

**THE EFFECT OF THE GUIDED DISCLOSURE PROTOCOL ON DAILY STRESS, MOOD AND
COPING**

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The candidate confirms that the work submitted is his/her own and that appropriate credit has been given where reference has been made to the work of others

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ABSTRACT

Objective: This expressive writing study had three main objectives: 1) To investigate the efficacy of the Guided Disclosure Protocol (Gidron et al., 2002) in improving the mood and wellbeing of individuals who had experienced a stressful, traumatic or upsetting event in the last 5 years, 2) To explore the hypothesis that expressive writing might work by enabling individuals to cope better with daily hassles and, 3) To consider whether high depression, baseline stress levels or alexithymia moderated expressive writing effects.

Design and Methods: Eighty-eight healthy participants completed baseline measures in depression (DAS-21) and alexithymia (TAS) and were randomised into two writing conditions (GDP, control). All participants wrote for twenty minutes over three consecutive days before completing a seven-day daily diary immediately following writing (Time 1) and at follow-up two months later (Time 2). In the diary participants were asked to report on their daily hassles and record subsequent mood (PANAS) and coping (Brief COPE). The DAS-21 was repeated at Time 2 after diary completion.

Results: The data were analysed using hierarchical linear modelling. Analysis found little evidence in support of the main effects of disclosure on mood. Expressive writers were found to report greater negative mood than controls at Time 2. In addition there was no evidence that coping improved with the exception of an increase in acceptance coping for expressive writers over controls. There was little evidence that high baseline depression, mood and alexithymia moderated expressive writing effects.

Discussion: Although no support for the efficacy of the GDP was found, the results from this study are important as they highlight the potential costs and benefits of using daily diary studies to assess mood and coping outcomes. The novel application of daily diary methodology to expressive writing research is discussed.

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ABBREVIATIONS

DAS-21 Depression and Anxiety Stress Scale – 21

GDP Guided Disclosure Protocol

PANAS Positive and Negative Affect Schedule

PTSD Post Traumatic Stress Disorder

TAS Toronto Alexithymia Scale

WHO World Health Organisation

INTRODUCTION

1.1 Overview

Despite considerable past debate about its helpfulness, there is now increasing evidence that stress is a major worldwide problem that has been associated with low mood, increased blood pressure, and many physical health conditions (1982; DeLongis, Folkman, & Lazarus, 1988). The World Health Organisation's (WHO) Global Burden of Disease Survey estimates that mental health problems, including stress related disorders are rapidly on the increase and will be the second leading cause of disabilities by the year 2020. Indeed, the frequency with which individuals are experiencing negative effects because of facing stressful events has led researchers to seek out increasingly accessible and cost-effective treatments.

There is mounting evidence from well over 200 writing studies that people who have experienced stressful life events reap physical and psychological health benefits when they engage in expressive writing (Smyth, 1998). Most writing studies use methodology devised by Pennebaker and colleagues (Pennebaker, 1997; Pennebaker & Beall, 1986) that requires participant randomisation into either an experimental condition where individuals write for twenty minutes a day for four consecutive days about a past trauma or a control condition where participants write about superficial topics.

Researchers have proposed a number of explanations for the reported benefits of expressive writing including theories of inhibition, cognitive-processing, exposure and self-regulation (Frattaroli, 2006; Sloan & Marx, 2004b). However, exposure to stressful situations can come in many forms, from traumatic life events to daily hassles. Previous research has ignored within-person fluctuations in an individual's ability to cope with stressful daily hassles. It is quite conceivable that benefits gleaned when an individual engages in writing about a traumatic event may be transferred to dealing with every day stressors. Klein and Boals (2001) propose that the processing of a traumatic or stressful event through expressive writing might free up cognitive resources that could then be applied to other activities, such as coping with day-to-day hassles. In addition, it is possible that facing and engaging with a trauma through expressive writing models a successful and adaptive coping process that individuals could then apply when dealing with daily stressors.

Naturalistic diary designs are an increasingly utilised methodological tool for understanding within-person stress-outcome processes (O'Connor, Jones, Conner, McMillan, & Ferguson, 2008) but have yet to be applied to expressive writing research. Their use here may provide a unique insight into the mechanisms that account for the expressive writing intervention.

However, not all studies have shown positive effects of writing and not all participants have benefited (Frattaroli, 2006; Meads & Nouwen, 2005). Differences in expressive writing protocols including the writing instructions given to participants may account for some of the variability in expressive writing effects found. One promising variation in participant writing instructions is the Guided Disclosure Protocol (GDP; Gidron, et al., 2002), a more comprehensive and directive expressive writing protocol that has appeared a useful intervention in reducing physical symptoms and hospital visits of frequent clinic users. To date, no research has explored whether the GDP can have the same effect on psychological outcomes.

In addition, individual differences may account for inconsistent outcomes. A number of variables have recently received considerable attention as potential moderators including levels of baseline stress, depression and alexithymia. However a lack of research and methodological problems inherent in some studies prevent any constructive conclusions from being drawn (Frattaroli, 2006). Therefore this study will explore whether stress, depression and alexithymia will moderate the effects of the GDP on mood and coping strategies utilised by participants.

1.2 Literature review

1.2.1 The expressive writing paradigm

Disclosing information after significant life events has long been considered both normal and healthy (Frattaroli, 2006). It was theorised that disclosure may afford the individual the opportunity to make sense of past experiences, making it possible for people to better manage their thoughts and emotions resulting in improvements in health and wellbeing (Frattaroli, 2006). The first experimental manipulation of written emotional disclosure on health was conducted by Pennebaker and Beall (1986). In this study participants in the experimental conditions were assigned to write about one or more traumatic experiences that had occurred in their lives for four consecutive days while

adhering to one of three sets of instructions; writing about the facts, writing about the emotions or writing about both the facts and the emotions. In addition, the researchers included a control condition, where participants were asked to write about a neutral topic of their choosing (such as their plans for the day). Participants in all four conditions were required to write for fifteen minutes during each of the four writing sessions. Writing took place alone in a controlled environment. Each day, participants were asked to attend the laboratory at a specified time where they were met individually by an experimenter. At the end of each writing session, individuals' were required to hand in their essays, which were identifiable only by a number. Pennebaker and Beall (1986) found that the only people to show any health benefit from writing were those assigned to write about the facts and emotions surrounding the trauma. This group demonstrated a significant reduction in visits to a campus clinic and reported less physical health complaints compared to other participants and this was maintained up to two months later.

The publication of this finding marked the start of a considerable interest in disclosure studies. The experimental procedure became known in the literature as the expressive writing paradigm, or experimental disclosure, and a wealth of studies now contribute to the growing evidence base surrounding the paradigm. In addition, numerous reviews and meta-analyses have been written in an attempt to structure the research and summarise the often conflicting or over-inflated findings (Frattaroli, 2006; Sloan & Marx, 2004b; Smyth, 1998). The following brief section is a historical summary of the evidence base for expressive writing.

1.2.2 Laboratory studies

Historically, most early expressive writing studies were conducted in laboratory settings on healthy undergraduate college students utilising Pennebaker's standardised methodology (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990). In such research, students were frequently asked to write about their most stressful or traumatic experience for 15-20 minutes a day, over three to five days (Frattaroli, 2006). By measuring a variety of independent variables at baseline, post-disclosure and at follow-up, researchers found that individuals improved on a wide array of physical and psychological health and wellbeing variables. Reported benefits of expressive writing have included improvements in emotional and physical health complaints (Greenberg & Stone, 1992;

Lepore, 1997; Pennebaker, et al., 1990) improved immune functioning (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Pennebaker, Kiecol-Glaser, & Glaser, 1988) as well as enhanced social relationships and role function (Lepore & Greenberg, 2002; Spera, Buhrfeind, & Pennebaker, 1994).

However, whilst laboratory-based studies with healthy university student populations benefit from the ability to eliminate potential confounding factors that can create questionable results, it is not clear how these findings may generalise to the population at large. The nature of stress or trauma experienced in invariably young participant samples may differ from those experienced by a more diverse community population. In addition, the ability of this highly educated cohort to both adhere to and make use of an intervention that requires one to write for some considerable length of time may not generalise to a population with less academic experience. As a result researchers began to supplement laboratory-based demonstrations of efficacy with studies of effectiveness using community and clinical populations (Smyth & Catley, 2002).

1.2.3 Real-world studies

More recent studies have been conducted with participant samples that include individuals in community healthcare settings who have experienced significant stress, often as a result of severe trauma or ill health (Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg, 2006; Norman, Lumley, Dooley, & Diamond, 2004; O'Cleirigh, Ironson, Fletcher, & Schneiderman, 2008; Smyth, 1999; Zakowski, Ramati, Morton, Johnson, & Flanigan, 2004). The results show that the benefits of expressive writing also appear to extend to nonstudent populations on a wide range of outcome variables (Frattaroli, 2006).

Some notable findings include improved lung function found in asthma patients and reduced symptoms in rheumatoid arthritis patients following disclosure (Smyth, 1999). In addition, women who had recently completed medical treatment for Stage I or II breast cancer reported a significant decrease in physical symptoms at three months after expressive writing as compared to the control group and this difference translated to a reduction in hospital appointments for cancer-related concerns (Stanton et al., 2002). Other outcomes attributed to expressive writing have included reductions in health related behaviours such as clinical attendance and absenteeism at work (Gidron, et al., 2002).

1.2.4 Expressive writing and psychological outcomes

The most recent expressive writing research has moved away from physical health settings and into the mental health field. The number of studies is still extremely limited however and the dearth of expressive writing studies that focus on measuring psychological outcomes is marked compared to the abundance of studies looking at physical health variables. In those that do exist, most have concentrated on measuring changes in negative mood as an outcome and as yet these have produced mixed results (Frattaroli, 2006). For example, Sloan and Marx (2004a) found that participants assigned to an experimental disclosure condition reported fewer psychological symptoms at follow up than control participants. However others have reported no such gains (Greenberg & Stone, 1992). Kovac and Range (2002) found that expressive writing did not reduce suicidal thoughts and feelings amongst college students. In addition, a disclosure condition was found to be no better than a placebo control for reducing levels of psychological distress caused by negative body image amongst college students (Earnhardt, Martz, Ballard, & Curtin, 2002).

A number of studies have investigated expressive writing on individuals with post-traumatic stress disorder (PTSD) symptoms (Gidron, Peri, Connolly, & Shalev, 1996; Sloan, Marx, & Epstein, 2005; Smyth, Hockemeyer, & Tulloch, 2008). Smyth and colleagues (2008) found no difference at a three month follow-up in PTSD symptom levels pre- to post-writing for participants with a PTSD diagnosis. However the authors found expressive writers did show a reduction in low mood compared to controls. Furthermore, lower cortisol levels were recorded in response to trauma-related memories in the expressive writing group as compared to the control group. Sloan et al. (2005) found no decrease in PTSD symptoms one month after writing for a sample of University undergraduates who had experienced a significant traumatic event and who were experiencing post traumatic stress symptoms in the moderate range for those writing either using Pennebaker's standard methodology (Pennebaker & Beall, 1986; Pennebaker, et al., 1990) or the control group. However participants in a third condition who were asked to write about the *same* traumatic experience over the entire three days did show a reduction in PTSD symptoms.

Methodological differences were applied in a third study on individuals with PTSD (Gidron, et al., 1996). In this study participants were required to write adhering to Pennebaker & Beall's (1986) expressive writing protocol but in addition to this, elaborate

orally on the most severe event about which they wrote. In comparison, the control condition wrote about their daily activities, also describing one orally. In this case however, authors found that expressive writers reported larger increases in health care visits related to trauma than controls after five weeks. However methodological concerns including a very small sample size ($n = 14$) and a significant difference in the two conditions of time passed since trauma (37.9 months for the expressive writing condition compared to 13.2 months for the control) question the reliability of these results. In addition, the combined use of oral (public) coupled with written (private) disclosure may have distorted or masked the effects of expressive writing making it difficult to know which aspect of the intervention contributed to the negative findings observed (Smyth, et al., 2008).

1.2.5 Summary

Drawing meaningful conclusions from expressive writing research is hampered by methodological issues. Studies differ considerably on a number of variables including the populations from which samples are drawn, the setting in which the experiment takes place, the expressive writing instructions given to participants, the timing and spacing of writing sessions and the length of time before follow-up measurements are taken. In addition, there is considerable variation in the outcome measures used by researchers to measure change.

