with higher narrative skills also reported using catastrophizing less. There were no significant correlations between any of the language measures and emotional intensity across the whole task (see appendix D).

Table 5

Correlations between internalising and externalising difficulties, ER self reported strategies (CERQ, ERQ) and emotions rating task.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 INT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 EXT	**.48****	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 CR	**-.36****	**-.50****	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ERQ																	
4 ES	.16	-.02	.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ERQ																	
5Adap	-.03	-.06	**.30***	-.06	-	-	-	-	-	-	-	-	-	-	-	-	-
CERQ																	
6 Mal	**.74****	**.35****	**-.27***	.12	.20	-	-	-	-	-	-	-	-	-	-	-	-
CERQ																	
7. ARt	.25	.24	-.10	-.01	-.04	.10	-	-	-	-	-	-	-	-	-	-	-
8 aRt	.12	.04	-.06	.10	.02	.03	**.50****	-	-	-	-	-	-	-	-	-	-
9 HRt	.26	.09	-.03	-.03	.13	**.35***	-.09	**-.35****	-	-	-	-	-	-	-	-	-
10RRt	.07	-.12	.02	-.15	.12	.17	-.23	**-.48****	**.42****	-	-	-	-	-	-	-	-
11ARy	.24	.15	-.01	.12	.07	.16	**.80****	**.46****	.02	**-.31***	-	-	-	-	-	-	-
12 aRy	.22	.23	-.03	.23	.01	.10	**.42****	**.80****	-.18	**-.45****	**.51****	-	-	-	-	-	-
13HRy	.05	.18	.07	-.02	.07	.17	-.19	**-.32***	**.51****	**.40****	-.12	-.25	-	-	-	-	-
14RRy	-.06	-.04	.03	-.20	.04	.10	-.18	**-.40****	**.29***	**.70****	-.24	**-.40****	**.46****	-	-	-	-
15 AI	**.40****	**.47****	**-.31***	-.09	-.16	.23	**.52****	**.35****	.04	-.20	**.49****	**.50****	-.12	-.15	-	-	-
16 aI	**.37****	**.43****	-.22	.10	-.04	.23	.21	**.47****	-.15	-.22	.22	**.55****	-.09	-.13	**.74****	-	-
17 HI	**-.42****	**-.38****	**.39****	-.20	.24	**-.41****	-.19	-.10	.05	.20	-.16	-.07	-.12	.05	**-.30***	**-.34****	-
18 RI	-.24	**-.31***	**.42****	-.01	.24	**-.30***	-.04	-.09	.07	.15	.01	.03	-.18	-.03	**-.32***	**-.40****	**.78****

Note. INT=internalising, EXT=externalising, CA ERQ=cognitive reappraisal, ES ERQ=suppression, Adap CERQ =adaptive ER strategies (CERQ), Mal CERQ=maladaptive strategies (CERQ), ARt=Anger reactivity, aRt=annoyed reactivity, HRt=happy reactivity, RRt=relaxed reactivity, ARy=angry recovery, aRt=annoyed recovery, HRy=happy recovery, RRt=relaxed recovery, AI=anger intensity, aI=annoyed intensity, HI=happy intensity, RI=relaxed intensity.

CERQ measures, n=54, all other measures n=55

**p<.05, **p<.01*

Table 6

Correlations between the nine individual strategies from the CERQ, language measures, and internalising and externalising difficulties (n=54)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. INT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. EXT	**.48****	-	-	-	-	-	-	-	-	-	-	-	-	-
3.CELF	.17	.20	-	-	-	-	-	-	-	-	-	-	-	-
4. MLU	-.16	-.22	.09	-	-	-	-	-	-	-	-	-	-	-
5. Narrative	-.21	-.20	-.06	**.40****	-	-	-	-	-	-	-	-	-	-
6. SB	**.71****	.27	.24	.01	.13	-	-	-	-	-	-	-	-	-
7. OB	**.31***	**.42****	-.02	.01	.02	**.33***	-	-	-	-	-	-	-	-
8. Rum	**.62****	.21	.06	.20	-.14	**.68****	**.40****	-	-	-	-	-	-	-
9. Cat	**.65****	**.29***	-.04	.01	**-.36****	**.55****	**.57****	**.72****	-	-	-	-	-	-
10. PReap	-.08	-.01	-.12	.20	.16	-.05	.17	.10	-.02	-	-	-	-	-
11. PRefoc	-.18	**-.28***	**-.33***	.10	.09	-.03	.07	.05	.06	**.44****	-	-	-	-
12.RePlan	-.19	-.14	-.24	**.38****	.26	-.04	.16	.13	.04	**.73****	-.04	-	-	-
13.PiP	.17	.06	.08	.25	.16	.21	.15	.23	.14	**.57****	**.34***	.21	-	-
14.Acc	**.39****	.08	.05	.04	-.5	**.50****	**.35***	**.41****	**.39****	.09	.15	.10	**.40****	-

Note. INT=internalizing, EXT=externalizing, CELF=language measure, MLU=mean length of utterance, Narrative=narrative measure, SB=self blame, OB=other blame, Rum=rumination, Cat=catastrophizing, PReap= positive reappraisal, PRefoc= positive refocusing, RePlan= refocus on planning, PiP=putting into perspective, Acc= acceptance.
**p<.05, **p<.01*

Hypothesis three: Adaptive ER strategies will be associated with lower levels of internalising and externalising difficulties.

Cognitive reappraisal as measured with the ERQ was significantly negatively correlated with internalising (r_s=-.36, p<.01) and externalising difficulties (r_s=.-.50, p<.01). Indicating that participants who reported using more cognitive reappraisal, also reported fewer internalising and externalising difficulties. Adaptive strategies from the CERQ were not significantly correlated with internalising (r=-.02, p=.88), or externalising difficulties (r=-.17, p=.22). However, when controlling for maladaptive strategy use, the correlations between internalising (r=-.27, p=.052) and externalising difficulties (r=-.26, p=..06), approached significance. This suggests that more adaptive strategies are only associated with lower levels of difficulties when maladaptive strategies are lower. Examining the adaptive individual strategies from the CERQ (Table 6), internalising was only significantly correlated with the acceptance ER strategy. However, higher acceptance was associated with higher internalising difficulties (r=.40, p<.01), indicating a non-adaptive strategy. Externalizing difficulties were significantly negatively associated with positive reframing (r=-.28, p=.04).

Correlational analysis was used to examine the strength and direction of the relationship between the variables. However this approach could only explore the contribution of each variable independently. Regression analyses were also conducted to determine the amount of variance in the dependent variables (internalising and externalising difficulties) that could be explained by several of the independent variables, and the relative contribution of each predictor within each model. As cognitive reappraisal had shown a significant correlation this was entered in step one of each model, followed by the adaptive CERQ strategies in step two.

For internalising, (Table 7) step one was significant (F(1, 52)=4.81, p=.033), with cognitive reappraisal predicting lower internalising difficulties, although it only accounted for 7% of the variance. Step two was also significant (F(5,48)=2.67, p=.033). The model accounted for 14% of the variance, however the only other significant predictor in the model, putting into perspective, actually increased internalising difficulties. For externalising difficulties (Table 8), step one was significant (F(1, 52)=12.82, p=.001). Cognitive reappraisal predicted lower levels of externalising difficulties and accounted for 18% of the variance. There was no significant change from step one to step two (F(5,

47)=1.57, p=.19), and none of the adaptive CERQ strategies were significant within the model.

Table 7

Summary of hierarchical regression analysis for individual adaptive ER strategies and internalising difficulties.

Variable	B	SE B	β
Step 1			
(Constant)	78.68	9.85	
CR (ERQ)	-1.13	.51	**-.29***
Step 2			
(Constant)	75.74	10.08	
CR (ERQ)	-1.14	.56	**-.29***
Positive Reframe	-.37	.66	-.09
Refocus on planning	-1.02	.83	-.26
Positive Reappraisal	-.21	.79	-.05
Putting into Perspective	1.74	.66	**.46***

Note: CR=cognitive reappraisal. For step 1: R^2=.09, ΔR^2 =.07, step two: R^2=.22, ΔR^2 =.14

**p*<.05

Table 8

Summary of hierarchical regression analysis for individual adaptive ER strategies and externalising difficulties.

Variable	B	SE B	β
Step 1			
(Constant)	84.90	8.39	
CR (ERQ)	-1.57	.44	**-.45****
Step 2			
(Constant)	89.73	11.89	
CR (ERQ)	-1.52	.51	**-.43****
Positive Reframe	-.57	.58	-.15
Refocus on planning	-1.20	.73	-.34
Positive Reappraisal	.67	.69	.18
Putting into Perspective	1.22	.71	1.72
Acceptance	-.66	.78	-.13

Note: CR=cognitive reappraisal. For step 1: R^2=.20, ΔR^2 =.18, step two: R^2=.31, ΔR^2 =.23

***p*<.01

Hypothesis four: Maladaptive ER strategies will be associated with higher levels of internalising and externalising difficulties.

As measured with the ERQ, suppression was not significantly associated with internalising (r_s=-.24, p=.24) or externalising difficulties (r_s=-.02, p=.91). The maladaptive strategies from the CERQ showed a strong significant positive correlation for internalising difficulties (r=.74, p<.01), and a modest significant correlation for externalising difficulties (r=.34, p=.01). Examining the associations of individual strategies from the CERQ (Table 6) showed a different pattern of results for externalising and internalising. Internalising was significantly positively associated with self-blame, other-blame, rumination, and catastrophizing. Externalizing was significantly positively associated with other-blame and catastrophizing.

Regression analysis was conducted to explore the unique contribution of a range of maladaptive strategies. The non-adaptive strategies from the ERQ and CERQ were entered in the same step. For externalising difficulties the model was not significant (F(5, 48)=2.11, p=.08), suggesting that increased maladaptive strategies are not significantly related to higher externalising difficulties. For internalising difficulties (Table 9) the model was significant (F(5, 48)=16.70, p<.001), accounting for 60% of the variance. Within the regression model self-blame and catastrophising were both unique significant predictors. The positive beta values for both these strategies show that they were related to higher internalising difficulties.

Table 9

Summary of hierarchical regression analysis for individual non-adaptive ER strategies and internalising difficulties.

Variable	B	SE B	β
(Constant)	16.86	6.94	
ES (ERQ)	.24	.48	.05
Self blame	1.83	.45	**.50****
Rumination	.06	.54	.02
Catastrophising	1.71	.61	**.41****
Other blame	-.09	.46	-.02

Note: CR=cognitive reappraisal. For step 1: R^2 =.63 ΔR^2 =.60

**p*<.05, ***p*<.01

Hypothesis five: Higher emotional reactivity, reduced recovery to normal levels of affect, and high emotional intensity will be associated with higher internalising and externalising difficulties.

There were significant correlations between externalising and anger intensity (r=.50, p<.01), annoyed intensity (r=.43, p<.01), happy intensity (r=-.38, p<.01), and relaxed intensity (r=-.31, p<.01). Similarly, there were also significant correlations between internalising difficulties and angry intensity (r=.40, p<.01), annoyed intensity (r=.37, p<.01), and happy intensity (r=-.42, p<.01). The reactivity and recovery measures were not significantly associated with internalising or externalising difficulties for any of the emotions. However, anger reactivity was approaching a significant positive correlation for internalising (r=.25, p=.06) and externalising difficulties (r=.24, p=.07). Annoyed recovery was approaching a significant positive correlation with externalising difficulties (r-.23, p=.09). For internalising difficulties happy reactivity (r=.26, p=.06) and angry recovery (r=.24, p=.070), were both approaching a positive significant correlation.

Regression analysis was used to explore which of the emotional measures were unique predictors of internalising and externalising difficulties. As intensity had reached significant correlations these were entered in the first step of the model. Only happy intensity and angry intensity were entered because the two positive and two negative emotions were highly correlated (Table 5). In step two of the model the reactivity and recovery measures that were approaching significance in the correlations were entered. For internalising (Table 10) the first step was significant (F(2, 52)-10.28, p<.001), and both happy intensity and anger intensity were significant predictors, with lower happiness and higher anger related to higher internalising difficulties. Step two did not result in a significant change in the amount of variance that was accounted for (F(3, 49)=1.90, p=.14). Thus, for internalising difficulties the intensity of positive and negative emotions were the largest predictors, accounting for 29% of the variance.

For externalising (Table 11) the first step was significant (F2, 52)=9.81, p<.001), with increased anger and decreased happiness accounting for 24% of the variance in the model. There was a significant change to step two (F(2, 50)=3.99, p=.03), and the model was significant (F(4, 50)=7.46, p<.001). Within this model reduced happiness intensity, reduced recovery from annoyance, and increased anger reactivity were all significantly related to more externalising difficulties, accounting for 32% of the variance.

Table 10

Summary of hierarchical regression analysis for emotional intensity and internalising difficulties

	B	SE B	β	Significance
Step 1				
Constant	61.79	4.75		
Anger Intensity	.05	.02	**.35**	.008
Happy intensity	-.03	.02	**-.29**	.026
Step 2				
Constant	62.57	4.86		
Anger Intensity	.04	.02	.27	.051
Happy intensity	-.04	.01	**-.30**	.019
Anger reactivity	-.03	.08	-.07	.75
Happy reactivity	.08	.04	.23	.062
Anger recovery	.10	.09	.21	.35

For step 1: R^2=.28, ΔR^2 =.26 step two: R^2=.35, ΔR^2 =.29 **p<.01. *p<.05

Table 11

Summary of hierarchical regression analysis for emotional intensity and externalising difficulties

	B	SE B	β	Significance
Step 1				
Constant	59.00	4.36		
Anger Intensity	.04	.02	**.35**	.009
Happy intensity	-.03	.01	**-.28**	.032
Step 2				
Constant	58.50	4.27		
Anger Intensity	.03	.02	.23	.079
Happy intensity	-.03	.01	**-.29**	.023
Anger reactivity	.10	.05	**.27**	.047
Annoyed recovery	-.17	.07	**-.32**	.012

For step 1: R^2=.27, ΔR^2 =.24 step two: R^2=.37, ΔR^2 =.32 **p<.01. *p<.05

Hypothesis six: Emotional reactivity, recovery and intensity will be associated with ER strategies. Specifically, adaptive strategies will be associated with more positive and fewer negative emotions, whereas maladaptive strategies will be associated with more negative and fewer positive emotions

Correlations were used to explore this hypothesis (Table 5 and appendix C). Cognitive reappraisal was not significantly associated with any of the emotional reactivity or recovery measures. However, there were significant positive correlations between cognitive reappraisal and happy intensity (r=.38, p=.004), and relaxed intensity (r=.43, p=.001), and significant negative correlations with anger intensity (r=-.31, p=.024). Showing that participants who reported using more cognitive reappraisal also reported higher levels of happiness and relaxation, and less anger, during the frustration task.

The CERQ adaptive strategies were not associated with the recovery or reactivity measures. The individual adaptive strategies of positive reframing was significantly associated with higher happy intensity (r=.45, p=.001), and relaxed intensity (r=.323, p=.02). Refocus on planning was also significantly associated with happy intensity (r=.28, p=.04). None of the CERQ adaptive strategies were significantly related to lower levels of negative emotions.

The CERQ maladaptive strategies were also not significantly correlated with any of the reactivity and recovery measures. There was an overall significant negative correlation with happy intensity (r=-.41, p<.01) and relaxed intensity (r=-.30, p=.01), with higher reported use of maladaptive CERQ strategies related to less reported happiness and relaxation. For the individual maladaptive CERQ strategies, catastrophizing and other blame both showed a significant negative correlation with happy intensity (r=-.40, p=<.01; r=-31, p=.02) and relaxed intensity (r=-.33, p=.02; r=-.33, p=.01). Finally, there was a significant negative correlation between rumination and happy intensity (r=-.33, p=.01).

2.4 Discussion

The study explored the associations between ER, language ability and internalising and externalising difficulties in adolescents. The results will be discussed with reference to each hypothesis.

Hypothesis one

The results did not support hypothesis one, that lower language ability would be associated with higher internalising and externalising difficulties. There were no significant correlations between any of the language measures and internalising or externalising difficulties within the present sample. This was unexpected; as previous research has found that poor language ability predicts both internalising and externalising difficulties over time in children and young people (Bornstein, Hahn, & Suwalsky, 2013; Petersen, et al., 2013). The CELF recalling sentences subtest has been found to be a sensitive measure of language difficulties compared to other measures (Conti-Ramsden et al., 2001). However, within this sample there were generally low scores on this measure. This skewed and reduced distribution may have restricted the ability to find associations between the CELF (complex language skills) and other measures. The narrative skills and functional language skills measures were also low but had greater variance. These measures may not be related to internalising or externalising difficulties. The finding of low levels of language ability in participants from mainstream schools in disadvantaged areas supports the results of previous research (Spencer, Clegg, & Stackhouse, 2012).

Hypothesis Two

Hypothesis two, that higher language ability would be associated with more adaptive ER strategies was not supported for complex language skills. Indeed, participants with higher complex language skills also reported less happiness following the frustration task and reported less positive refocusing, which was a surprising and confusing finding. However, the narrative skills and functional language skills measures did provide some tentative support for this hypothesis. Participants with higher functional language skills also reported more use of the refocus on planning ER strategy, and also showed less anger reactivity following the frustration task. Interestingly higher anger reactivity was found to be a significant predictor of more externalising difficulties within the regression model. Participants who demonstrated more complex narrative skills also reported using the catastrophizing ER strategy less. Within the regression model this strategy was one of the

significant predictors of higher internalising difficulties. Rather than focusing attention on a situation seeming worse than it was, narrative skills may support someone to make sense of an event (Pennebaker, 1997). The CELF-RS is a measure that assesses more formal language and syntactic complexity in expressive language. However the MLU and narrative measures are more representative of a person's functional language skills. Perhaps good functional language skills are more important for ER strategies, although the correlations found were only moderate in strength so more research would be needed to draw firm conclusions.