It is clear that not all published studies of expressive writing have shown benefits (Meads & Nouwen, 2005). Furthermore, in common with much psychotherapy research, there is likely to be a publication bias meaning that studies yielding non-significant results are under-represented in the literature. This bias results in some literature reviews and meta-analyses reporting inflated claims about effect sizes (Frattaroli, 2006). Indeed published meta-analyses report a broad range of claims about the efficacy of expressive writing interventions (Frattaroli, 2006; Frisina, Borod, & Lepore, 2004; Meads & Nouwen, 2005; Smyth, 1998). For instance, Smyth's (1998) meta-analysis of expressive writing studies found a weighted effect size of $d = 0.47$, $p < .01$ across all studies and outcomes, which signified a 23% improvement in the expressive writing group compared with the control group. However, Meads & Nouwen (2005) reported that there was no clear improvement for physical health benefits and that expressive writing might actually result in an increase in some psychological outcomes such as depression. Nevertheless,

Frattaroli's (2006) recent large scale meta-analytic comparison of 146 randomised studies of expressive writing found an overall effect size of $d = 0.08$, $p < .05$. On balance it appears therefore that the therapeutic effects of expressive writing are small but significant. Such findings are important as they suggest that continued research into attempting to improve our understanding of expressive writing is valuable. Enhancing our understanding of expressive writing may lead to benefits which would decrease the burden on healthcare resources thereby potentially providing substantial economic savings for a very small cost.

1.3 Proposed mechanisms of action for expressive writing paradigm

The existing experimental disclosure literature is clear that although expressive writing has been shown to 'work' on numerous occasions no one is really sure how or why (King, 2002). A number of theories have been proposed which implicate various mechanism of action and several reviews have been published that document the inevitable rise and fall in popularity of these approaches (see Frattaroli, 2006; Sloan & Marx, 2004b). The following is a summary of the most influential of these theories including a review of the literature critiquing each approach.

1.3.1 Inhibition theory

Pennebaker's original theory accounting for the observed effects of expressive writing studies centred around the Freudian idea that emotional inhibition is stressful and ultimately harmful to an individual (Pennebaker, 1989). Pennebaker proposed that disclosing once inhibited feelings leads to a reduction in stress, resulting in improved immune system functioning and subsequently a reduction in negative health-related symptoms. An early body of work by Alexander (1939, 1950) proposed that emotional inhibition could cause specific health difficulties primarily as a result of observed increases in blood pressure elevation. Researchers in this area have concentrated efforts on anger but have consistently linked the non-expression of anger to increases in resting blood pressure and, conversely the expression of anger to a lower resting blood pressure (see Jorgensen et al. (1996), for a meta-analytic review of this literature).

Support for this theory wavered however when Greenberg and Stone (1992) tested the hypothesis directly by manipulating the standardised writing instructions. They asked participants to write either about a trauma they had already disclosed, or one that was undisclosed, or a neutral topic control. They found no benefit from writing about

undisclosed (versus previously disclosed) traumas. Furthermore in a second experiment Greenberg and colleagues (1996) demonstrated that participants showed benefits from expressive writing, in this case a reduction in illness-related doctor's visits, even when the trauma they were writing about was imaginary. These findings caused problems for an account of the expressive writing mechanism that implicates a theory of disinhibition since letting-go of emotions from a past traumatic experience through writing does not appear to be of superior benefit to the process of writing about a make believe trauma. As a result investigators began to explore additional mechanisms of action.

1.3.2 Cognitive-adaptation theories

Cognitive-adaptation is an umbrella term for a number of theories proposed about the mechanisms of action in the expressive writing paradigm that although distinct, all share the notion that the processing of a traumatic experience requires changing existing schemas (Sloan & Marx, 2004a). However, only one theory of cognitive-adaption, the cognitive-processing theory is actually supported by any empirical findings (Sloan & Marx, 2004b). Pennebaker and colleagues developed the theory in response to asking for participants' self-report on how individuals thought they had benefited from the writing paradigm (Pennebaker, et al., 1990). Pennebaker et al. found that participants most commonly reported that writing was helpful as it allowed them to gain insight into what had happened to them (Frattaroli, 2006). Indeed, subsequent qualitative analysis of participants' written transcripts conducted by Pennebaker did identify an increased use of insight words (e.g., consider, know) and causation words (e.g., because, cause, effect) in those who benefited from writing when compared to those who did not (Pennebaker, 1993). Moreover further investigation found participants who used more causal and insight related words did have improved physical health at follow-up (Pennebaker & Francis, 1996). As such Pennebaker proposed that writing about a trauma may allow the individual to structure and organise memories which afford the participant the opportunity to gain insight into the trauma thus enabling assimilation of the event in the memory. It is proposed that the process of assimilation (integrating the traumatic experience in the memory) results in a reduction of stress and its subsequent effects.

A study by Smyth and colleagues (2001) provided some support for this hypothesis. They found that participants who were assigned to construct a narrative about their

thoughts and feelings regarding the most traumatic experience of their lives reported significantly less restriction of activity due to illness than either participants assigned to a fragmented writing condition or a trivial topic control.

Furthermore, a recent study by Dunnack & Park (2009) found that use of the pronoun “I” at the final session was correlated with several aspects of better psychological adjustment. The authors proposed that use of ‘I’ reflected a self-focused thought process, and that thinking about oneself overtime is likely to aid adjusting to trauma because individuals who self-focus are better able to reanalyse traumatic events, reinterpreting and subsequently integrating and assimilating their memories. However it is just as conceivable that the use of the pronoun “I” could merely be an outcome of better engagement with the writing task. Indeed those who did have increased use of “I” also had increased use of cognitive words suggesting that the use of “I” merely represents an individual engaged with the task rather than supposing that they changed because they had been able to assimilate memories more efficiently.

In addition, Park and Blumberg (2002) found that even when expressive writers appraised their traumatic events at follow-up as less stressful and threatening than controls (and therefore would be expected to have assimilated the experience) no differences on self-reported physical and psychological health variables were found between the two writing conditions.

1.3.3 Exposure theories

Recently, theories have increasingly focused around the principles of therapeutic exposure since the expressive writing task closely resembles exposure techniques seemingly successful in the treatment of post-traumatic stress disorder (PTSD; Foa & Rothbaum, 1998). The principles of therapeutic exposure suggest that when a person confronts a negative experience over a number of sessions, the repeated exposure leads to a reduction of thoughts and feelings associated with that experience. Foa and Kozak (1986) have argued that successful exposure-based treatments require an individual to initially experience intense negative affect when confronting the negative experience, which will be followed by gradual decreases in affect through ongoing exposure.

Given this understanding of exposure, it has been argued that the written disclosure paradigm may serve as a context that makes it more likely that an individual will

contemplate exposure to the traumatic memory and other cues that had been previously avoided (Booztin, 1997; Kloss & Lisman, 2002). Many individuals attempt to avoid thinking about traumatic experiences, owing to fear that they will be overwhelmed by the accompanying emotions (Meadows & Foa, 1999). The avoidance however only serves to leave the individual feeling even greater levels of distress about facing the traumatic experience (Sloan & Marx, 2004a). It is quite possible therefore that expressive writing affords individuals the opportunity to face and ultimately process a previously avoided traumatic experience in a way that is perceived 'safe' by the participant. By facing the traumatic experience and associated emotions, the individual becomes more confident that they will not be overwhelmed by the accompanying emotions thereby reducing feelings of fear and distress of both the primary feared stimulus (the trauma) but also the fear of being overwhelmed by the fear itself (a meta-worry).

In this way expressive writing may serve as a 'distracter task' affording the participant the opportunity to engage with their traumatic memory, but in a way that doesn't require direct attention. Although Foa and Kozak (1986) argue that distraction interferes with effective exposure therapy, some studies have found that it can help to minimise avoidance and promote exposure to the feared stimulus (Johnstone & Page, 2004; Oliver & Page, 2003). By experiencing the memory in a weakened form (while being distracted), people may change some of their beliefs about how dangerous their memories are, as well as their beliefs about their ability to cope with remembering them, thereby promoting acceptance of the memory rather than changing the content of the memory itself.

However, studies have found conflicting evidence that level of anxiety decreases after repeated exposure to the trauma during expressive writing interventions. For instance, Kloss and Lisman (2002) found, contrary to predictions, that self-report state anxiety actually increased from pre- to post-writing conditions and that levels of state anxiety did not decrease across the writing sessions. However a second study conducted by Sloan and Marx (2004a) replicating Kloss and Lisman's methodology but using cortisol measurement obtained from saliva, in addition to self-report to measure levels of state anxiety, found more support for an exposure hypothesis. They found that disclosure participants showed significantly greater physiological reactivity at the first writing session

compared with control participants but not at follow up and that self-reported ratings matched the downward trend of arousal found in physiological reactivity. The authors argued that their findings supported the notion that initial activation of negative emotion and arousal occurs in response to the written disclosure procedure with reduction of negative emotion and arousal occurring across the sessions. However, although the authors found that participants assigned to the disclosure condition reported fewer psychological and physical symptoms at follow-up compared with control participants, the reductions were only clinically significant for one outcome measure – low mood. Clinically significant reductions were not found in self-report anxiety measures.

1.3.4 Self-Regulation Theories

None of the above theories however are able to offer a clear explanation for the imaginary trauma study conducted by Greenberg and colleagues (1996) where benefits were found even when individuals did not write about their own trauma. In addition, there are a number of other studies where the findings also pose problems for existing theories. King and Miner (2000) found that writing about the *benefits* of a traumatic event was as helpful in reducing illness related doctor's visits than the traditional disclosure paradigm. Moreover, King (2001) reported that writing about an individual's 'best possible self' (i.e., writing about your life as if all your goals were met and everything went right) produced reductions in illness visits that were as strong as those produced from writing expressively about a trauma. Writing about the best possible self even improved psychological well-being (e.g. optimism), whereas the traditional expressive writing did not. Lepore and colleagues currently explain such findings by arguing that experimental disclosure can be thought of as a mastery experience (Lepore, Greenberg, Bruno, & Smyth, 2002). It allows people to observe themselves expressing and controlling their emotions. This may give people a new or stronger belief in their ability to regulate their emotions. They may feel that traumas or stressors are more controllable, which should serve to reduce negative affect and lead to other well-being improvements (Frattaroli, 2006). In other words, individuals may learn to cope better with the stressors in their lives.

1.3.5 Summary

The above list of theories represents the most popular and supported but it is certainly not exhaustive. A number of additional mechanisms have been implicated

including cognitive restructuring and increases in social support arising as a result of participants' discussions post intervention (Sloan & Marx, 2004a; Sloan & Marx, 2004b). At present it is clear that not one theory of expressive writing can account for all the findings. Indeed, moreover, it is likely that a combination of mechanisms may be responsible for change. However there are two strong conclusions that can be drawn from the research summarised here into potential mechanisms of action accounting for the effects of expressive writing. First, the benefits of expressive writing do not appear to be confined to traditional writing paradigms and second, there is increasing evidence that expressive writing may benefit individuals by enabling the individual to cope better with stressors in their lives. The primary aims of this study are to investigate these findings.

1.4 Expressive writing instructions

A number of studies have identified various features in the writing of participants for whom expressive writing is particularly beneficial. For instance, Pennebaker and Francis (1996) showed that subjects who disclosed their trauma while writing words indicative of self-reflection (e.g. "I realise") had the greatest health benefits. Foa, Molnar, & Cashman (1995) found that victims of rape who disclosed their traumatic event chronologically had less psychiatric symptomology later as compared to a control group who did not write chronologically. In addition, Lestideau & Lavallee (2007) found that planful writing appeared to lessen the impact of emotional distress experienced short-term by participants when they are faced with an expressive writing intervention. Such findings suggest that individuals may benefit from guidance in both the content and the manner of written disclosure (Gidron, et al., 2002).

1.4.1 The Guided Disclosure Protocol (GDP)

The Guided Disclosure Protocol (GDP; Gidron, et al., 2002) is one such guided expressive writing approach that has been developed in response to findings from the clinical literature. Like Pennebaker's standard protocol, the procedure requires participants to write for a short period (fifteen – twenty minutes) over three consecutive days, but differs in its use of additional instructions. On the first day, participants are asked to describe a single traumatic or upsetting event in chronological order in a journalistic manner without expression or emotions (to form a continuous narrative). On the second, they are asked to describe thoughts and feelings at the time of the event (to enhance

cognitive processing and labeling of sensory and affective responses) and appraise the effect the event has had on their life (to enhance self-reflection). Finally on day three, they are asked to write about how they thought and felt about the event currently (to enhance perspective), and what they would do in the future, should they encounter similar events (to enhance self-regulation).

As yet, few studies have investigated the efficacy of the GDP as an alternative to standard disclosure protocols. However findings from one study on a sample of 41 frequent outpatient health clinic attenders has found improved outcomes for a GDP condition where participants were required to write about a trauma using the enhanced protocol compared to a control condition which required participants to write about a neutral topic (Gidron, et al., 2002). Participants in the GDP condition reported lower symptom levels (including muscle and back pain and feelings of heaviness) at three months and made fewer clinic visits than those in the control condition and the differences met criteria for statistical and clinical significance.

Although this is a promising finding, the small and heterogeneous sample and lack of replication make it very difficult to generalise these findings. In addition, no psychological outcomes were directly assessed in the study protocol. As such, the first aim of this study is to investigate further the efficacy of the GDP on an opportunist sample of healthy volunteers who have experienced a significant traumatic or upsetting event in the past five years. It would be hypothesised that this guided approach to expressive writing will provide enhanced benefits in the form of less negative mood, anxiety and stress over a standard, control condition where participants are required to write only about their daily plans. Such a hypothesis is important to investigate since a more directed expressive writing protocol would make no difference to the potential financial burden of the intervention yet may considerably effect outcomes.

1.5 Expressive writing and coping

The second aim of this study is to explore the hypothesis that individuals may benefit from expressive writing because they learn to cope better with their trauma.

1.5.1 Coping

An individual is required to respond in some way in order to overcome the impending threat or harm imposed by a trauma. People may respond in a multitude of

different ways and many of these ways get labelled as methods of “coping” (Carver & Connor-Smith, 2010). Carver & Connor-Smith (2010) reported that coping is often defined in the literature as efforts to diminish threat, harm, and loss, or to reduce associated distress. Therefore how a person copes with a trauma is likely to define its ultimate impact.

There is a considerable body of research investigating the way individuals cope with stressors and traumas and coping theories differ in their assumptions about the stability and generality of coping behaviour (Carver & Connor-Smith, 2010). In addition, while some empirical studies assess coping under specific situational conditions, other studies refer to coping in terms of trait-like, individual coping styles, i.e., an individual’s stable preference for certain coping strategies across different situations (Schwarzer & Schwarzer, 1996). Often this distinction is defined in the literature as being either voluntary and/or conscious versus involuntary and/or unconscious responses to coping (Carver & Connor-Smith, 2010). Most empirical studies that utilise the many standardised measures of coping behaviour seek to examine coping responses that individuals are aware of in their consciousness. The resultant literature however is somewhat complex as researchers have proposed numerous models of coping or ways to group coping responses (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner, Edge, Altman, & Sherwood, 2003).

Nevertheless most theories of coping style still incorporate a distinction between problem focused and emotion focused styles of coping, first described by Lazarus & Folkman (1984). Problem-focused coping is aimed directly at the problem itself and involves taking action to remove or minimise its impact, for example asking another for help. Whereas emotion focused coping is aimed at minimising the distress caused by the problem, for instance avoidance.

However, some strategies, such as seeking emotional support can be problem focused or emotion focused depending on the intended goal. For example, if an individual wants to seek social support for reassurance, it might be classed as emotion-focused but if the intention is to obtain another’s opinion on the matter, then it would be classified as problem-focused (Carver & Connor-Smith, 2010). Furthermore, actively participating in one sort of coping may lead to easier activation of another sort. For instance an emotion-focused coper might cry in order to minimise distress, but once they are less distressed they may feel more able to tackle the problem itself.

Such variability in the temporal goal of coping has led researchers away from a problem versus emotion focused distinction towards a distinction between engagement versus disengagement coping (Carver & Connor-Smith, 2010). Engagement focused coping includes problem-focused coping and some forms of emotion-focused coping including getting advice from others, acceptance and cognitive restructuring (Carver & Connor-Smith, 2010). It requires the individual to actively work on the current stressor and as such is characterised in this study as adaptive. Disengagement coping on the other hand includes predominately emotion-focused methods but is characterised by an attempt to escape feelings of distress (Carver & Connor-Smith, 2010). In this study, disengagement coping is classed as maladaptive. Both maladaptive and adaptive coping strategies are measured by the Brief Cope (Carver, 1997), a short form of the COPE inventory which has been utilised in a number of coping studies with various health outcomes (Carver, Scheier, & Weintraub, 1989).

The second novel aim of this study therefore is to investigate the hypothesis that expressive writing will result in individuals using more adaptive, productive and engaged methods of coping than controls. Two possible mechanisms of action are proposed which may support this hypothesis. At this point it should be acknowledged that this hypothesis is exploratory and therefore the supporting theory is intended only as a proposal for possible potential mechanisms.

1.5.2 Working Memory account

The working memory account is based on the work of Klein and Boals (2001) who propose that people undergoing high levels of stress will be poorer problem solvers compared to individuals reporting fewer stressful experiences (Klein, 2002). Klein (2002) argues that people have a finite capacity for attention to tasks in the face of distraction which they call the working memory capacity. It is proposed that a person with high stress will experience cognitive intrusions which attract attention away from the task in hand. Klein and Boals (2001) conducted a study assessing whether students who wrote about a negative event four times over five weeks, in a similar style to expressive writing, experienced greater working memory improvements and declines in intrusive thinking compared with students who wrote about the negative event once followed by three sessions writing about either a positive or neutral experience. They found that participants

who wrote more about the negative event reported greater declines in intrusive and avoidant thinking about the negative event at follow up and greater gains in working memory. The validity of this study is somewhat questionable since it might be expected that control participants who were exposed to a writing session about a trauma and then reminded of it at follow-up would be more likely to have increased intrusions over individuals already given three sessions in which to write about the negative experience. However it make intuitive senses that individuals may be distracted from other tasks, such as coping with stressors, if they are experiencing intrusions about a trauma. Reducing the impact of the trauma may well free up cognitive capacity to cope with other stressors.

1.5.3 Modeling adaptive coping account

The second account is based on the proposal that expressive writers would have learned a more adaptive form of coping with their trauma by following the guided writing instructions provided by the GDP. The individual will experience themselves facing and engaging with their most traumatic memory and whilst doing so will be required to consider what they have learned as a result of the experience. This process may afford the individual the opportunity to experience themselves coping and mastering their most traumatic memory which may provide the confidence to attempt adaptive coping strategies when faced with additional stressors. The above account is supported by the research literature from self-regulation theories which point to the importance of mastery and writing about oneself in the best possible light as important factors in expressive writing theory (King, 2001; Lepore, et al., 2002).

These accounts cannot be tested by the current study but they are offered as possible mechanisms of action relating to the proposed hypothesis. Both proposals share in common an end result that after expressive writing, individuals may be able to cope better with additional, more minor, stressors. To date little is understood about whether an individual is able to translate benefits gleaned from the expressive writing intervention when they are dealing with every day stressors. The remainder of this section will explore the research literature on coping with minor stressors.

1.5.4 Within-person fluctuations in stress response

Most of life's stressors are not major life events, as are commonly written about by participants in expressive writing studies but rather are comparatively minor annoyances that may accumulate over time (McIntyre, Korn, & Matsuo, 2008). Theory and research into the effects of psychological stress has shifted from an earlier emphasis on a life-events approach to stress measurement to a consideration of how individuals cope with the day-to-day stressors (Lazarus, 1984). One important reason for this from a practical point of view is that the relationship between life events and health outcomes are extremely weak (DeLongis, et al., 1982). Life event scores have not been shown to be good predictors of the probability of future illness (Rabkin & Struening, 1976). Daily stressors on the other hand have been found to correlate with a number of psychological and physical health outcomes including low mood, anxiety and depression (Almeida, 2005; Zautra, 2003). However to date, the expressive writing literature has ignored the possible effects that writing about a major life trauma may have on a person's ability to cope with daily stressors.

1.5.5 Daily Hassles

Daily life stressors are known in the stress and coping literature as daily hassles. Hassles are defined as experiences and conditions of daily living that have been appraised as harmful or threatening to an individual's wellbeing (Lazarus, 1984). Recent research investigating the impact of daily hassles suggest these experiences may take the form of an event, thought or situation that results in negative feelings such as annoyance, irritation, worry or frustration, and/or makes you aware that your goals and plans will be more difficult or impossible to achieve (O'Connor, et al., 2008). Lazarus (1984) argues that a hassle is viewed as harmful or threatening if it involves demands on an individual that tax or exceed a persons' perceived ability to manage. However, an alternative view of the impact of a hassle uses an economic metaphor. Hobfoll (1989, 1998) suggests that people have resources that they try to protect, defend and conserve. Resources are anything that the person values and can be physical (e.g. house, car), conditions of life (e.g. having friends and relatives, stable employment), personal qualities (e.g., a positive world view, work skills) or other assets (e.g. money or knowledge). Hobfoll (1989, 1998) argues that a hassle becomes harmful when resources are threatened or lost.

The negative effect of daily hassles has been well replicated on various outcome measures (Almeida, 2005; DeLongis, et al., 1988; O'Connor, et al., 2008; Zohar, 1999). For instance, increases in daily hassle *severity* have been found to correlate with a number of outcomes including decreases in end-of-day mood, increases in self-report fatigue and increases in the subjective size of participant workloads (Zohar, 1999). Whilst increases in the *frequency* of daily hassles has been found to correlate with various health problems such as flu, sore throat, headaches and backaches (DeLongis, et al., 1988). More recently, daily hassles have also been found to be associated with an increased consumption of unhealthy food coupled with a reduction in the consumption of healthy food (O'Connor, et al., 2008).

1.5.6 Daily diary methodology

Research into the effects of daily hassles has benefited from the use of daily diary methodology. Naturalistic daily diaries, which allow respondents to record their own responses to daily hassles on a day-to-day basis are an increasingly used methodology in stress-related research because they do not constrain respondents to considering just one stressful event (O'Connor, et al., 2008). For instance, when hassles are assessed once, the only conclusion that can be reached is that people who experience hassles have a different outcome than people who do not. However this conclusion is very different from within-person comparisons, in which the conclusion is that the *times* when people experience a hassle result in different outcomes from the times when they do not. Both are important, but the latter option allows for the attribution of the hassle effect to the hassle itself, not to the person (Marco, Neale, Schwartz, Shiffman, & Stone, 1999). Daily diary studies allow for the exploration of the effects of multiple daily stressors. By measuring daily hassles and then asking an individual to comment on his or her response, researchers are able to explore fluctuations in within-person response to daily hassles (O'Connor, et al., 2008). Such research is important for improving our understanding of stress-outcome processes (O'Connor, et al., 2008).

1.5.7 Hassles and the use of a daily diary

To date no research has investigated whether the expressive writing paradigm has any effect on the impact of daily hassles. Therefore here for the first time we will investigate whether benefits gleaned from participants writing about traumatic events

using the expressive writing protocol can be translated to individuals in their everyday lives when dealing with daily hassles. It is quite possible that a major mechanism of action by which the expressive writing protocol might work is that expressive writing may reduce the impact of daily hassles on an individual's life as they might be able to translate learning about how to deal with major stressors onto everyday hassles.

The third aim, in this novel study is to utilise naturalistic diary design methodology for the first time in expressive writing research. Including a daily diary component after the expressive writing intervention measuring the frequency and severity of daily hassles and asking the participant to respond regarding their levels of mood and strategies of coping will allow for an exploratory analysis of within-person fluctuations in response to daily hassles. In particular, it was hypothesised that a daily hassles-negative mood association would be moderated by writing condition, such that expressive writers would experience less negative effects in terms of levels of negative mood, stress and daily mood-ratings than controls. In addition it was hypothesised that in response to daily hassles, expressive writers would report more adaptive and less maladaptive coping strategies than controls. Such a finding would be valuable because it would suggest that an important mechanism of action for expressive writing might be that it helps individuals to cope better with daily hassles.

1.6 Moderators of the expressive writing effect

Gaining a better understanding of who experimental disclosure works for may afford us a greater understanding of these additional implied mechanisms of change. After all, it is most likely that a combination of mechanisms may account for therapeutic change. However, although a wide variety of participant variables have been implicated in expressive writing studies, there is little agreement across studies or indeed between meta-analyses about which of these variables are the most important (Berman, 2003; Frattaroli, 2006; Frisina, et al., 2004). The situation is particularly unclear for possible psychological moderators due to both a lack of consensus between studies of which person variables to investigate coupled with a relatively small numbers of publications (Frattaroli, 2006).

This finding suggests that future research should include participant variables as potential moderators of the expressive writing paradigm. Three variables which have been

increasingly included in expressive writing research are baseline stress, depression and alexithymia. Within-study analysis conducted by Frattaroli as part of her recent meta-analysis found that of these variables only stress was found to moderate the effects of expressive writing, such that participants high in stress were more likely to benefit (Frattaroli, 2006). Frattaroli concluded that the unexpected null effects found for baseline mood levels and alexithymia were more likely to be due to a lack of studies examining these variables and a failure to include the additional data (p values and F-ratios) from which effect sizes could be computed. This was a problem because effect sizes in studies without these data were estimated at zero but it could have easily been the case that these individual studies did not have enough power to detect a significant interaction even though an interaction existed (Frattaroli, 2006). More recently however, researchers have begun to investigate more frequently the potential moderating variable of alexithymia on expressive writing since it has consistently been theorised to moderate the benefits of expressive writing (O'Connor & Ashley, 2008; Baikie & McIlwain, 2008).