Hypothesis three

The findings of the study did not confirm hypothesis three, that adaptive ER strategies would be associated with lower levels of internalising difficulties. Adaptive cognitive ER strategies (CERQ) were not significantly associated with internalising difficulties. They were approaching significance when controlling for maladaptive strategies, which would indicate that they are only associated with lower levels of internalising when a young person does not use high levels of maladaptive strategies. However, the correlation was weak. A similar finding has been reported with adults, with adaptive strategies only predicting lower internalising difficulties when maladaptive strategies were either high or low (Aldao & Nolen-Hoeksema, 2012). Cognitive reappraisal was significantly correlated with internalising difficulties, with higher cognitive reappraisal being associated with fewer internalising difficulties. This agrees with previous research (Eastabrook, et al., 2014; Joorman & Gotlib, 2010). While this finding provides some support for hypothesis three, cognitive reappraisal was only able to account for 7% of the variance in internalising difficulties.

While adaptive strategies were not strongly associated with internalising difficulties, a different pattern of results emerged for externalising difficulties. Here, hypothesis three was confirmed. Externalising difficulties were significantly negatively correlated with positive refocusing. However, the strongest evidence for hypothesis three comes from cognitive reappraisal. This was the first study to explore cognitive reappraisal in relation to externalising difficulties in adolescents. Cognitive reappraisal had a strong negative correlation with externalising difficulties. When entering cognitive reappraisal and the adaptive CERQ strategies into a regression model, cognitive reappraisal was the only significant predictor of externalising difficulties, accounting for 18% of the variance. This supports the findings of studies with adults that suggest higher cognitive reappraisal is

related to less negative affect, and reduced anger and aggression (Barlett & Anderson, 2011; Mauss et al. 2007; Silvers, et al., 2012; Ray et al., 2008). Cognitive reappraisal may enable young people to view situations differently to reduce the emotional intensity of an event. Finding that fewer adaptive strategies were most associated with higher externalising difficulties is supported by previous research with adolescents (Calvete & Orue, 2012).

Hypothesis Four

Results provide support for hypothesis four, that maladaptive strategies would be associated with higher internalising difficulties. This was not the case for suppression (from the ERQ), which showed no association with internalising difficulties. However, maladaptive cognitive ER strategies (from the CERQ) accounted for 60% of the variance within a regression model, with self-blame and catastrophising being unique predictors. Maladaptive strategies accounting for a high amount of variance and internalising difficulties has been found in previous research (Garnefski et al, 2005; Pena & Pacheco, 2012). Self-blame was the strongest predictor, and it is thought that it represents a global attributional style that focuses on the negative implications of an event on internal causes that can appear difficult to control (Breitenbecher, 2006; McGee, Wolfe, & Olson, 2001). Further, self-blame has been linked to higher feelings of shame and depression (Tilghman-Osborne, Cole, Felton, & Ciesla, 2008) and increases negative outcomes following traumatic events (Breitenbecher, 2006). Previous research with adults has found that maladaptive strategies have stronger associations with internalising difficulties compared to adaptive strategies (Aldao et al, 2010). So why are maladaptive strategies related to internalising difficulties? The interference hypothesis (Aldao & Nolen-Hoeksema, 2012) suggests that maladaptive strategies may narrow attentional focus, impacting on a person's ability to effectively perceive the context around them and process new information. Joormann and Vanderlind (2014) link this to a lack of cognitive control, i.e. being able to inhibit negative interpretation bias and intrusive thoughts. This may also contribute to negative affect increasing and being maintained over time (Chambers, Gullone, & Allen, 2009; Joormann & Vanderlind, 2014).

For externalising difficulties the results for hypothesis four were not confirmed. Maladaptive strategies were significantly correlated with externalising difficulties, however it was only a moderate association. Further, results from the regression analysis showed that increased maladaptive strategies were not significantly related to higher externalising difficulties. This would indicate that using cognitive ER strategies following

a stressful event are more related to internalising than externalising difficulties. This agrees with previous research conducted in adolescence (Garnefski et al, 2005; Pena & Pacheco, 2012).

Hypothesis five

Hypothesis five, explored if higher emotional reactivity and a reduced emotional recovery following a frustrating task would be associated with higher internalising and externalising difficulties. The results do not support this hypothesis for reactivity and recovery with internalising difficulties. The reactivity and recovery scores for positive and negative emotions showed weak associations with internalising difficulties. However the emotional intensity reported by participants during the task was significantly positively correlated for the positive emotions and significantly negatively correlated for the negative emotions. Within a regression model only anger intensity and happy intensity were significant predictors of internalising difficulties, accounting for 26% of the variance. This indicates that emotional reactivity and recovery following a frustration task were not strongly related to internalising difficulties. However, the emotional intensity (lower positive emotions and higher negative emotions) were strongly related to more internalising difficulties. This finding supports previous research and theory that indicates the importance of maintaining positive emotions for wellbeing (Fussner et al., 2014; Tugade & Fredrickson, 2007; Joorman & Vanderlind, 2014). High emotional intensity could be an indication of poor ER taking place, as ER works to regulate emotions to keep people in a 'window of tolerance', which allows better social functioning and goal directed behaviour (Shore, 2003).

Higher emotional intensity was also significantly associated with externalising difficulties, with higher negative emotions and lower positive emotions related to higher externalising difficulties. The reactivity and recovery from negative emotions were more related to externalising difficulties. Within the regression model decreased happiness, and annoyed recovery, and increased anger reactivity were all significant predictors of higher externalising difficulties. More anger reactivity could indicate that effective ER is not taking place before an emotion is generated. This supports the findings in the adult research that under-regulation of anger can lead to aggression and reduce information-processing skills (Roberton et al., 2012). However, it is very difficult to disentangle reactivity and ER (Mauss, Bunge, & Gross, 2007). An alternative hypothesis may be that individuals who are more emotionally reactive following a frustrating event are also more likely to have higher externalising difficulties. For example, emotional reactivity can be

caused by early trauma (Silk, et al., 2007). Annoyed recovery was related to fewer externalising difficulties. This indicates that being able to use effective ER to reduce a negative emotion following a frustrating task is important to reduce externalising difficulties. It is surprising that anger recovery was not also related to externalising difficulties. However, participants reported higher levels of annoyance compared to anger so there may have been higher levels of emotions to regulate for annoyance.

Hypothesis six

Hypothesis six examined if emotional reactivity, recovery and intensity were related to the self-reported ER strategies. Emotional reactivity and recovery were not associated with any of the ER strategies; however, emotional intensity was related to both adaptive and non-adaptive strategies. Participants who reported using more cognitive reappraisal, also reported significantly more intensity in happiness and relaxation, and less anger intensity during the experimental task. This agrees with previous research with adults, which found that higher cognitive reappraisal is linked to fewer negative emotions and more positive emotions (Gross & John, 2003; Ray et al., 2008). The CERQ adaptive strategies were related to increased emotional intensity of positive emotions. Whereas, the maladaptive strategies were related to a decrease in the emotional intensity of positive emotions. Further, when combining the maladaptive strategies together the association between the strategies and anger intensity was approaching significance. This indicates that the CERQ strategies are most strongly related to a reduction of positive emotions (maladaptive strategies) and an increase in positive emotions (adaptive strategies). While these results support the role of adaptive strategies for increasing positive emotions and decreasing negative emotions, it should be remembered that the experimental task was not examining if these strategies were being used and so directly influenced the emotional intensity. They can only be seen as related issues.

Strengths, Limitations and Future Research

The study's main strength was that multiple measures of ER were used to examine a range of ER strategies. This allowed for different strategies to be explored in relation to internalising and externalising difficulties. This was a useful approach as the ERQ was most related to externalising difficulties and the CERQ to internalising difficulties. Using a behavioural measure to investigate emotional reactivity, recovery and intensity was also valuable to examine if this impacted on internalising and externalising difficulties as it indicates difficulties with up-regulating and maintaining positive emotions and down-

regulating negative emotions. Effective ER involves regulating the intensity of emotions and how people respond to events, and the results suggest that young people with higher internalising and externalising difficulties are less effective at managing this.

Despite the positive results, the study had several limitations. The cross-sectional design does not allow the direction of the relationship between variables to be considered. Instead, the conclusions can only say that the findings are related issues. The self-report measures of ER may have been impacted on by methodological biases influencing the results (Podsakoff, 2003). Further, ER can also be influenced by the environment, such as a social context that values certain emotional response, which may result in a person automatically regulating their emotions without being consciously aware of this (Mauss et al., 2007). Self-report measures are unlikely to capture the strategies that people use if they are less aware of using them. Finally, the behavioural frustration provides measures of changes in emotions, but did not directly measure regulation strategies or mechanisms. This is a common difficulty within ER research (Chambers et al., 2009) and future research could try to improve on this, for example by including a measure alongside the emotional rating to explore which ER strategies participants felt that were using. It would be useful to extend this research within a longitudinal design to be able to answer questions about the direction of the relationship, for example does increased cognitive reappraisal lead to fewer externalising difficulties over time.