1.6.1 Alexithymia

The term alexithymia, which literally translates as 'lacking words for feelings,' is defined as the extent to which an individual has difficulty in identifying, labelling and understanding emotions (Bagby, Parker, & Taylor, 1994; Lumley, 2004). Alexithymia is predominately measured by the Toronto Alexithymia Scale (TAS-20; Bagby, Parker, et al., 1994). Scoring high on measures of alexithymia is hypothesised to be a risk factor for a number of psychological and physical health problems including chronic pain, panic disorder and obsessive-compulsive disorder (Lumley, Asselin, & Norman, 1997; Zeitlin & McNally, 1993). The expressive writing intervention has been theorised to be helpful for people who find it particularly difficult to recognise and verbalise emotions (i.e. alexithymia) (Baikie & Wilhelm, 2005). However, given that the ability to acknowledge emotions, emotional involvement and cognitive processing during the intervention have been considered to play a crucial role in bringing about expressive writing effects, it is likely that participants who are less adept at identifying, acknowledging and describing emotions (e.g. alexithymia individuals) will derive less benefit from writing (O'Connor & Ashley, 2008). Since Frattaroli's recent inconclusive meta-analysis, two further studies have explored the effects of alexithymia on expressive writing. Baikie and McIlwain (2008) randomised 88

university students to four weekly twenty-minute expressive or neutral writing sessions, with a one month follow-up. Results on a variety of outcome measures were inconclusive however with alexithymic individuals making less GP visits than controls and showing fewer depression symptoms yet reporting increased intrusion and hyperarousal symptoms. Furthermore, methodological differences in the spacing of writing sessions make it difficult to compare findings from this study. O'Connor and Ashley (2008), found partial support for their hypothesis that alexithymia would moderate the impact of writing condition on emotional distress levels at follow-up. However, they found that individuals higher in alexithymia reported greater distress whilst those lower on measures of alexithymia reported less emotional distress. However, the follow-up period after the writing intervention was only two weeks in this study compared to an average across disclosure studies of three months (Frattaroli, 2006). Researchers have argued that a longer follow-up may be required in order for health-related improvements to be observed (Wetherell et al., 2005).

The lack of any clear conclusions from the alexithymia and expressive writing literature suggest that further investigation exploring the possible moderating effects of alexithymia on expressive writing is warranted. In particular it would be interesting to discover whether moderating effects of alexithymia would be found after use of the GDP which instructs an individual to consider emotion focussed words and feelings about the trauma memory directly. The final aim of the study therefore is to examine the three potential moderators discussed: levels of baseline mood, stress and alexithymia.

1.7 Review of thesis aims and hypotheses

The two main aims of the current research were to investigate the effect of writing condition (GDP, control) on a number of mood (negative, positive, daily mood rating, stress score) and coping (maladaptive, adaptive, positive reframing, acceptance, humour, religion) outcome variables. Two hypotheses were tested:

1. It was expected that individuals who engaged in expressive writing would experience more negative mood than controls immediately following writing but that this trend would be reversed at a two-month follow-up such that expressive writers would be expected to show less negative mood than controls.

2. It was expected that expressive writers would show greater use of adaptive coping strategies and less use of maladaptive strategies than controls.

A third aim of this research was to consider whether the relationship between daily hassles and mood/coping variables is moderated by writing condition. Two hypotheses were tested:

3. It was expected that expressive writers would experience less low mood in response to daily hassles than participants in the control condition at both times points.
4. It was expected that expressive writers would utilise more adaptive coping strategies and less maladaptive coping strategies in response to daily hassles as compared to controls.

The final three aims of this research were to investigate the impact of moderating variables (baseline depression, stress, alexithymia) on mood/coping outcomes. Three hypotheses were tested:

5. It was expected that individuals who score high in baseline depression would benefit more from expressive writing than participants who score low on a baseline measure of depression.
6. It was expected that individuals who score high in baseline stress would benefit more from expressive writing than participants who score low on a baseline measure of stress.
7. It was expected that alexithymia might moderate the impact of writing although it was unclear at the outset the nature of this relationship.

METHOD

2.1 Overview

This section includes the methods employed in the current study to investigate the research questions outlined above. Specifically, this chapter of the thesis is divided into the following sections: participants, design, measures and procedure. The chapter culminates with a description of the methods employed during data analysis.

2.2 Participants

2.2.1 Recruitment

The recruitment of the opportune sample of participants took place from the beginning of November 2009 until the end of February 2010. The recruitment strategy involved a number of methods and participants were recruited to the study via one of the following routes:

- The University of Leeds undergraduate participant pool scheme.
- Advertisements requesting participation and providing basic details and contact information placed on University notice boards and in local libraries.
- Emails enclosing an electronic version of the above advertisement were distributed amongst assistant psychologist and research assistant groups across the country.
- Contacts in commercial businesses were approached and advertisements were placed across the organisations.

2.2.2 Inclusion and exclusion criteria

All participants were required to be over the age of 18 and have experienced an event perceived by the individual to be stressful, upsetting or traumatic in the last five years. Participants were also required to be able to read and write in English and provide written informed consent. Participants were excluded if they had a current diagnosis for a mental health condition or have sought treatment for a diagnosis in the last six months.

Written consent to participate in the study was obtained after individuals had read the Participant Information sheet (see Appendix). This procedure was adhered to in order to ensure participants met inclusion and exclusion criteria.

2.2.3 Participant characteristics

Participants were regarded as entering the study if they completed the first full round of data collection (baseline questionnaires, writing and Daily Diary 1). Eighty-eight participants met these criteria.

2.2.4 Demographic information

Of the 88 participants (17 men, 71 women) who entered the study, the mean age was 36 years (range = 23 - 84 years). Of these, 86% were white British with the remainder coming from a range of ethnic backgrounds. Of the 88 participants, 24% were single, 16% had a long term partner, 4% were separated or divorced and 55% were living with a partner or married. The number of participants with children living currently at home equalled 15%.

2.2.5 Study attrition analysis

Of the original 88, 17 participants dropped-out after the first round of data collection and did not return their second Daily Diary (9 from the GDP condition and 6 from the control writing condition), resulting in a 19% attrition rate. The data for the 88 participants who completed the first round of data collection were used for Time 1 but participants who did not complete the second diary were excluded from analysis at the 2-month follow-up (Time 2). Participants who dropped out of the study at follow-up did not differ significantly from study completers on baseline measures.

2.3 Design

This study used a mixed design investigating within person and between person effects of writing condition (GDP, control) on the dependent variables of stress (as measured by daily hassles), mood and coping.

2.3.1 Power calculation

The mean effect size for a writing intervention in healthy participants is $d=0.47$ (Smyth, 1998). A power analysis for a balanced design based upon an effect size of 0.47 indicated that a sample of 87 would be more than adequate to detect effects with 80% power and an alpha of 0.05.

2.3.2 Design and participants

The 88 participants who entered the study were randomly assigned to either an expressive writing condition ($n = 45$) or a control writing condition ($n = 43$). Randomisation was achieved by assigning participants alternately to the two writing conditions at the point of entry to the study. A small external incentive was offered to all participants on completion of the study by way of entrance into a prize draw for 1 x £100 and 2 x £50 M&S or Amazon vouchers. Financial reimbursement of this nature may foster participant motivation in the study and it has been argued that increased motivation leads to increased compliance with the study protocol (Green, Rafaeli, Bolger, Shrout, & Reis, 2006).

2.3.3 Ethical clearance

Approval for this research was granted by the Institute of Psychological Sciences Ethics Committee at the University of Leeds. Approval was obtained on 2 November, 2009 prior to the commencement of data collection (see Appendix).

2.4 Measures

Participants completed a series of questionnaires at baseline (Time 1) immediately prior to commencing writing in order to obtain demographic, mood and alexithymia data. Mood measures were repeated at the two-month follow-up (Time 2). Participants also completed a daily diary every day for one week over two separate time points.

2.4.1 Baseline and follow-up measures

Alexithymia

The Toronto Alexithymia Scale (TAS-20; Bagby, Parker, et al., 1994; Bagby, Taylor, & Parker, 1994; Taylor, Bagby, & Parker, 1992) is a 20-item measure that assesses three dimensions of alexithymia (difficulty identifying feelings (DIF), difficulty describing feelings (DDF) and externally oriented thinking (EOT)). Respondents are asked to rate each statement on a 5-point Likert-type scale (ranging from 1 = strongly disagree to 5 = strongly agree). The TAS-20 demonstrates good internal consistency and test-retest reliability, and the three factor structure is theoretically congruent with the alexithymia construct (Bagby, Parker, et al., 1994). Internal reliability for the total scale with this sample was good ($\alpha = .82$).

Mood

The Depression and Anxiety Stress Scale – 21 (DAS21; Lovibond & Lovibond, 1995) is a 21-item measure that assesses items relating to depression, anxiety and stress. A Likert-type scale is used to rate items according to symptoms experienced in the past week (ranging from 0 = not at all to 3 = most of the time). The depression subscale of the DAS21 has been shown to provide a better separation of the features of anxiety and depression than other existing measures of depression (Antony, Bieling, Cox, Enns, & Swinson, 1998). Two-week test-retest reliability has been found to be relatively high at .71 (Antony et al., 1998). Internal reliability for this sample was good overall ($\alpha = .87$) and for the depression and stress subscales: depression ($\alpha = .84$), stress ($\alpha = .79$), but was not acceptable for the anxiety subscale ($\alpha = .65$).

Demographics

The brief demographics questionnaire contained items on gender, age, ethnicity, education level and whether participants had children living at home.

2.4.2 Daily Diary

A 7-day Daily Diary required participants to record the number of hassles experienced each day, provide a brief description of each hassle and rate how stressful the experience was on a Likert-type scale (ranging from 0 = not stressful, to 4 = very stressful). Daily hassles were defined and examples provided in each diary booklet. These procedures are adapted from those used by Conner, Fitter & Fletcher (1999) and O'Connor et al., (2008).

Idiographic measures

Two idiographic measures were included in the Daily Diary. First, a daily 'stress score' was obtained by totalling a participant's total stress ratings over the day. Second, a daily 'mood rating' was obtained by asking participants to rate their mood for that day on a scale of 0-10 (0 = worst you have ever felt, 10 = best you have ever felt). In addition the following adapted psychometric measures were incorporated in the diary:

Mood

The Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item questionnaire measuring items on two 10-item subscales of positive and negative affect. The scale consists of a number of words that describe different feelings

and emotions e.g. “interested” or “afraid”. A Likert-type scale is used to rate items according to frequency (ranging from 1 = very slightly or not at all, to 5 = extremely). The PANAS has been adapted for use in daily diary studies previously (O'Connor, et al., 2008) whereby the top 5 loading items from each of the positive and negative affect scales were combined to produce a 10-item measure. This adapted version reduces participant burden making it more appropriate for inclusion in daily diary studies. Internal reliability for each scale on the adapted measure of this sample was good (negative: $\alpha = .85$; positive: $\alpha = .84$).

Coping

The brief COPE (Carver, 1997) is an adapted short-form of the COPE inventory (Carver, et al., 1989). It contains 28 items which describe potential reactions to problems or problematic situations assessing 14 different coping styles, with 2 items per subscale. The subscales broadly map on to Lazarus & Folkman's (1984) model of coping and, in line with this research, can conceptually be divided into two overall styles of coping: adaptive and maladaptive. Although, there is adequate internal consistency reported for both coping sub-styles of the brief COPE, reliability is better for an adaptive coping scale. For the purpose of inclusion in the diary, and to limit participant burden, only one item on each of the 14 subscales was included in the Brief COPE.

For this sample, there was unacceptable internal reliability for a broader adaptive scale incorporating items of positive reframing (item 3) acceptance (item 4), religion (item 6) and humour (item 5) with the more problem-focussed coping styles of active coping (item 1), planning (item 2) and using instrumental support (item 8). Therefore, the problem-focussed coping styles (items, 1, 2 and 3) were calibrated to form a smaller adaptive coping scale. Good internal reliability for this reduced scale was found with this sample ($\alpha = .83$). The additional adaptive scales were not found to calibrate at a higher order and so were analysed independently.

Good internal reliability was found for a maladaptive subscale incorporating items relating to self-distraction (item 9), denial (item 10), venting (item 11), substance use (item 12), behavioural disengagement (item 13) and self-blame (item 14). Using emotional support (item 7) also calibrated with these items and was included in the maladaptive scale following research that links this construct with unhelpful coping (Carver & Connor-Smith, 2010). Internal reliability for this maladaptive subscale in this sample was good ($\alpha = .89$).

2.5 Procedure

The Participant Pack was sent to willing participants who had read the Participant Information Sheet and who met inclusion and exclusion criteria. The Pack provided full standardised instructions that participants were required to follow for this study (see Appendix). After giving written informed consent (see Appendix), three baseline measures (demographics, DASS-21, TAS) were completed. Participants then opened an envelope marked 'WRITING – DAY 1' which included instructions for the first twenty minute writing session and a blank booklet in which to write. Following the twenty minute writing session, participants were required to send back the writing along with the initial measures and consent form (the consent form enclosed in a separate envelope to ensure it could be removed prior to analysis in order to maintain confidentiality) in the stamped addressed envelope provided. The same procedure was followed for the writing task on the second and third day. Participants were asked to send back their writing for these two days together but sealed in separate envelopes. Individual envelopes for each day of writing containing the days' instructions and writing booklet were provided in order to improve adherence to the writing protocol.

2.5.1 Expressive writing condition (GDP)

Participants were provided with instructions developed by Duncan et al. (1998) that have been successfully used in a previous written disclosure study (Gidron, et al., 2002). The expressive writing group were asked to write about their most stressful, traumatic or upsetting experience for a twenty minute periods over three consecutive days. The instructions provided to participants differ on each day and are as follows:

Day 1

During today's twenty minute writing session please write about what happened when the traumatic event you have chosen to write about occurred. For example, write about where you were, who you were with, what happened, sights and sounds, and your surroundings. So this means you write about the bare facts in the order that they happened, as if you are telling a story. But don't write about your feelings/emotions at that time.

Obviously you write about the circumstances around the trauma happening but try to be very factual, objective and accurate without letting us know at this time about any

thoughts or feelings that were passing through your mind. We appreciate that this may be difficult but it is very important that you recall the sequence of events that happened surrounding the trauma.

Day 2

During today's twenty minute writing session we would like you to please write about two things:

1. Your deepest thoughts and feelings about the trauma event. To help you do this, put yourself back in the situation again and see if you can remember how you felt. Don't hold back, feel free to write anything you want, and try to find words which would best describe your deepest thoughts and feelings at the time the trauma event happened.
2. Having experienced the trauma please write about how it has affected your day-to-day living, work and social life in the subsequent days and weeks since the trauma occurred. Please write about whether it has caused you to change aspects/priorities of your life that were important to you? Please write about how this makes you feel inside.

Day 3

During today's twenty minute writing session we would like you to please write about three things:

1. About how you feel today, right now, about the trauma event and all that has happened around it. Don't think about past feelings; just concentrate on how you are feeling today, at the present time. So please write about these present time feelings, expressing yourself freely and find words that best describe your deepest thoughts and feelings about the trauma now.
2. Please write about how you think you are dealing/coping with this change in your life.
3. And finally, looking at the whole event, the trauma and subsequent changes around it, is there anything you have learned about yourself and how you would deal with future events like this should they happen again in your life. Would you do/say anything different, and what have you taken from this event that may be helpful for your future ability to cope with something again.

2.5.2 Control condition

Writing instructions for participants in the control condition replicated those used by Sloan et al. (2008) and are similar to most expressive writing studies. Participants were required to write continuously for twenty minutes over three consecutive days using the following instructions:

Day 1-3

Please write about how you spent your time today. Please do not include any emotions or opinions in your writing but simply write about what you have done during the day. It is very important that you write continuously for twenty minutes. Please do not discuss your writing with anyone else who is taking part in the study.

On the evening of the last day of writing participants in both conditions were asked to open the envelope marked 'DAILY DIARY' and complete day one of the 7-day Daily Diary. Participants were asked to complete the Diary, each evening ('ideally before bedtime') for seven days before posting back. This interval-contingent method was employed to increase motivation and compliance with the diary protocol. Recent studies successfully utilising diary methodologies (e.g. O'Connor et al., 2008) have favoured this approach over event-contingent methods since it has been shown to reduce participant burden, thereby increasing motivation without compromising reliability (Green, et al., 2006). Two months after the commencement of the study participants were required to complete a further 7-day Daily Diary.

Participants were asked to provide a mobile telephone number (optional) which was used solely for the purpose of texting reminders to participants to send back their Daily Diaries. Two reminders were sent to participants who provided a mobile number but had not returned their Diaries. Participants were fully debriefed on completion of the second 7-day Daily Diary. They were provided with a written debriefing sheet and an email address in which to contact the researcher if they wanted to discuss the study further (see Appendix). This was in common with procedures followed in all other stages of data collection.

2.5.3 Pilot study

The above protocol was piloted on two individuals prior to the beginning of the study and the period of formalised data collection. This process ensured participant information and instructions were adequate for acceptable adherence to the study.

2.6 Data analysis

The data were analysed using Hierarchical Linear Modeling (HLM) using HLM6 (Raudenbush, Bryk, Cheong, & Congdon Jr., 2004). Hierarchical linear modeling allows for variance in outcome variables to be analysed at multiple hierarchical levels. The data here contained a two level hierarchical structure with Level 1 being the within-person variation (e.g. daily patterns in the number and type of hassles experienced and in the mood and coping response of participants) and Level 2 being the between-person variability (e.g. condition, baseline depression, baseline stress and alexithymia scores). Level 1 variables were centered around the grand mean. The Level 2 variable, condition, was entered uncentered.

In order to explore the moderating effects of the additional Level 2 variables (baseline depression, baseline stress and alexithymia) on writing, a median split was performed on baseline scores obtained for these data to produce two groups for each variable (e.g. high/low alexithymia, high/low depression, high/low stress). Two separate HLM data files were produced for each Level 2 variable so data could be analysed for each high/low group independently. The final stage saw each high/low group split further into expressive writing and control conditions. Separate HLM data files were produced within each high/low group for both writing conditions and Level 1 analysis was repeated. This allowed for comparisons to be made between the writing conditions for each high/low group.

The hierarchical linear model was designed to run so that the main effect of writing condition on mood/coping outcome variables could be observed simultaneously with cross-level interactions of writing condition on the daily hassles-mood/coping relationship. As a result, the different research questions for this study were answered in one model. The model then required examination of the different component parts to extract data relevant to the separate research hypotheses. The first step explored whether there was a main effect of writing condition on mood/coping whilst the second step required

examination of the cross-level interactions between writing condition and the daily hassles-mood/coping relationship.

In order to do this, the day-to-day within-person effects of daily hassles on the mood and coping (Level 1 variables) were modelled, together with the impact of writing condition (Level 2 variable) on mood and coping. Finally, in order to observe the effects of the moderating (Level 2) variables (baseline depression, baseline stress and alexithymia) on the writing condition-mood/coping associations (Step 1) and the cross-level interactions between writing condition and daily hassles-mood/coping associations (Step 2) the analysis above was repeated for each of the separate high/low data files for each of the three potential moderating variables. The general form for the model equation is below:

$$\begin{aligned} \text{Level 1:} \quad & \gamma_{ij} = \beta_0 + \beta_1 (\text{daily hassles}) + r_{ij} \\ \text{Level 2:} \quad & \beta_0 = \gamma_{00} + \gamma_{01} (\text{writing condition}) \\ & \beta_1 = \gamma_{10} + \gamma_{11} (\text{writing condition}) \end{aligned}$$

In this model, γ_{00} indicates the mean level of the mood or coping variable, and γ_{01} (writing condition) indicates the extent to which this average is influenced by the writing condition (the main effect). Similarly, γ_{10} indicates the average size of the relationship between daily hassles and the mood/coping variables, and γ_{11} (writing condition) indicates the extent to which that relationship is moderated by (or conditional on) writing condition. For ease of interpretation, output derived from the model will be broken down into the component interactions detailed above and subsequent analysis will be presented under the appropriate sub-heading for each of the study's hypotheses. Analysis will be reported for both Time 1 (baseline) and Time 2 (2-month follow-up).

In addition, a series of repeated measures ANOVAs for a mixed design were performed using the scale scores from the Time 1 and Time 2 DAS-21 measure, in order to provide additional information about the relationships between time and writing condition for each variable. These results will be reported under main effects of writing condition on mood/coping variables.

RESULTS

3.1 Overview

The primary two aims of the current research were to investigate the effect of writing condition (GDP, control) on a number of mood (negative, positive, daily mood rating, stress score) and coping (maladaptive, adaptive, positive reframing, acceptance, humour, religion) outcome variables. It was expected that individuals who engaged in expressive writing would experience more negative mood than controls immediately following writing but that this trend would be reversed at follow-up such that expressive writers would be expected to show less negative mood than controls. In addition, it was expected that expressive writers would show greater use of adaptive coping strategies and less use of maladaptive strategies than controls.

A third aim of this research was to consider whether the relationship between daily hassles and mood/coping variables is moderated by writing condition. For instance, it was expected that expressive writers would experience negative mood in response to daily hassles than participants in the control condition. In addition it was expected that expressive writers would utilise more adaptive coping strategies and less maladaptive coping strategies in response to daily hassles as compared to controls.

The final three supplementary aims of this research were to investigate the impact of moderating variables (baseline depression, stress, alexithymia) on both the writing condition-mood/coping relationship but also on the interaction of writing condition on the daily hassles-mood/coping association. It was expected that individuals who are high in stress or high in depression would benefit more from expressive writing than participants who score low on baseline measures of depression or stress (e.g. showing less negative mood either as a main effect of writing and in response to daily hassles at Time 2). In addition, it was expected that alexithymia might moderate the impact of writing although it was unclear at the outset in which direction this might be.

The results section is divided into seven main areas in order to answer the research questions described above: data preparation, main effects of writing on mood/coping, impact of writing on daily hassles-mood/coping relationship, moderating impact of high/low depression, moderating impact of high/low stress and moderating impact of alexithymia. The chapter will conclude with a summary of the findings.

3.2 Data Preparation

Prior to analysis data were screened for outliers and missing values using box plots. Outlying scores were cross-referenced against the original data to check for accuracy of inputting. Outliers were retained for analysis.

3.2.1 Randomisation

To investigate the adequacy of randomisation, participants assigned to the two writing conditions were compared on demographic (age) and baseline questionnaire measures (depression, stress, and alexithymia) using multivariate analysis of variance (MANOVA). No significant between-group differences were found ($F(6,81) = .86$, ns). Tables 1 and 2 show descriptive statistics for main Level 1 and Level 2 study variables at Time 1 and Time 2. The average number of hassles per day across the two writing conditions for both Time 1 and Time 2 (Mean range = 2.40-2.77) was high compared to other studies utilising diary methodology suggesting that task engagement was high (O'Connor, et al., 2008). Observations of the histogram and frequency data showed near normal distribution and therefore a prior decision was made to retain hassles data as scale scores.

Table 1

Descriptive statistics for daily (Level 1) and between-person (Level 2) measures at Time 1

| Level and variable | GDP (n = 43) | | Control (n = 45) | |
|---------------------------------|--------------|-------|------------------|-------|
| | M | SD | M | SD |
| Level 1 | | | | |
| Total number of hassles per day | 2.52 | 1.77 | 2.77 | 1.90 |
| Stress score | 5.69 | 4.39 | 5.60 | 4.19 |
| Mood rating | 6.33 | 1.53 | 6.63 | 1.29 |
| Negative mood | 8.01 | 3.91 | 7.40 | 3.15 |
| Positive mood | 13.17 | 4.34 | 14.25 | 3.96 |
| Maladaptive coping | 11.71 | 3.10 | 10.88 | 2.98 |
| Adaptive coping | 7.23 | 2.49 | 7.40 | 2.13 |
| Positive reframing | 2.52 | 1.03 | 2.42 | 0.95 |
| Acceptance | 2.20 | 0.96 | 2.18 | 0.95 |
| Humour | 1.92 | 1.04 | 1.89 | 0.97 |
| Religion | 1.37 | .781 | 1.31 | 0.82 |
| Level 2 | | | | |
| Age | 36.09 | 15.08 | 36.91 | 15.54 |
| DAS Total Score | 14.00 | 8.60 | 11.80 | 6.62 |
| DAS Stress Scale Score | 7.79 | 3.93 | 6.93 | 3.37 |
| DAS Depression Scale Score | 3.88 | 3.36 | 3.02 | 2.86 |
| DAS Anxiety Scale Score | 2.33 | 3.19 | 1.84 | 2.24 |
| TAS Total Score | 43.84 | 10.26 | 42.34 | 8.90 |

Note. M = mean; SD = standard deviation; n = number of participants.

Table 2

Descriptive statistics for daily (Level 1) and additional between-person (Level 2) measures at Time 2

| Level and variable | GDP (n = 32) | | Control (n = 39) | |
|---------------------------------|--------------|------|------------------|------|
| | M | SD | M | SD |
| Level 1 | | | | |
| Total number of hassles per day | 2.40 | 1.80 | 2.48 | 1.80 |
| Stress score | 5.65 | 4.34 | 5.06 | 4.18 |
| Mood rating | 6.21 | 1.61 | 6.68 | 1.29 |
| Negative mood | 8.66 | 4.52 | 7.22 | 3.14 |
| Positive mood | 13.25 | 4.64 | 13.84 | 3.73 |
| Maladaptive coping | 10.56 | 2.98 | 10.64 | 3.19 |
| Adaptive coping | 6.96 | 2.22 | 7.36 | 2.31 |
| Positive reframing | 2.16 | 1.00 | 2.21 | 0.89 |
| Acceptance | 1.95 | 0.94 | 1.92 | 0.93 |
| Humour | 1.80 | 1.07 | 1.74 | 0.88 |
| Religion | 1.31 | 0.71 | 1.22 | 0.69 |
| Level 2 | | | | |
| DAS T2 Total Score | 15.78 | 9.91 | 13.21 | 7.96 |
| DAS T2 Stress Scale Score | 9.06 | 4.37 | 8.08 | 4.31 |
| DAS T2 Depression Scale Score | 3.88 | 3.88 | 2.72 | 2.26 |
| DAS T2 Anxiety Scale Score | 2.84 | 3.00 | 2.41 | 2.79 |

Note. M = mean; SD = standard deviation; n = number of participants

3.3 Main effects of writing condition on mood and coping

Initial analysis explored whether there was a main effect of writing on mood and coping. All variables that were entered into the model for analysis were significantly different from 0 ($p < .001$). Mood was examined by using the negative and positive scales on the adapted PANAS. In addition, further negative mood indicators were examined in the form of the daily mood rating (mood rating) and the total stress score (stress score).