In terms of the language findings, it should be remembered that language is a large construct and the measures used within this study represent only a small area of language ability. For example it did not explore receptive or pragmatic language skills. Further, while expressive language was examined, this did not focus on areas such as vocabulary. Future research should consider gaining participants from a wider sample than used in the current study. This would enable a potentially wider range of language abilities to be examined and would provide a stronger test of the hypotheses.

2.5 Conclusions and Implications for Practice

Contrary to predictions and previous findings (Bornstein, et al., 2013; Petersen et al., 2013) the language measures were not associated with internalising or externalising difficulties. Tentative findings suggest that functional language skills may support more adaptive ER and reduce maladaptive ER and anger reactivity. However, this warrants replication in samples with a broader range of language skills. In terms of implications for practice the low language abilities in pupils attending schools in disadvantaged areas

indicates a need to support mainstream secondary schools. Language difficulties can impact on social skills, literacy skills and academic ability (Snow & Powell, 2004). Therefore raising awareness and understanding of this in secondary schools would be a useful aim. There has been less focus on supporting the language skills of adolescents, compared to younger children (Durkin & Conti-Ramsden, 2010). However, there is an increased emphasis on the need for joint working across professional groups to plan and deliver support for young people with language difficulties (Bercow, 2008; Durkin & Conti-Ramsden, 2010).

Using multiple measures of ER was useful to examine which were most strongly associated with internalising and externalising difficulties. The different pattern of results suggests that higher internalising difficulties have the strongest association with higher maladaptive cognitive ER strategies following stressful events. Whereas, higher externalising difficulties had the strongest associations with fewer adaptive strategies, specifically cognitive reappraisal. The results also highlight the function that the emotional intensity of positive and negative emotions may play in internalising and externalising difficulties. For practice these findings highlight a few potential avenues of support and intervention.

For internalising difficulties mindfulness-based interventions could be beneficial. Mindfulness refers to keeping attention in the present moment in a non-judgemental way (Williams, 2007). This is used at the attention deployment stage in the process model of ER, and can focus cognitive resources on attentional processes and so limit the use of habitual negative appraisals and cognitions (Farb, Anderson, Irving, & Segal, 2014). Within the current study it was the use of negative styles of thinking that were related to higher internalising difficulties. Therefore supporting young people to develop ways to shift attention away from these ER strategies may support their well-being. Indeed, research has found that using mindfulness as an ER strategy in young people with depression, increased their recovery and was associated with positive mental health outcomes (Chambers et al, 2014). For externalising difficulties it may be useful to develop young people's ability to use cognitive reappraisal more, and this may support excluded pupils. CBT approaches could be beneficial, as they can teach young people to think about situations in different ways. For example the CBT Friend's programme or the Conscious Coping intervention both use CBT approaches to develop appraisal skills (Stallard, Simpson, Anderson, Hibbert, & Osborn, 2007; Tharalsden, 2012). Overall, the findings indicate that ER strategies are related to internalising and externalising difficulties in

young people, therefore targeting support to develop their effective ER skills could be beneficial to improve outcomes.

Appendices

Appendix A

A.1 Inclusion and exclusion criteria for systematic search.

A.2 Table of studies for literature review

Appendix B

B.1 Parent/carer information sheet

B.2 Parent/carer consent form

B.3 Participant information sheet

B.4 Participant assent form

B.5 Head teacher letter

B.6 Debrief statement, participants

B.7 Debrief statement, parent/carer

B.8 Ethics committee approval

B.9 Research Governance Office approval

Appendix C

C.1 ERQ-CA measure

C.2 CERQ measure

Appendix D

D.1 Correlation table

D.2 Correlation table

Appendix A

A.1 Inclusion and Exclusion Criteria for Systematic Search.

Inclusion

Studies must look at emotional regulation and include an outcome, which focuses on internalising difficulties (such as anxiety, depression) or externalising difficulties (such as aggression).

Exclusion Criteria

1. Studies that just look at emotional regulation in adolescents, without linking to outcomes were excluded (n=3).
2. Participants must be under 18 or 11 years at the start of the study (n=8).
3. Studies that are exploring the use of a measure in relation to emotional regulation were excluded, for example validity of a measure (n=14).
4. Studies that focused on exercise/sport/healthy eating, sleep, substance misuse o were excluded (n=13).
5. Studies looking at the role of the emotional regulation and outcomes, with the main focus on the role of the family/social environment were excluded (n=30).
6. Studies that used a specialist population, such as bipolar, Autism, Borderline personality disorder, were excluded (n=37).
7. Neuroscience studies were excluded (n=11).
8. Studies with a focus on an intervention were excluded (n=9).
9. Studies with a focus on cultural aspects were excluded (n=4).
10. Papers that were reviews (n=3).
11. Papers that couldn't be accessed (n=1).

Paper excluded from abstract search:

Neumann, van Lier, Frijns, Meeus and Koot (2011). Method: Emotional dysregulation was explored using emotional dynamics, specifically the level and variability of four emotions. Participants were asked to rate their emotions on five consecutive days at three time points. While this design showed the emotional dynamics across a year, it asked participants to rate their emotions without reference to a situation. Therefore it could be seen as measuring the reactivity of participants' emotional experiences rather than emotional regulation.

A.2 Table of studies for literature review

Author	Date	Design	Target sample	Sample size	Measures used	Impact of ER on an outcome	Key results
Fusser, Luebbe, Bell **REF 1**	2014	Cross sectional Experimental	Adolescents, 12-16 years Females only	N=492	Adolescent Depressive Symptoms (CDI) Experimental task/observations exploring positive affect (positive affect) positive affect response captures positive affect activation and ability to up regulate positive emotions. positive affect persistence captures ability to maintain positive emotional states and reduce negative emotions.	Impact of regulating positive emotions on depression in adolescents	Participants with more depression showed a reduce ability to maintain positive affect following a conflict task.

Voon, Martin, Hasking **REF 2**	2014	Longitudinal, 3 years	Adolescents 12-18 years at time 1 Australian schools	Time 1 n=2636 Time2 n=2328 Time 3 n=1984	Adolescent Life events Survey Emotion Regulation Questionnaire General Health Questionnaire Ruminative Thought Style Questionnaire Self-Harm Behaviour Questionnaire	Impact of ER strategies on severity of NSSI (Nonsuicidal Self Injury)	Of ER strategies, only cognitive reappraisal at baseline had a significant association with NSSI. Higher cognitive reappraisal was associated with lower frequent and medical severity of NSSI.
Voon, Hasking, Martin **REF 3**	2014	Longitudinal, 3 year	Adolescent, 12-18 years at time 1	Time 1 n=2637 Time2 n=2328 Time 3 n=1984	Adolescent Life events Survey (ALES) Emotion Regulation Questionnaire (ERQ) General Health Questionnaire (GHQ) Ruminative Thought Style Questionnaire (RTSQ) Self-Harm Behaviour Questionnaire (SHBQ)	ER strategies and NSSI	Expressive suppression and rumination were not associated with NSSI. Frequency of cognitive reappraisal at baseline predicted NSSI at time 2.

Matthews, Kerns, and Ciesla **REF 4**	2014	Cross sectional	Adolescent, 11-14 years USA	N=90	Difficulties in Emotion Regulation Scale (DERS) COPE inventory Reported emotions during parent-child task The Social Anxiety Scale for Children (SAS-A) The Screen for Anxiety Related Emotional Disorders (SCARED)	ER and anxiety	ER significantly associated with social anxiety and general anxiety symptoms. Suggests that different types of ER difficulties may be associated with different types of anxiety.
Eastabrook, Flynn, and Hollenstein **REF 5**	2014	Cross sectional	Adolescents, 13-16 years, female only USA	N=123	Difficulties in Emotion Regulation Questionnaire (emotional awareness) Emotion Regulation Questionnaire (ERQ) Child Depression Inventory (CDI) Social Anxiety Scale for Adolescents (SAS-A)	Role of emotional awareness and ER on anxiety and depression.	Emotional awareness positively associated with reappraisal and negatively associated with suppression. Low reappraisal linked to depression High suppression linked to social anxiety.