Coping variables were measured utilising the higher order scales of maladaptive and adaptive coping based on the Brief COPE as previously discussed (see Method) in addition to separate analysis of items relating to positive reframing, acceptance, humour and religion.

The results at Time 1 for each model are presented in Table 3. The results showed no significant main effect of condition on either mood or coping at Time 1, although there was a trend towards a main effect of condition on positive mood (Coeff = 1.050, $p = .078$) such that those in the control writing condition (M = 14.25, SD = 3.96) experienced more positive mood following writing than those in the expressive writing condition (M = 13.17, SD = 4.34).

Table 3

Main effects of writing condition (GDP, control) on daily mood and coping at Time 1

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|----------|
| Negative mood | β_{01} | -0.518 | 0.527 | .329 |
| Positive mood | β_{01} | 1.050 | 0.589 | .078 |
| Mood rating | β_{01} | 0.295 | 0.190 | .124 |
| Stress score | β_{01} | -0.135 | 0.683 | .844 |
| Maladaptive coping | β_{01} | -0.282 | 0.504 | .578 |
| Adaptive coping | β_{01} | 0.207 | 0.261 | .430 |
| Positive reframing | β_{01} | -0.108 | 0.145 | .459 |
| Acceptance | β_{01} | -0.022 | 0.136 | .871 |
| Humour | β_{01} | -0.019 | 0.152 | .902 |
| Religion | β_{01} | 0.001 | 0.165 | .992 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

However, a main effect of writing condition on negative mood at Time 2 reached significance (Coeff = -1.310, $p < .05$) such that participants who engaged in expressive writing ($M = 8.66$, $SD = 4.52$) showed significantly greater negative mood than controls ($M = 7.22$, $SD = 3.14$) (see Table 4). In addition, a main effect of writing condition on mood rating at Time 2 also nearly reached conventional statistical significance (Coeff = 0.416, $p = .05$). Again, examination of the means suggest that individuals in the expressive writing condition ($M = 6.24$, $SD = 1.67$) reported significantly lower daily mood ratings than participants in the control condition ($M = 6.70$, $SD = 1.30$).

Table 4

Main effects of writing condition (GDP, control) on mood and coping at Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>P</i> |
|--------------------------|--------------|--------|-------|----------------|
| Negative mood | β_{01} | -1.310 | 0.605 | <.05 |
| Positive mood | β_{01} | 0.423 | 0.680 | .536 |
| Mood rating | β_{01} | 0.416 | 0.209 | =.05 |
| Stress score | β_{01} | -0.698 | 0.761 | .363 |
| Maladaptive coping | β_{01} | 0.226 | 0.603 | .709 |
| Adaptive coping | β_{01} | 0.378 | 0.371 | .313 |
| Positive reframing | β_{01} | 0.005 | 0.143 | .975 |
| Acceptance | β_{01} | 0.025 | 0.157 | .873 |
| Humour | β_{01} | -0.013 | 0.149 | .934 |
| Religion | β_{01} | -0.044 | 0.149 | .771 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.3.1 Main effect of writing condition (GDP, control) on mood over time

The main effect of writing on mood was subject to further analysis to determine the effect of writing on mood over time (pre- and post- writing). Baseline data obtained from the DAS-21 (total score and 3 x subscales: depression, stress and anxiety) prior to writing were compared against follow-up DAS-21 data (Time 2) obtained two months after writing. Repeated measures ANOVAs for a mixed design were performed on these data for each of the dependent variables (DAS-21 total score, depression, stress, anxiety subscales).

There was a main effect of time on DAS-21 total score, such that scores on the DAS-21 significantly increased, regardless of writing condition, between Time 1 (means: GDP = 13.06, control = 10.92) and Time 2 (means: GDP = 15.78, control = 13.21) ($F(1, 69) = 6.415, p < .05$). In addition there was a main effect of time on both the anxiety ($F(1, 69) = 6.746, p < .05$) and stress ($F(1, 69) = 5.571, p < .05$) subscales of the DAS-21 such that there were significant increases in both anxiety (anxiety means: Time 1: GDP = 2.00, control = 1.59; Time 2: GDP = 2.84, control = 2.41) and stress (stress means: Time 1: GDP = 7.81, control = 6.77; Time 2: GDP = 9.06, control = 8.08) between Time 1 and Time 2 for participants regardless of writing condition. No main effect of time was found on depression ($F(1, 69) = 1.217, ns$).

However, no significant interaction was found between writing condition and time for DAS total score ($F(1,69) = .049, ns$). In addition, there was no significant interaction effect between writing condition and time for the depression subscale ($F(1, 69) = .445, ns$), the stress subscale ($F(1, 69) = .003, ns$) or the anxiety subscale ($F(1, 69) = .001, ns$) suggesting that writing condition had no impact on mood changes found at Time 1 and Time 2.

3.4 Effects of writing condition on the daily hassles-mood/coping relationship

3.4.1 Daily hassles-mood/coping relationship at Time 1

The daily hassles-mood/coping relationship is detailed by the HLM coefficient β_{10} (see Table 5). At Time 1, daily hassles were significantly associated with a number of mood variables including negative mood, mood rating and stress score ($p < .05$). Such that on days participants experienced more hassles, they also reported greater negative mood, lower mood ratings and increased stress scores. In addition daily hassles were also associated with a number of coping variables including adaptive coping, acceptance, humour and

religion ($p < .05$) suggesting that on days where individuals experienced more hassles they reported greater use of adaptive coping strategies and increased use of acceptance, humour, and religion. In addition, there was a trend towards daily hassles being associated with maladaptive coping ($p = .088$), such that more maladaptive coping was reported in response to increases in daily hassles.

3.4.2 Cross-level interaction with writing condition at Time 1

In addition the model tested whether the daily hassles-mood/coping relationship (detailed in terms of slope) was moderated by the writing condition to which individuals were assigned. This interaction is detailed in the model by the HLM coefficient β_{11} . We hypothesised that expressive writing may moderate the daily hassles–negative mood relationship such that individuals who engage in expressive writing may experience less negative mood as a result of daily hassles. Table 5 indicates that there was indeed a significant daily hassles-negative mood relationship moderated by writing (Coeff = -0.403, $p < .05$). As a result, further analysis should be performed on this data to determine the nature of this association. The only other variable to achieve near statistical significance and thus warrant further investigation at Time 1 was the coping variable acceptance, such that the daily hassles-acceptance coping relationship was moderated by writing condition (Coeff = -0.112, $p = .05$). These results are presented after the analysis at Time 2.

3.4.3 Daily hassles-mood/coping relationship at Time 2

The above process was repeated for Time 2 variables (see Table 6). At Time 2, a number of mood variables were significantly associated with daily hassles including negative mood, mood rating and stress score ($p < .05$). Such that on days where individuals' experienced more hassles they reported more negative mood, lower mood ratings and greater stress. The only coping variable to reach conventional levels of statistical significance was adaptive coping ($p < .05$), such that individuals reported more use of adaptive coping as daily hassles increased. In addition, there was a trend towards associations between daily hassles and maladaptive coping, positive reframing and acceptance, such that on days with more daily hassles reported, participants also reported greater use of maladaptive, positive reframing and acceptance coping strategies.

Table 5

The association of daily hassles on mood and coping (β_{10}), and as a function of writing condition (β_{11}) at Time 1

| MRCM: Dependent variable | Symbol | Coeff | SE | p |
|---|--------------|--------|-------|-----------------|
| hassles-negative mood slope | β_{10} | 0.774 | 0.153 | <.001 |
| Condition by hassles-negative mood | β_{11} | -0.403 | 0.202 | <.05 |
| hassles- positive mood slope | β_{10} | -0.164 | 0.190 | .390 |
| Condition by hassles-positive mood | β_{11} | 0.179 | 0.250 | .477 |
| hassles-mood rating slope | β_{10} | -0.263 | 0.067 | <.001 |
| Condition by hassles-mood rating | β_{11} | 0.096 | 0.089 | .282 |
| hassles-stress score slope | β_{10} | 2.061 | 0.145 | <.001 |
| Condition by hassles-stress score | β_{11} | -0.239 | 0.197 | .230 |
| hassles-maladaptive coping slope | β_{10} | 0.202 | 0.117 | .088 |
| Condition by hassles-maladaptive coping | β_{11} | -0.013 | 0.155 | .935 |
| hassles-adaptive coping slope | β_{10} | 0.270 | 0.080 | =.001 |
| Condition by hassles-adaptive coping | β_{11} | 0.016 | 0.106 | .882 |
| hassles-positive reframing slope | β_{10} | 0.026 | 0.049 | .586 |
| Condition by hassles-positive reframing | β_{11} | 0.060 | 0.066 | .361 |
| hassles-acceptance slope | β_{10} | 0.128 | 0.043 | <.01 |
| Condition by hassles-acceptance | β_{11} | -0.112 | 0.057 | =.05 |
| hassles-humour slope | β_{10} | 0.190 | 0.042 | <.001 |
| Condition by hassles-humour | β_{11} | -0.069 | 0.057 | .228 |
| hassles-religion slope | β_{10} | 0.056 | 0.023 | <.05 |
| Condition by hassles-religion | β_{11} | -0.027 | 0.031 | .392 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.4.4 Cross-level interaction with writing condition at Time 2

At Time 2 the only daily hassles-mood/coping relationship that appeared to be moderated by writing condition was stress score (Coeff. = -0.603, $p < .01$). We hypothesised that expressive writing may moderate the daily hassles–stress score relationship such that individuals who engage in expressive writing may experience less perceived stress as a result of daily hassles as compared to controls. Table 6 indicates that there is indeed a significant daily hassles-stress score relationship moderated by writing at time 2 ($p < .05$) suggesting that further analysis should be performed on this data to determine the nature of this association. The results from this analysis will follow in the next section.

Table 6

The daily hassles-mood/coping relationship (β_{10}), and as moderated by writing condition (β_{11}) at Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|---|--------------|--------|-------|----------|
| hassles-negative mood slope | β_{10} | 0.673 | 0.216 | <.01 |
| Condition by hassles-negative mood | β_{11} | -0.184 | 0.288 | .524 |
| hassles- positive mood slope | β_{10} | -0.336 | 0.245 | .174 |
| Condition by hassles-positive mood | β_{11} | 0.364 | 0.327 | .270 |
| hassles-mood rating slope | β_{10} | -0.400 | 0.095 | <.001 |
| Condition by hassles-mood rating | β_{11} | 0.159 | 0.127 | .215 |
| hassles-stress score slope | β_{10} | 2.547 | 0.154 | <.001 |
| Condition by hassles-stress score | β_{11} | -0.603 | 0.206 | <.01 |
| hassles-maladaptive coping slope | β_{10} | 0.347 | 0.174 | =.05 |
| Condition by hassles-maladaptive coping | β_{11} | 0.011 | 0.233 | .963 |
| hassles-adaptive coping slope | β_{10} | 0.482 | 0.147 | <.01 |
| Condition by hassles-adaptive coping | β_{11} | 0.234 | 0.197 | .240 |
| hassles-positive reframing slope | β_{10} | 0.107 | 0.059 | .074 |
| Condition by hassles-positive reframing | β_{11} | 0.106 | 0.079 | .187 |
| hassles-acceptance slope | β_{10} | 0.108 | 0.059 | .070 |
| Condition by hassles-acceptance | β_{11} | -0.108 | 0.079 | .174 |
| hassles-humour slope | β_{10} | 0.052 | 0.056 | .355 |
| Condition by hassles-humour | β_{11} | 0.032 | 0.074 | .671 |
| hassles-religion slope | β_{10} | 0.021 | 0.021 | .331 |
| Condition by hassles-religion | β_{11} | -0.049 | 0.028 | .086 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.4.5 Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions

Where a cross-level interaction between daily hassles-coping/mood was found, analysis was re-run separately on the expressive writing and control conditions in order to explore the nature of the interaction. At Time 1 cross-level interactions for daily hassles-mood/coping variables were found for daily hassles-negative mood and daily hassles-acceptance coping and so both were subject to the further analysis. The results shown in Table 7 indicate that the significant positive relationship between daily hassles and negative mood remained in both writing conditions but the relationship was stronger in the expressive writing condition (Coeff. = 0.775, $p < .001$) than in the control writing condition (Coeff. = 0.362, $p < .001$).

For acceptance however, there was a marked degree of difference between the writing conditions in the daily hassles-acceptance relationship. A significant positive daily

hassles-acceptance relationship was found when individuals engaged in the expressive writing condition (Coeff. = 0.129, $p < .01$) but not in the control condition (Coeff. = 0.014 $p < .705$). Therefore, the marginally significant daily hassles-acceptance coping cross-level interaction at Time 1 is accounted for by the impact of expressive writing on the relationship.

At Time 2 there were no significant daily hassles/mood-coping cross-level interactions. However, there was a trend towards significance for a daily hassles-stress score cross-level interaction which warranted further investigation ($p = .05$). As above, analysis was re-run separately for the expressive writing and control conditions. The results, shown in Table 7, indicated that a highly significant positive daily hassles-stress score relationship remained for each writing condition but that the association was stronger for expressive writers (Coeff = 2.537, $p < .001$) than the control (Coeff = 1.967, $p < .001$).

Table 7

Associations between daily hassles and mood/coping at Time 1 and 2 separately in the GDP and control writing conditions

| MRCM: Dependent variable | Symbol | Coeff | SE | p |
|-----------------------------------|--------------|-------|-------|-------|
| Time 1 | | | | |
| Negative mood | | | | |
| <i>GDP intercept</i> | β_{00} | 7.997 | 0.421 | <.001 |
| Level 1 slope | β_{10} | 0.775 | 0.165 | <.001 |
| <i>Control intercept</i> | β_{00} | 7.503 | 0.326 | <.001 |
| Level 1 slope | β_{10} | 0.362 | 0.125 | <.001 |
| Acceptance coping | | | | |
| <i>GDP intercept</i> | β_{00} | 2.201 | 0.092 | <.001 |
| Level 1 slope | β_{10} | 0.129 | 0.044 | <.01 |
| <i>Control intercept</i> | β_{00} | 2.179 | 0.102 | <.001 |
| Level 1 slope | β_{10} | 0.014 | 0.036 | .705 |
| Time 2 | | | | |
| Total perceived stress of hassles | | | | |
| <i>GDP intercept</i> | β_{00} | 5.615 | 0.548 | <.001 |
| Level 1 slope | β_{10} | 2.537 | 0.136 | <.001 |
| <i>Control intercept</i> | β_{00} | 4.915 | 0.524 | <.001 |
| Level 1 slope | β_{10} | 1.967 | 0.151 | <.001 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.5 The effect of baseline depression on the main effect of writing condition (GDP, control) on mood and coping

To investigate the hypothesis that individuals who are higher in negative mood prior to expressive writing benefit more from the expressive writing intervention than people who have less low mood a median split was performed on baseline DAS depression scale scores which were obtained from participants prior to writing. Two depression mood groups were formed: high ($n = 44$) and low ($n = 44$). The HLM analysis which had previously been performed on the whole data set was performed on each group separately. Initial observations show that all variables investigated were again significantly different from 0 ($p < .001$).

The main effect of writing on mood/coping for the high depression group is depicted in the model by the symbol (β_{01}) and is shown in Table 8. No significant main effects of writing at Time 1 were found however there was a trend towards a negative main effect of writing on negative mood (Coeff = -1.830, $p = .070$) such that expressive writers who were in the high depression group experienced more negative mood in response to writing ($M = 8.91$, $SD = 4.95$) than controls in the same group ($M = 7.31$, $SD = 2.91$). In addition, there was a trend towards a main effect of writing on religion (Coeff = -0.379, $p = .094$) such that writers in the experimental condition used more religious coping strategies ($M = 1.29$, $SD = 0.74$) compared to controls ($M = 1.08$, $SD = .30$). At Time 2, there was a significant main effect of writing on negative mood (Coeff = -1.968, $p < .05$). Observations of the means suggests that this was not in the direction hypothesised and that negative mood was higher in the experimental group ($M = 9.08$, $SD = 4.92$) compared to the control group ($M = 7.02$, $SD = 3.00$).

For the low depression group, there were no significant main effects of writing condition on mood/coping variables at Time 1 or Time 2. Furthermore, no trends were found (see Table 9). This finding suggests that there is only a significant main effect of writing condition on negative mood at Time 2 for participants high in baseline depression but that the differences are not evident for participants low in baseline depression.

Table 8

Main effects of writing condition (GDP, control) on mood and coping for Time 1 and Time 2 for the high depression group

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|----------------|
| Negative mood | | | | |
| Time 1 | β_{01} | -1.830 | 0.977 | .070 |
| Time 2 | β_{01} | -1.968 | 0.934 | <.05 |
| Positive mood | | | | |
| Time 1 | β_{01} | 1.403 | 0.852 | .109 |
| Time 2 | β_{01} | 0.913 | 0.972 | .355 |
| Mood rating | | | | |
| Time 1 | β_{01} | 0.451 | 0.317 | .164 |
| Time 2 | β_{01} | 0.575 | 0.285 | .052 |
| Stress score | | | | |
| Time 1 | β_{01} | 0.312 | 1.183 | .794 |
| Time 2 | β_{01} | -0.164 | 1.068 | .879 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | -0.584 | 0.894 | .518 |
| Time 2 | β_{01} | -0.024 | 0.855 | .978 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | 0.381 | 0.556 | .498 |
| Time 2 | β_{01} | 0.556 | 0.470 | .246 |
| Positive reframing | | | | |
| Time 1 | β_{01} | -0.181 | 0.246 | .468 |
| Time 2 | β_{01} | 0.084 | 0.202 | .679 |
| Acceptance | | | | |
| Time 1 | β_{01} | -0.153 | 0.206 | .462 |
| Time 2 | β_{01} | -0.242 | 0.200 | .233 |
| Humour | | | | |
| Time 1 | β_{01} | -0.124 | 0.236 | .604 |
| Time 2 | β_{01} | -0.254 | 0.191 | .194 |
| Religion | | | | |
| Time 1 | β_{01} | -0.379 | 0.220 | .094 |
| Time 2 | β_{01} | -0.025 | 0.171 | .159 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

Table 9

Main effects of writing condition (GDP, control) on mood and coping for Time 1 and Time 2 for the low depression group

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|----------|
| Negative mood | | | | |
| Time 1 | β_{01} | 0.617 | 0.743 | .412 |
| Time 2 | β_{01} | -1.043 | 0.714 | .153 |
| Positive mood | | | | |
| Time 1 | β_{01} | -0.157 | 0.993 | .876 |
| Time 2 | β_{01} | -0.200 | 0.863 | .818 |
| Mood rating | | | | |
| Time 1 | β_{01} | 0.068 | 0.242 | .779 |
| Time 2 | β_{01} | 0.366 | 0.301 | .232 |
| Stress score | | | | |
| Time 1 | β_{01} | -0.184 | 0.940 | .846 |
| Time 2 | β_{01} | -0.743 | 1.075 | .494 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | 0.229 | 0.706 | .747 |
| Time 2 | β_{01} | 0.258 | 0.805 | .750 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | -0.174 | 0.507 | .733 |
| Time 2 | β_{01} | 0.216 | 0.556 | .700 |
| Positive reframing | | | | |
| Time 1 | β_{01} | 0.041 | 0.204 | .839 |
| Time 2 | β_{01} | 0.059 | 0.202 | .773 |
| Acceptance | | | | |
| Time 1 | β_{01} | 0.306 | 0.202 | .139 |
| Time 2 | β_{01} | 0.185 | 0.233 | .433 |
| Humour | | | | |
| Time 1 | β_{01} | 0.160 | 0.218 | .469 |
| Time 2 | β_{01} | 0.136 | 0.220 | .541 |
| Religion | | | | |
| Time 1 | β_{01} | -0.015 | 0.286 | .960 |
| Time 2 | β_{01} | -0.003 | 0.250 | .991 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.5.1 Effects of daily hassles on mood/coping in high depression group

At Time 1, daily hassles were found to be significantly associated with a number of mood/coping variables: negative mood, mood rating, stress score, adaptive coping and humour such that on days where participants experience more hassles they also report more negative mood, lower mood ratings and greater stress. In addition they report greater use of adaptive coping and humour in response to increases in hassles. There was also a trend towards a significant daily hassles-positive reframing association, such that

participants report greater use of a positive reframing coping strategy on days when they experience more hassles. At Time 2, there was a significant daily hassles-stress score relationship such that greater stress was reported on days of greatest hassles and a trend towards daily hassles being associated with both adaptive coping and religion (see Table 10).

3.5.2 Cross-level interaction with writing condition in high depression group

Examination of the daily hassles-mood/coping cross-level interactions with writing condition for the high depression group, found no statistically significant cross-level interactions but there was a trend towards a significant cross-level interaction between daily hassles-negative mood and writing condition (Coeff = -0.666, $p = .060$) at Time 1 and between daily hassles-positive reframing (Coeff = 0.191, $p = .093$) and daily hassles-religion (Coeff = -0.088, $p = .064$) and writing condition at Time 2 (see Table 10). Variables where cross-level interactions were found were subjected to further analysis to determine the nature of the daily-hassles-mood/coping relationships in each writing condition. The results from this analysis are reported in the next section after the results for the low depression group.

Table 10

The daily hassles-mood/coping relationship (β_{10}), and as moderated by writing condition (β_{11}) in the high depression group at Time 1 and 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|---|--------------|--------|-------|-----------------|
| Level 1 slope (<i>hassles-negative mood</i>) | | | | |
| Time 1 | β_{10} | 1.110 | 0.259 | <.001 |
| Time 2 | β_{10} | 0.268 | 0.305 | .386 |
| Cross-level interaction (<i>cond. x hassles-negative mood</i>) | | | | |
| Time 1 | β_{11} | -0.666 | 0.342 | .060 |
| Time 2 | β_{11} | 0.297 | 0.407 | .470 |
| Level 1 slope (<i>hassles-positive mood</i>) | | | | |
| Time 1 | β_{10} | -0.274 | 0.322 | .401 |
| Time 2 | β_{10} | -0.390 | 0.302 | .206 |
| Cross-level interaction (<i>cond. x hassles-positive mood</i>) | | | | |
| Time 1 | β_{11} | 0.214 | 0.424 | .616 |
| Time 2 | β_{11} | -0.164 | 0.400 | .685 |
| Level 1 slope (<i>hassles-mood rating</i>) | | | | |
| Time 1 | β_{10} | -0.344 | 0.120 | <.05 |
| Time 2 | β_{10} | -0.196 | 0.132 | .146 |
| Cross-level interaction. (<i>cond. x hassles-mood rating</i>) | | | | |
| Time 1 | β_{11} | 0.182 | 0.162 | .269 |
| Time 2 | β_{11} | -0.151 | 0.181 | .411 |
| Level 1 slope (<i>hassles-stress score</i>) | | | | |
| Time 1 | β_{10} | 1.785 | 0.229 | <.001 |
| Time 2 | β_{10} | 2.486 | 0.216 | <.001 |
| Cross-level interaction. (<i>cond. x hassles-stress score</i>) | | | | |
| Time 1 | β_{11} | 0.265 | 0.310 | .401 |
| Time 2 | β_{11} | -0.342 | 0.299 | .262 |
| Level 1 slope (<i>hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.315 | 0.205 | .134 |
| Time 2 | β_{10} | 0.302 | 0.242 | .222 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.214 | 0.274 | .441 |
| Time 2 | β_{11} | -0.199 | 0.331 | .551 |
| Level 1 slope (<i>hassles- adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.439 | 0.170 | <.05 |
| Time 2 | β_{10} | 0.357 | 0.193 | .073 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.047 | 0.227 | .837 |
| Time 2 | β_{11} | 0.238 | 0.262 | .372 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |
| Time 1 | β_{10} | 0.150 | 0.081 | .074 |
| Time 2 | β_{10} | -0.044 | 0.082 | .593 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | -0.011 | 0.111 | .919 |
| Time 2 | β_{11} | 0.191 | 0.111 | .093 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |

| | | | | |
|---|--------------|--------|-------|------|
| Time 1 | β_{10} | 0.096 | 0.075 | .208 |
| Time 2 | β_{10} | 0.068 | 0.076 | .378 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.074 | 0.100 | .464 |
| Time 2 | β_{11} | -0.079 | 0.103 | .450 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.277 | 0.073 | <.01 |
| Time 2 | β_{10} | -0.038 | 0.085 | .657 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.128 | 0.099 | .201 |
| Time 2 | β_{11} | 0.126 | 0.114 | .275 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.056 | 0.038 | .147 |
| Time 2 | β_{10} | 0.066 | 0.034 | .063 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.031 | 0.051 | .542 |
| Time 2 | β_{11} | -0.088 | 0.046 | .064 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.5.3 Effects of daily hassles on mood/coping in low depression group

At Time 1, daily hassles were found to be significantly associated with a number of mood/coping variables: negative mood, mood rating, stress score and acceptance coping for those in the low depression group such that on days when individuals experienced greater hassles they also experienced more negative mood, lower mood ratings, more stress and greater reported use of acceptance coping. In addition there was a trend towards a significant daily hassles-adaptive coping and daily hassles-humour relationship such that when greater hassles were experienced increased use of adaptive coping and humour was reported. At Time 2, daily hassles were found to be significantly associated with negative mood, mood rating, stress score, adaptive coping and positive reframing and there was a trend towards daily hassles being associated with both maladaptive coping and acceptance (see Table 11).

3.5.4 Cross-level interaction with writing condition in low depression group

Examination of the daily hassles-mood/coping cross-level interactions with writing condition for the high depression group, found statistically significant cross-level interactions between daily hassles-stress score and writing condition at Time 1 (Coeff = -0.683, $p < .05$) and at Time 2 (Coeff = -0.943, $p < .001$) which required further investigation to determine the nature of the relationships within each writing condition (see Table 11).

In addition at Time 1, trends were found between daily hassles-positive reframing (Coeff = 0.209, $p = .053$) and daily hassles-acceptance (Coeff = -0.193, $p = .059$) cross-level interactions with writing condition which were also subjected to further analysis. This analysis is reported in the next section.