Herts, McLaughlin, Hatzenbuehler **REF 6**	2012	Longitudinal, 7 months	Early adolescents, 11-14 years USA	N=1065	The Peer Experiences Questionnaire Life Events Scale for Children Emotion Expression Scale for Children The Children's Sadness Management Scale and Anger Management Scale The Children's Responses Styles Questionnaire (rumination)	Examined the longitudinal associations of peer victimisation and stressful life events with emotional regulation and aggressive behaviour.	Stressful life events and peer victimisation predicted increases in emotional dysregulation over a 4 month period. These increases in emotional dysregulation were then associated with increases in aggression over a 3 month period. Results support the role of emotion dysregulation as a mechanism underlying the association between stress and aggression.
Calvete and Orue **REF 7**	2012	Longitudinal,	Adolescents 13-17 yrs, Spain	N=1125	The Social Information Processing Questionnaire (SIPQ) Questions on -intention attribution -emotion attribution -own emotion -emotion regulation	Assessed the moderating role of ER between Social information processing (hostile interpretation and anger) and aggressive behaviour.	Adaptive ER predicted a decrease in reactive and proactive aggression. Gender differences: Boys scored higher in aggression because they experienced more anger and used fewer adaptive ER strategies.

							Girls scored higher in sadness. Girls used more adaptive ER.
Pena and Pacheco **REF 8**	2012	Cross sectional	Adolescents 11-18 yrs,	N= 248	Short Cognitive Emotion Regulation Questionnaire (CERQ) The Children's Depression Inventory Short Version (CDI:S) Physical and Verbal Aggression Scale (AFV)	Explored relationship between cognitive ER strategies and aggression and depression	Certain cognitive ER strategies significantly predicted levels of depression and aggression in adolescents. Depression: rumination acceptance and catastrophizing in boys and girls Aggression: Self-blame and rumination significantly predicted aggression in boys only.
Lougheed and Hollenstein **REF 9**	2012	Cross sectional	Adolescents 12-16 years USA	177	Emotion Regulation Questionnaire (ERQ) Affective Style Questionnaire (ASQ) Difficulties in Emotion Regulation Scale (DERS) Beck Depression	Exploring whether having a range of ER strategies is more beneficial than using singular strategies on anxiety and depression.	Fewer ER strategies were associated with higher internalising difficulties. Results highlight the importance of having different ER strategies to use and flexibility is important for positive outcomes.

					Inventory 2nd edition (BDI-II) Beck Anxiety Inventory (BAI) The Social Anxiety Scale for Adolescents (SAS-A)		
Larsen et al **REF 10**	2012	Longitudinal, 1 year	Adolescents 12-13 years Netherlands	Time 1: N=2051 Time 2: N=1753	Center for Epidemiological Studies Depression (CES-D) inventory Emotion Regulation Questionnaire (ERQ)	ER strategies and depression	Suppression and depressive symptoms were correlated within each time point. Depressive symptoms preceded increased use of suppression. However, suppression did not precede future depressive symptoms.
McLaughlin, Hatzenbuehler, Mennin, Nolen-Hoeksema	2011	Longitudinal, 7 months	Adolsecents, 11-14years USA	N=1065	The Multidimensional Anxiety Scale for Children (MASC) The Revised Peer Experiences	Exploring the direction of the relationship between ER and psychopathology	Emotional dysregulation predicted increases in anxiety, aggression, and eating pathology (although not depression). None of the 4 types of psychopathology predicted increases in emotional dysregulation.

REF 11					Questionnaire (RPEQ) Children's Eating Attitudes Test (ChEAT) Emotion Expression Scale for Children (EESC) The Children's Sadness Management Scale and Anger Management Scale (CSMS, CAMS) The Children's Response Styles Questionnaire (CRSQ) (rumination)		

Tortella-Feliu, Balle and Sese **REF 12**	2010	Cross sectional design	Adolescents 12-17 years, Spain	N=1441	The Positive and Negative Affect Schedule for Children and Youth (positive affectNAS-CY) The Sensitivity to Punishment and Sensitivity to Reward Questionnaire-Junior (SPSRQ-J) Cognitive Emotion Regulation Questionnaire (CERQ) The Spence Children's Anxiety Scale (SCAS) Children's Depression Inventory (CDI)	Role of negative affectivity (NA) and ER on anxiety and depression	Higher NA was associated with an increased use of maladaptive ER strategies NA and a negative style of ER are associated with increased anxiety symptoms.
Garnefski, Kraaij and Etten	2005	Cross sectional	Adolescents 12-18 years, Netherlands	N=271	Youth Self Report (YSR) Cognitive Emotion Regulation	Role of cognitive ER strategies for internalising and	Adolescents with internalising problems scored higher on ER strategies of self-blame and rumination. ER strategies could explain more of the variance for

REF 13					Questionnaire (CERQ)	externalising problems.	internalising problems compared to externalising problems. Independent predictors of internalising were lack of positive reappraisal, rumination and self-blame (an event-related strategy). Independent predictors of externalising was positive refocusing (an event avoidant strategy)
Voon, Martin, Hasking **REF 14**	2014	Longitudinal, 3 years	Adolescents 12-18 years at time 1 Australian schools	N=2507	Adolescent Life events Survey Emotion Regulation Questionnaire General Health Questionnaire Ruminative Thought Style Questionnaire Self-Harm Behaviour Questionnaire	Impact of ER strategies on severity of NSSI (Nonsuicidal Self Injury)	Cognitive reappraisal was related to reduced severity of NSSI, whereas expressive suppression and rumination may increase the risk of NSSI, although not its severity. However relatively weak relationships were found.

Appendix B

Appendix B.1

UNIVERSITY OF Southampton

Parent/Carer Information Sheet (Version no.1, 01.09.14)

Study Title: How do young people deal with their feelings?
Researcher: Jess Butcher
ERGO Study ID number:12311
RGO reference number: 12311

Who is carrying out the study?
Jess Butcher, a Trainee Educational Psychologist.

What is the study about?
The study is looking at the links between young people's thoughts, feelings and behaviour. People use stories (narratives) to talk to other people about what's happening to them, and to think about what's happening to them. This might help them to make sense of things. The study will explore if how people talk about their experiences affects their feelings and behaviour; for example how they cope with being angry. This could help us to think about ways to better support young people.

Why is my child being asked to take part?
Your child is being asked to take part because their School agreed to take part in the study.

What will it involve?
1) You will be asked to fill in a short questionnaire about your child's thoughts, feelings and behaviours.
2) Some of the young people who return their consent forms will be chosen to take part in the rest of the study. We want to include young people with a range of behaviours.
3) Your child will be asked to take part in some activities with the researcher. This will take place at their school for around an hour. The tasks are short and will include:

- Telling a story from some pictures
- Filling in some questionnaires about how they feel and how they cope with different emotions, for example "I worry a lot", "I like to help others".
- Playing a short computer game.
- Solving some quick puzzles.

Your child will receive £10 in shopping vouchers as a thank you for taking part.
Your child should only take part if they want to. All information collected during the study will be confidential and data-protected. Results from the language assessments may be shared with your child's school but only if you give consent on the consent form. You and your child can withdraw from the study at any time, without having to give a reason.

What do I need to do now?
If you are happy for your child to take part please fill in the consent form and the questionnaire and return it to your child's school.

Who can I contact if I have any questions?
Please contact Jess Butcher, via email: *jb8q12@soton.ac.uk or phone: 07825 450893*
In case of concern or complaint please contact the research governance office, at Southampton University rgoinfo@soto.ac.uk, Tel: 023 8059 5058

Thank you for reading this.

Appendix B.2

UNIVERSITY OF Southampton

CONSENT FORM (Version no.1, 01.09.14)

Study title: **How do young people deal with their feelings?**

Researcher name: Jess Butcher
ERGO Study ID number:12311
RGO reference number: 12311

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

I have read and understood the information sheet (version 1, 01.09.14) and have had the opportunity to ask questions about the study and have had these questions answered.	☐
I agree for my child to take part in this research project and agree for their data to be used for the purpose of this study	☐
I understand that participation is voluntary and I may withdraw my child from the study at any time without my legal rights being affected	☐

Data Protection
I understand that information collected about my child during their participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. I understand that the files containing any personal data will be stored using numbers rather than my child's name, and the results and my child's name won't be stored together.

Name of participant (child) (print name).....

Parent/Carer name (print name).....

Signature of parent/carer.....

Date.....

Additional Information:

Please indicate if you are happy for the results of the short language assessments to be shared with your child's school:

☐ Yes, I consent to the language results being shared with the school

☐ No, I do not consent to the language results being shared with the school

Appendix B.3

UNIVERSITY OF Southampton

Participant Information Sheet (Version no.1, 01.09.14)

Study Title: **How do young people deal with their feelings?**
Researcher: Jess Butcher
ERGO Study ID number:12311
RGO reference number: 12311

Who is carrying out the study?
Jess Butcher, a Trainee Educational Psychologist.

What is the study about?
The study is looking at the links between young people's thoughts, feelings and behaviour. People use stories (narratives) to talk to other people about what's happening to them, and to think about what's happening to them. This might help them to make sense of things. The study will explore if how people talk about their experiences affects their feelings and behaviour; for example how they cope with frustration. This could help us to think about ways to support young people.

Why am I being asked to take part?
You are being asked to take part because your School has agreed to take part in the study.

What will it involve?
You will be asked to complete different activities with the researcher. This will take around an hour. The tasks are short and will include:

- Telling a story from some pictures
- Filling in some questionnaires about how you feel and how you cope with different emotions, for example when you feel worried, frustrated or happy.
- Playing a short computer game.
- Solving some quick puzzles.

There are no right or wrong answers; I just want to know what you think. Everything you say and do will be treated as confidential (private). If you say it's ok (give consent) results from the language tasks may be shared with your school.
You will receive £10 in shopping vouchers as a thank you for taking part.

You do not have to take part in this study if you do not want to. You can also stop taking part at any time - just tell us.

What do I need to do now?
If you are happy to take part, please fill in the consent form.

Who can I contact if I have any questions?
Please contact Jess Butcher, via email: *jb8q12@soton.ac.uk or phone: 07825 450893*
In case of concern or complaint please contact the research governance office, at Southampton University rgoinfo@soto.ac.uk, Tel: 023 8059 5058

Appendix B.4

UNIVERSITY OF Southampton

ASSENT FORM (Version no.1, 01.09.14)

Study title: **How do young people deal with their feelings?**

Researcher name: Jess Butcher
ERGO Study ID number:12311
RGO reference number: 12311

If you are happy to help me, then please answer the questions below and sign your name.

Please circle the answer you agree with:

Have you read the information sheet (version 1, 01.09.14)	Yes	No
Has somebody explained the project to you?	Yes	No
Do you understand what the project is about?	Yes	No
Have you asked all the questions that you want?	Yes	No
Has someone answered your questions in a way that you understand?	Yes	No
Do you understand it is okay to stop taking part at any time?	Yes	No

If you have answered yes to all the above questions,

Please sign your name below to show that you are happy to take part"

Signature……

Thank you very much!

Additional Information

'Do you give us permission to share the results of your language assessment with your school?'	Yes	No

Appendix B.5

UNIVERSITY OF Southampton

Letter from School (Version no.1, 01.09.14)

Study Title: How do young people deal with their feelings?

Researcher: Jess Butcher
ERGO Study ID number:12311
RGO reference number: 12311

Who is carrying out the study?
Jess Butcher, a Trainee Educational Psychologist.

What is the study about?
The study is looking at the links between young people's thoughts, feelings and behaviour. People use stories (narratives) to talk to other people about what's happening to them, and to think about what's happening to them. This might help them to make sense of things. The study will explore if how people talk about their experiences affects their feelings and behaviour; for example how they cope with being angry. This could help us to think about ways to better support young people.

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

I have read and understood the information sheet (version 1, 01.09.14) and have had the opportunity to ask questions about what the study will involve and have had these questions answered.	☐
I confirm that the school is willing to host this research project	☐

Name of School.....

Name (print name).....

Job Title.....

Signature .....

Date.....

Appendix B.6

UNIVERSITY OF Southampton

How do young people deal with their feelings?
Debriefing Statement *(written; pupils)* (Version no.1, 01.09.14)

The aim of this research was to explore how young people cope with a range of emotions. It also looked at how people talk about their experiences.

During the study you were asked to complete a range of activities for around an hour.
The activities looked at:

- your language ability to share a story
- your visual problem solving skills
- how you cope with different emotions
- Your ability to cope with mild stress or frustration. You were asked to play a short mildly frustrating game to see how you coped with this. You were told at the end that the task was meant to be frustrating. This was so you reacted naturally during the task. Afterwards, the aims of the study were explained in further detail, and you were given an opportunity to ask any questions.

If you would like to ask any more questions about the study you can ask me now or contact me later on.

It is hoped that the information from the study will help to think about ways to support young people. For example, would helping them develop how they talk about their experiences help them to cope with different emotions?

If you have any concerns about your mental health or well-being (e.g. low mood), you may wish to call the charity 'No Limits' (02380 224 224). They provide independent advice, support, and counselling for young people in Southampton and Hampshire.'

Once again results of this study will not include your name or any other identifying characteristics. If you would like a summary of the results at the end of the project, or you have any questions, please contact me using the details below:
Jess Butcher, email: *jb8g12@soton.ac.uk or phone: 07825 450893*

Thank you for your participation in this research.

Signature _____ Date _____
Jess Butcher, Trainee Educational Psychologist.

Appendix B.7

UNIVERSITY OF Southampton

How do young people deal with their feelings?
Debriefing Statement *(written parent/carer)* (Version no.1, 01.09.14)

The aim of this study was to explore how young people cope with a range of emotions. It also looked at if how young people talk about their experiences impacts on the ways that they cope. We asked you to completing a short questionnaire (SDQ) covering your child's thoughts, feelings and behaviours because we were interested in recruiting children with a range of behaviours. On the basis of this information, we selected children who were either relatively low or relatively high in disruptive behaviour. Thank you for filling in the SDQ.

During the session at school, the young people were asked to complete a range of activities for around an hour.
The activities looked at:

- their language ability (when describing a story)
- their visual problem solving skills
- how they think they cope with different emotions
- Their ability to cope with mild stress or frustration. They were asked to play a game that was deliberately designed to be very difficult and frustrating. We couldn't tell them in advance that the task was designed to be very difficult to ensure they reacted naturally during the task. However, at the end of the session, they were told about the aims of the task and were given an opportunity to ask questions.

It is hoped that the information from the study will help us to think about ways to support young people. For example, would helping them improve their language abilities help them to cope with strong emotions?

Once again, we would remind you that the results of this study will not include your child's name or any other identifying characteristics. If you would like a summary of the results at the end of the project, or you have any questions, please contact me using the details below:

Jess Butcher, email: *jb8q12@soton.ac.uk* *or phone: 07825 450893*

Thank you for your participation in this research.

Signature _____ Date _____
Jess Butcher, Trainee Educational Psychologist.

Appendix B.8

Find Someone Options

Your Ethics Submission (Ethics ID:12311) has been reviewed and approved

ERGO [ergo@soton.ac.uk] Actions

To: Butcher J.

Inbox 28 October 2014 14:58

Submission Number: 12311
Submission Name: How do young people deal with their feelings?
This is email is to let you know your submission was approved by the Ethics Committee.

Please note that you cannot begin your research before you have had positive approval from the University of Southampton Research Governance Office (RGO) and Insurance Services. You should receive this via email within two working weeks. If there is a delay please email rgoinfo@soton.ac.uk.

Comments
None
Click here to view your submission

ERGO : Ethics and Research Governance Online
http://www.ergo.soton.ac.uk

DO NOT REPLY TO THIS EMAIL

Appendix B.9

Research Governance Feedback on your Ethics Submission (Ethics ID:12311)

ERGO [ergo@soton.ac.uk]

To: Butcher J.

28 October 2014 1!

Submission Number 12311:
Submission Title How do young people deal with their feelings?:
The Research Governance Office has reviewed and approved your submission

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

"

Submission ID : 12311
Submission Name: How do young people deal with their feelings?
Date : 28 Oct 2014
Created by : Jessica Butcher

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

1. Ensure the study is conducted as described in the protocol/study outline approved by this office

2. Advise this office of any amendment/change to the protocol, methodology, study documents, research team, participant numbers or start/end date of the study

3. Report to this office as soon as possible any concern, complaint or adverse event arising from the study

Failure to do any of the above may invalidate your ethics approval and therefore the insurance agreement, affect funding and/or sponsorship of your study; your study may need to be suspended and disciplinary proceedings may ensue.

On receipt of this letter you may commence your research but please be aware other approvals may be required by the host organisation if your research takes place outside the University. It is your responsibility to check with the host organisation and obtain the appropriate approvals before recruitment is underway in that location.

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

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ERGO : Ethics and Research Governance Online
http://www.ergo.soton.ac.uk

Appendix C

Appendix C.1

ERQ-CA

Below are a number of statements. Please read each statement, and then **circle the choice that seems most true for you**. Some of the statements may seem the same but they are different in important ways, so be sure to read carefully.

1. When I want to feel happier, I think about something different.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
2. I keep my feelings to myself	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
3. When I want to feel less bad (e.g., sad, angry or worried), I think about something different.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
4. When I am feeling happy, I am careful not to show it.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
5. When I'm worried about something, I make myself think about it in a way that helps me feel better.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
6. I control my feelings by not showing them	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
7. When I want to feel happier about something, I change the way I'm thinking about it.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
8. I control my feelings about things by changing the way I think about them.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
9. When I'm feeling bad (e.g., sad, angry, or worried), I'm careful not to show it.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree
10. When I want to feel less bad (e.g., sad, angry, or worried) about something, I change the way I'm thinking about it.	Strongly Disagree	Disagree	Half and half	Agree	Strongly Agree

Appendix C.2 CERQ

CERQ-kids

How do you cope with events?

Sometimes nice things happen in your life and sometimes unpleasant things might happen.
When something unpleasant happens, you can think about it for a long time.
When something unpleasant happens to you, what do you usually think?

	(almost) never	some-times	regu-larly	often	(almost) always
1. I think that I am to blame	1	2	3	4	5
2. I think that I have to accept it	1	2	3	4	5
3. Again and again, I think of how I feel about it	1	2	3	4	5
4. I think of nicer things	1	2	3	4	5
5. I think about what would be the best for me to do	1	2	3	4	5
6. I think that I can learn from it	1	2	3	4	5
7. I think that worse things can happen	1	2	3	4	5
8. I often think that it's much worse than what happens to others	1	2	3	4	5
9. I think that others are to blame	1	2	3	4	5
10. I think that I have been stupid	1	2	3	4	5
11. It just happened; there is nothing I can do about it	1	2	3	4	5
12. I often think of what I am thinking and feeling about it	1	2	3	4	5
13. I think of nicer things that have nothing to do with it	1	2	3	4	5
14. I think of how I can cope with it	1	2	3	4	5
15. I think that it makes me feel 'older and wiser'	1	2	3	4	5
16. I think that worse things happen to others	1	2	3	4	5
17. Again and again, I think about how terrible it all is	1	2	3	4	5
18. I think that others have been stupid	1	2	3	4	5
19. I think that it's my own fault	1	2	3	4	5
20. I think that I can't change it	1	2	3	4	5
21. All the time, I think that I want to understand why I feel that way	1	2	3	4	5
22. I think of something nice and not about what happened	1	2	3	4	5
23. I think of how I can change it	1	2	3	4	5
24. I think that there are good sides to it as well	1	2	3	4	5
25. I think that it's not as bad as other things that could happen	1	2	3	4	5
26. All the time, I think that this is the worst thing that can happen to you	1	2	3	4	5
27. I think that it's the fault of others	1	2	3	4	5
28. I think that it's all caused by me	1	2	3	4	5
29. I think that I can't do anything about it	1	2	3	4	5
30. I often think of how I feel about what happened	1	2	3	4	5
31. I think of nice things that have happened to me	1	2	3	4	5
32. I think of what I can do best	1	2	3	4	5
33. I think that it's not all bad	1	2	3	4	5
34. I think that there are worse things in the world	1	2	3	4	5
35. I often think about how horrible the situation was	1	2	3	4	5
36. I think that it's all caused by others	1	2	3	4	5

Thank you for filling out the questionnaire!

Appendix D

Appendix D.1: Correlations of language measures and emotional ratings from behavioral task

Correlations

Control Variables			CELF_percentile	ERRNI MLU percentile	ERRNI narrative pecentile	VAS_ANG_reactivity	VAS_ANN_reactivity	VAS_HAP_reactivity	VAS_REL_reactivity	angry_intense	annoy_intense	happy_intense	relax_intense	Angry_recovery	Annoy_recovery	happy_recovery	relax_recovery
WASI pecentile	CELF_percentile	Correlation	1.000	.098	-.056	-.022	-.152	.314	-.175	-.026	-.062	-.126	.058	.029	-.015	.157	-.049
		Significance (2-tailed)	.	.482	.687	.873	.271	.021	.206	.854	.657	.365	.679	.837	.916	.257	.722
		df	0	52	52	52	52	52	52	52	52	52	52	52	52	52	52
	ERRNI MLU percentile	Correlation	.098	1.000	.409	-.337	-.192	.131	.058	-.156	-.131	-.006	.104	-.402	-.256	-.052	.089
		Significance (2-tailed)	.482	.	.002	.013	.163	.345	.676	.260	.346	.966	.452	.003	.062	.711	.524
		df	52	0	52	52	52	52	52	52	52	52	52	52	52	52	52
	ERRNI narrative pecentile	Correlation	-.056	.409	1.000	-.029	.168	-.181	-.223	-.026	.004	.059	.042	-.118	.044	-.179	-.027
		Significance (2-tailed)	.687	.002	.	.838	.224	.190	.105	.852	.980	.673	.763	.397	.753	.196	.848
		df	52	52	0	52	52	52	52	52	52	52	52	52	52	52	52
	VAS_ANG_reactivity	Correlation	-.022	-.337	-.029	1.000	.672	-.209	-.475	.355	.330	-.250	-.095	.824	.548	-.103	-.288
		Significance (2-tailed)	.873	.013	.838	.	.000	.129	.000	.008	.015	.068	.493	.000	.000	.460	.035
		df	52	52	52	0	52	52	52	52	52	52	52	52	52	52	52
	VAS_ANN_reactivity	Correlation	-.152	-.192	.168	.672	1.000	-.363	-.482	.188	.308	-.189	-.147	.551	.789	-.174	-.287
		Significance (2-tailed)	.271	.163	.224	.000	.	.007	.000	.173	.024	.171	.288	.000	.000	.208	.036
		df	52	52	52	52	0	52	52	52	52	52	52	52	52	52	52
	VAS_HAP_reactivity	Correlation	.314	.131	-.181	-.209	-.363	1.000	.406	.083	-.092	.070	.131	-.057	-.160	.566	.184
		Significance (2-tailed)	.021	.345	.190	.129	.007	.	.002	.552	.509	.614	.345	.681	.248	.000	.184
		df	52	52	52	52	52	0	52	52	52	52	52	52	52	52	52
	VAS_REL_reactivity	Correlation	-.175	.058	-.223	-.475	-.482	.406	1.000	-.162	-.157	.206	.106	-.432	-.430	.255	.594
		Significance (2-tailed)	.206	.676	.105	.000	.000	.002	.	.240	.257	.136	.445	.001	.001	.062	.000
		df	52	52	52	52	52	52	0	52	52	52	52	52	52	52	52
	angry_intense	Correlation	-.026	-.156	-.026	.355	.188	.083	-.162	1.000	.880	-.379	-.443	.384	.269	.028	-.134
		Significance (2-tailed)	.854	.260	.852	.008	.173	.552	.240	.	.000	.005	.001	.004	.050	.842	.334
		df	52	52	52	52	52	52	52	0	52	52	52	52	52	52	52
	annoy_intense	Correlation	-.062	-.131	.004	.330	.308	-.092	-.157	.880	1.000	-.430	-.457	.304	.337	-.034	-.114
		Significance (2-tailed)	.657	.346	.980	.015	.024	.509	.257	.000	.	.001	.001	.025	.013	.807	.412
		df	52	52	52	52	52	52	52	52	0	52	52	52	52	52	52
	happy_intense	Correlation	-.126	-.006	.059	-.250	-.189	.070	.206	-.379	-.430	1.000	.775	-.236	-.164	-.059	.118
		Significance (2-tailed)	.365	.966	.673	.068	.171	.614	.136	.005	.001	.	.000	.086	.235	.674	.394
		df	52	52	52	52	52	52	52	52	52	0	52	52	52	52	52
	relax_intense	Correlation	.058	.104	.042	-.095	-.147	.131	.106	-.443	-.457	.775	1.000	-.035	-.013	-.161	-.082
		Significance (2-tailed)	.679	.452	.763	.493	.288	.345	.445	.001	.001	.000	.	.802	.924	.245	.554
		df	52	52	52	52	52	52	52	52	52	52	0	52	52	52	52
	Angry_recovery	Correlation	.029	-.402	-.118	.824	.551	-.057	-.432	.384	.304	-.236	-.035	1.000	.689	-.125	-.331
		Significance (2-tailed)	.837	.003	.397	.000	.000	.681	.001	.004	.025	.086	.802	.	.000	.367	.014
		df	52	52	52	52	52	52	52	52	52	52	52	0	52	52	52
	Annoy_recovery	Correlation	-.015	-.256	.044	.548	.789	-.160	-.430	.269	.337	-.164	-.013	.689	1.000	-.125	-.410
		Significance (2-tailed)	.916	.062	.753	.000	.000	.248	.001	.050	.013	.235	.924	.000	.	.367	.002
		df	52	52	52	52	52	52	52	52	52	52	52	52	0	52	52
	happy_recovery	Correlation	.157	-.052	-.179	-.103	-.174	.566	.255	.028	-.034	-.059	-.161	-.125	-.125	1.000	.248
		Significance (2-tailed)	.257	.711	.196	.460	.208	.000	.062	.842	.807	.674	.245	.367	.367	.	.071
		df	52	52	52	52	52	52	52	52	52	52	52	52	52	0	52
	relax_recovery	Correlation	-.049	.089	-.027	-.288	-.287	.184	.594	-.134	-.114	.118	-.082	-.331	-.410	.248	1.000
		Significance (2-tailed)	.722	.524	.848	.035	.036	.184	.000	.334	.412	.394	.554	.014	.002	.071	.
		df	52	52	52	52	52	52	52	52	52	52	52	52	52	52	0

Appendix D.2: Correlations of the 9 individual strategies from the CERQ and emotional ratings from behavioral task

Correlations

			CERQ_SB	CERQ_Acc	CERQ_Rum	CERQ_PosRef	CERQ_RoPlan	CERQ_PReap	CERQ_PiP	CERQ_Cat	CERQ_OB	VAS_ANN_reactivity	VAS_REL_reactivity	VAS_HAP_reactivity	VAS_ANG_reactivity	happy_intense	relax_intense	angry_intense	annoy_intense	Annoy_recovery	Angry_recovery	relax_recovery	happy_recovery
Spearman's rho	CERQ_SB	Correlation Coefficient	1.000	.496**	.680**	−.031	−.038	−.045	.213	.551**	.329*	.123	.102	.392**	.143	−.267	−.172	.251	.230	.169	.166	.102	.203
		Sig. (2-tailed)	.	.000	.000	.822	.783	.746	.122	.000	.015	.377	.463	.003	.304	.051	.213	.067	.094	.222	.230	.465	.141
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_Acc	Correlation Coefficient	.496**	1.000	.405**	.150	.099	.092	.395**	.386**	.347**	.070	.083	.048	.030	−.227	−.137	−.055	−.018	.118	.134	.054	.136
		Sig. (2-tailed)	.000	.	.002	.279	.474	.510	.003	.004	.010	.616	.551	.729	.829	.099	.322	.694	.899	.396	.335	.698	.326
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_Rum	Correlation Coefficient	.680**	.405**	1.000	.051	.126	.100	.226	.724**	.400**	−.008	.165	.214	.007	−.333*	−.192	.112	.132	.021	.076	.150	.058
		Sig. (2-tailed)	.000	.002	.	.713	.365	.474	.100	.000	.003	.956	.233	.120	.958	.014	.165	.422	.341	.882	.586	.279	.678
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_PosRef	Correlation Coefficient	−.031	.150	.051	1.000	.611**	.435**	.344*	.060	.074	.121	.245	.004	.114	.449**	.323*	−.047	−.029	.043	.107	.136	−.158
		Sig. (2-tailed)	.822	.279	.713	.	.000	.001	.011	.667	.597	.383	.074	.978	.412	.001	.017	.733	.837	.756	.440	.327	.255
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_RoPlan	Correlation Coefficient	−.038	.099	.126	.611**	1.000	.731**	.535**	.042	.157	−.046	.051	.050	−.119	.277*	.241	−.089	−.016	−.014	−.026	.025	.019
		Sig. (2-tailed)	.783	.474	.365	.000	.	.000	.000	.761	.256	.741	.716	.719	.391	.043	.079	.523	.906	.920	.854	.857	.890
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_PReap	Correlation Coefficient	−.045	.092	.100	.435**	.731**	1.000	.568**	−.016	.170	−.085	.046	.105	−.169	.218	.133	−.172	−.028	−.117	−.039	.058	.110
		Sig. (2-tailed)	.746	.510	.474	.001	.000	.	.000	.911	.219	.542	.739	.452	.222	.113	.336	.213	.839	.398	.782	.675	.429
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_PiP	Correlation Coefficient	.213	.399**	.226	.344*	.535**	.568**	1.000	.141	.146	.048	−.033	.114	.059	.087	.248	−.232	−.102	.091	.127	−.138	.091
		Sig. (2-tailed)	.122	.003	.100	.011	.000	.000	.	.310	.293	.730	.814	.410	.669	.532	.070	.091	.463	.512	.360	.321	.511
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_Cat	Correlation Coefficient	.551**	.386**	.724**	.060	.042	−.016	.141	1.000	.574**	.022	.186	.255	.197	−.404**	−.325*	.213	.135	.018	.238	.062	.124
		Sig. (2-tailed)	.000	.004	.000	.667	.761	.911	.310	.	.000	.873	.179	.062	.153	.002	.017	.121	.332	.896	.082	.654	.373
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	CERQ_OB	Correlation Coefficient	.329*	.347*	.400**	.074	.157	.170	.146	.574**	1.000	−.044	.047	.172	.035	−.310*	−.331*	.188	.187	.091	.127	.051	.201
		Sig. (2-tailed)	.015	.010	.003	.597	.256	.219	.293	.000	.	.750	.737	.213	.800	.023	.014	.172	.175	.514	.362	.715	.146
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	VAS_ANN_reactivity	Correlation Coefficient	.123	.070	−.008	.121	−.046	−.085	.048	.022	−.044	1.000	−.484**	−.348**	.493**	−.117	−.109	.371**	.490**	.794**	.464**	−.395**	−.317*
		Sig. (2-tailed)	.377	.616	.956	.383	.741	.542	.730	.873	.750	.	.000	.010	.000	.401	.434	.006	.000	.000	.000	.003	.020
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	VAS_REL_reactivity	Correlation Coefficient	.102	.083	.165	.245	.051	.046	−.033	.186	.047	−.484**	1.000	.409**	−.251	.251	.194	−.247	−.252	−.457**	−.325*	.702**	.381**
		Sig. (2-tailed)	.463	.551	.233	.074	.716	.739	.814	.179	.737	.000	.	.002	.067	.067	.159	.072	.066	.001	.016	.000	.005
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	VAS_HAP_reactivity	Correlation Coefficient	.392**	.048	.214	.004	.050	.105	.114	.255	.172	−.348**	.409**	1.000	−.106	.087	.106	.004	−.185	−.185	.012	.272*	.500**
		Sig. (2-tailed)	.003	.729	.120	.978	.719	.452	.410	.062	.213	.010	.002	.	.445	.533	.448	.980	.181	.180	.932	.046	.000
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	VAS_ANG_reactivity	Correlation Coefficient	.143	.030	.007	.114	−.119	−.169	.059	.197	.035	.493**	−.251	−.106	1.000	−.171	−.016	.515**	.192	.420**	.788**	−.205	−.213
		Sig. (2-tailed)	.304	.829	.958	.412	.391	.222	.669	.153	.800	.000	.067	.445	.	.216	.907	.000	.164	.002	.000	.137	.123
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	happy_intense	Correlation Coefficient	−.267	−.227	−.333*	.449**	.277*	.218	.087	−.404**	−.310*	−.117	.251	.087	−.171	1.000	.768**	−.276*	−.345*	−.086	−.143	.102	−.084
		Sig. (2-tailed)	.051	.099	.014	.001	.043	.113	.532	.002	.023	.401	.067	.533	.216	.	.000	.043	.011	.538	.301	.461	.547
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	relax_intense	Correlation Coefficient	−.172	−.137	−.192	.323*	.241	.133	.248	−.325*	−.331*	−.109	.194	.106	−.016	.768**	1.000	−.290*	−.373**	.018	.023	.019	−.146
		Sig. (2-tailed)	.213	.322	.165	.017	.079	.336	.070	.017	.014	.434	.159	.448	.907	.000	.	.034	.005	.895	.869	.892	.293
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	angry_intense	Correlation Coefficient	.251	−.055	.112	−.047	−.089	−.172	−.232	.213	.188	.371**	−.247	.004	.515**	−.276*	−.290*	1.000	.724**	.520**	.487**	−.197	−.169
		Sig. (2-tailed)	.067	.694	.422	.733	.523	.213	.091	.121	.172	.006	.072	.980	.000	.043	.034	.	.000	.000	.000	.152	.220
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	annoy_intense	Correlation Coefficient	.230	−.018	.132	−.029	−.016	−.028	−.102	.135	.187	.490**	−.252	−.185	.192	−.345*	−.373**	.724**	1.000	.571**	.207	−.168	−.125
		Sig. (2-tailed)	.094	.899	.341	.837	.906	.839	.463	.332	.175	.000	.066	.181	.164	.011	.005	.000	.	.000	.134	.223	.368
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	Annoy_recovery	Correlation Coefficient	.169	.118	.021	.043	−.014	−.117	.091	.018	.091	.794**	−.457**	−.185	.420**	−.086	.018	.520**	.571**	1.000	.510**	−.399**	−.249
		Sig. (2-tailed)	.222	.396	.882	.756	.920	.398	.512	.896	.514	.000	.001	.180	.002	.538	.895	.000	.000	.	.000	.003	.070
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	Angry_recovery	Correlation Coefficient	.166	.134	.076	.107	−.026	−.039	.127	.238	.127	.464**	−.325*	.012	.788**	−.143	.023	.487**	.207	.510**	1.000	−.265	−.133
		Sig. (2-tailed)	.230	.335	.586	.440	.854	.782	.360	.082	.362	.000	.016	.932	.000	.301	.869	.000	.134	.000	.	.053	.339
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	relax_recovery	Correlation Coefficient	.102	.054	.150	.136	.025	.058	−.138	.062	.051	−.395**	.702**	.272*	−.205	.102	.019	−.197	−.168	−.399**	−.265	1.000	.441**
		Sig. (2-tailed)	.465	.698	.279	.327	.857	.675	.321	.654	.715	.003	.000	.046	.137	.461	.892	.152	.223	.003	.053	.	.001
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	happy_recovery	Correlation Coefficient	.203	.136	.058	−.158	.019	.110	.091	.124	.201	−.317*	.381**	.500**	−.213	−.084	−.146	−.169	−.125	−.249	−.133	.441**	1.000
		Sig. (2-tailed)	.141	.326	.678	.255	.890	.429	.511	.373	.146	.020	.005	.000	.123	.547	.293	.220	.368	.070	.339	.001	.
		N	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

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