Table 11

The association of daily hassles on mood and coping (β_{10}), and as moderated by writing condition (β_{11}) in low depression group at Time 1 and 2.

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>P</i> |
|---|--------------|--------|-------|-----------------|
| Level 1 slope (<i>hassles-negative mood</i>) | | | | |
| Time 1 | β_{10} | 0.702 | 0.282 | <.05 |
| Time 2 | β_{10} | 0.909 | 0.317 | <.01 |
| Cross-level interaction (<i>cond. x hassles-negative mood</i>) | | | | |
| Time 1 | β_{11} | -0.334 | 0.338 | .330 |
| Time 2 | β_{11} | -0.420 | 0.422 | .327 |
| Level 1 slope (<i>hassles-positive mood</i>) | | | | |
| Time 1 | β_{10} | -0.085 | 0.307 | .785 |
| Time 2 | β_{10} | -0.241 | 0.358 | .505 |
| Cross-level interaction (<i>cond. x hassles-positive mood</i>) | | | | |
| Time 1 | β_{11} | 0.238 | 0.369 | .523 |
| Time 2 | β_{11} | 0.769 | 0.479 | .117 |
| Level 1 slope (<i>hassles-mood rating</i>) | | | | |
| Time 1 | β_{10} | -0.313 | 0.118 | <.05 |
| Time 2 | β_{10} | -0.459 | 0.147 | <.05 |
| Cross-level interaction. (<i>cond. x hassles-mood rating</i>) | | | | |
| Time 1 | β_{11} | 0.134 | 0.141 | .350 |
| Time 2 | β_{11} | 0.277 | 0.195 | .165 |
| Level 1 slope (<i>hassles-stress score</i>) | | | | |
| Time 1 | β_{10} | 2.293 | 0.273 | <.001 |
| Time 2 | β_{10} | 2.700 | 0.201 | <.001 |
| Cross-level interaction. (<i>cond. x hassles-stress score</i>) | | | | |
| Time 1 | β_{11} | -0.683 | 0.339 | <.05 |
| Time 2 | β_{11} | -0.943 | 0.267 | <.001 |
| Level 1 slope (<i>hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.070 | 0.211 | .741 |
| Time 2 | β_{10} | 0.389 | 0.224 | .090 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | 0.243 | 0.254 | .345 |
| Time 2 | β_{11} | 0.192 | 0.293 | .517 |
| Level 1 slope (<i>hassles- adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.371 | 0.199 | .069 |
| Time 2 | β_{10} | 0.472 | 0.231 | <.05 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.097 | 0.242 | .692 |
| Time 2 | β_{11} | 0.203 | 0.302 | .505 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |

| | | | | |
|---|--------------|--------|-------|------|
| Time 1 | β_{10} | -0.131 | 0.087 | .140 |
| Time 2 | β_{10} | 0.263 | 0.079 | <.05 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | 0.209 | 0.105 | .053 |
| Time 2 | β_{11} | 0.005 | 0.108 | .967 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |
| Time 1 | β_{10} | 0.229 | 0.082 | <.01 |
| Time 2 | β_{10} | 0.184 | 0.101 | .077 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.193 | 0.099 | .059 |
| Time 2 | β_{11} | -0.164 | 0.131 | .223 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.151 | 0.083 | .078 |
| Time 2 | β_{10} | 0.091 | 0.071 | .210 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.018 | 0.101 | .855 |
| Time 2 | β_{11} | -0.001 | 0.096 | .991 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.042 | 0.035 | .238 |
| Time 2 | β_{10} | 0.000 | 0.030 | .996 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.026 | 0.043 | .546 |
| Time 2 | β_{11} | -0.036 | 0.040 | .382 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.5.5 Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions in high/low depression groups

Where a cross-level interaction between daily hassles-coping/mood was found, analysis was re-run separately on the expressive writing and control conditions in order to explore the nature of the interaction. For the high depression group, negative mood was the only variable at Time 1 that was subject to further analysis. A significant positive daily hassles-negative mood relationship remained in both the expressive writing condition (Coeff = 1.087, $p < .01$) and the control (Coeff = 0.591, $p < .05$) but the relationship was stronger for expressive writers (see Table 12). At Time 2 in the high depression group, two variables were subject to further analysis: positive reframing and religion coping. The daily hassles-positive reframing relationship remained significant only in the control condition (Coeff = 0.143, $p < .05$) but not in the expressive writing condition (-0.084, $p = .408$, ns). Neither the expressive writing or the control condition reached significance for the daily

hassles-religion relationship however the association was positive in the expressive writing (Coeff = 0.067, $p = .148$) and negative in the control condition (Coeff = -0.019, $p = .535$).

In the low depression group, three variables, stress score, positive reframing and acceptance were subject to further analysis. A significant positive daily hassles-stress score relationship remained for both writing conditions but was stronger in the expressive writing (Coeff = 2.171, $p < .001$) than the control condition (Coeff = 1.653, $p < .001$). No significant daily hassles-positive reframing relationships were found for either the expressive writing (Coeff = -0.125, $p = .157$, ns) or the control conditions (Coeff = 0.069, $p = .279$). For acceptance coping only the expressive writing condition reached significance to the extent that there was a positive daily hassles-acceptance relationship (Coeff = 0.248, $p < .05$). This relationship was not found in the control condition (Coeff = 0.035, $p = .516$, ns).

At Time 2 both stress score and religion were subject to further analysis. Strong positive daily hassles-stress score relationships were found for both the expressive writing condition (Coeff = 2.602, $p < .001$) and the control condition (Coeff = 1.794, $p < .001$) but the relationship was stronger for expressive writers. The negative relationship between daily hassles-religion was not evident for the expressive writing condition (Coeff = -0.004, $p = .925$, ns) but there was a trend towards the relationship in the control condition (Coeff = -0.039, $p = .086$).

Table 12

Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions for high/low depression groups

| MRCM: Dependent variable and time | Symbol | Coeff | SE | <i>p</i> |
|-----------------------------------|--------------|--------|-------|-----------------|
| High Depression | | | | |
| Negative mood (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 8.887 | 0.853 | <.001 |
| Level 1 slope | β_{10} | 1.087 | 0.332 | <.01 |
| <i>Control intercept</i> | β_{00} | 7.290 | 0.440 | <.001 |
| Level 1 slope | β_{10} | 0.591 | 0.231 | <.05 |
| Positive reframing (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 2.215 | 0.149 | <.001 |
| Level 1 slope | β_{10} | -0.084 | 0.099 | .408 |
| <i>Control intercept</i> | β_{00} | 2.246 | 0.127 | <.001 |
| Level 1 slope | β_{10} | 0.143 | 0.060 | <.05 |
| Religion coping (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 1.333 | 0.163 | <.001 |
| Level 1 slope | β_{10} | 0.067 | 0.045 | .148 |
| <i>Control intercept</i> | β_{00} | 1.083 | 0.038 | <.001 |
| Level 1 slope | β_{10} | -0.019 | 0.029 | .535 |
| Low Depression | | | | |
| Total Stress (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 4.830 | 0.760 | <.001 |
| Level 1 slope | β_{10} | 2.171 | 0.204 | <.001 |
| <i>Control intercept</i> | β_{00} | 4.653 | 0.575 | <.001 |
| Level 1 slope | β_{10} | 1.653 | 0.222 | <.001 |
| Positive reframing (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 2.312 | 0.190 | <.001 |
| Level 1 slope | β_{10} | -0.125 | 0.084 | .157 |
| <i>Control intercept</i> | β_{00} | 2.354 | 0.109 | <.001 |
| Level 1 slope | β_{10} | 0.069 | 0.062 | .279 |
| Acceptance (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 1.898 | 0.151 | <.001 |
| Level 1 slope | β_{10} | 0.248 | 0.090 | <.05 |
| <i>Control intercept</i> | β_{00} | 2.204 | 0.130 | <.001 |
| Level 1 slope | β_{10} | 0.035 | 0.053 | .516 |
| Stress score (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 5.228 | 0.858 | <.001 |
| Level 1 slope | β_{10} | 2.602 | 0.194 | <.001 |
| <i>Control intercept</i> | β_{00} | 4.484 | 0.664 | <.001 |
| Level 1 slope | β_{10} | 1.794 | 0.185 | <.001 |
| Religion (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 1.311 | 0.146 | <.001 |
| Level 1 slope | β_{10} | -0.004 | 0.041 | .925 |
| <i>Control intercept</i> | β_{00} | 1.310 | 0.179 | <.001 |
| Level 1 slope | β_{10} | -0.039 | 0.022 | .086 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.6 The effect of baseline stress on the main effect of writing condition (GDP, control) on mood and coping

In order to examine the possibility that baseline stress might moderate the daily hassles-mood/coping relationship a median split on scores from the Stress Scale of the DAS-21 was performed. Two groups were created: high stress ($n = 34$) and low stress ($n = 54$). The uneven nature of the two groups was due to the number of subjects scoring around the median. The HLM analysis was then repeated on these data sets separately for each of the groups. For the group high in stress (see Table 13), significant main effects of writing condition on mood/coping were found for two variables at Time 1, positive mood ($p < .01$) and mood rating ($p < .05$) and a trend was found towards a main effect of writing condition on negative mood ($p < .063$). Examination of the means suggests that individuals in the expressive writing condition experienced less positive mood ($M = 12.36$, $SD = 4.60$) than the control group ($M = 15.60$, $SD = 3.90$) at Time 1. For mood rating, individuals in the expressive writing condition rated their day more negatively ($M = 5.98$, $SD = 1.69$) than those in the control condition ($M = 6.92$, $SD = 1.31$) and negative mood was greater in the expressive writing condition ($M = 9.41$, $SD = 5.34$) than in the control ($M = 6.78$, $SD = 2.66$).

At Time 2, significant main effects of writing on mood/coping was maintained for mood rating ($p < .05$) but now reached significance for negative mood ($p < .05$). No significant main effects or trends towards significance were found between writing condition and any additional mood/coping variables. Examination of the means showed that again, individuals in the expressive writing condition recorded lower daily mood ratings ($M = 6.04$, $SD = 1.87$) than the control ($M = 6.84$, $SD = 1.21$). Furthermore, those in the expressive writing condition also experienced higher negative mood ($M = 9.78$, $SD = 4.91$) than the control ($M = 6.87$, $SD = 3.04$) in line with the trend found at Time 1 (see Table 13).

Table 13

Main effects of writing condition (GDP, control) on mood and coping for Time 1 and Time 2 in the high stress group

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|----------------|
| Negative mood | | | | |
| Time 1 | β_{01} | -2.469 | 1.271 | .063 |
| Time 2 | β_{01} | -3.049 | 1.075 | <.05 |
| Positive mood | | | | |
| Time 1 | β_{01} | 3.189 | 1.070 | <.01 |
| Time 2 | β_{01} | 1.822 | 1.189 | .138 |
| Mood rating | | | | |
| Time 1 | β_{01} | 0.926 | 0.332 | <.05 |
| Time 2 | β_{01} | 0.831 | 0.384 | <.05 |
| Stress score | | | | |
| Time 1 | β_{01} | -1.794 | 1.682 | .297 |
| Time 2 | β_{01} | -1.407 | 1.483 | .353 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | -1.461 | 0.921 | .125 |
| Time 2 | β_{01} | -0.356 | 0.792 | .657 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | 0.407 | 0.692 | .562 |
| Time 2 | β_{01} | -0.159 | 0.591 | .790 |
| Positive reframing | | | | |
| Time 1 | β_{01} | -0.015 | 0.304 | .960 |
| Time 2 | β_{01} | 0.127 | 0.268 | .639 |
| Acceptance | | | | |
| Time 1 | β_{01} | -0.128 | 0.271 | .641 |
| Time 2 | β_{01} | -0.072 | 0.236 | .764 |
| Humour | | | | |
| Time 1 | β_{01} | -0.279 | 0.280 | .329 |
| Time 2 | β_{01} | -0.103 | 0.232 | .659 |
| Religion | | | | |
| Time 1 | β_{01} | -0.412 | 0.280 | .154 |
| Time 2 | β_{01} | -0.257 | 0.188 | .185 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

There were no significant main effects of writing condition on mood/coping variables at either Time 1 or Time 2 for those low in baseline stress (see Table 14). This suggests that the effects of writing condition on negative and positive mood variables and mood rating observed in the high stress condition are unique to this participant group and are not replicated in participants in the low stress group.

Table 14

Main effects of writing condition (GDP, control) on mood and coping for Time 1 and Time 2 in the low stress group.

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|----------|
| Negative mood | | | | |
| Time 1 | β_{01} | 0.477 | 0.621 | .446 |
| Time 2 | β_{01} | -0.724 | 0.671 | .287 |
| Positive mood | | | | |
| Time 1 | β_{01} | -0.645 | 0.775 | .410 |
| Time 2 | β_{01} | -0.182 | 0.820 | .825 |
| Mood rating | | | | |
| Time 1 | β_{01} | -0.130 | 0.228 | .572 |
| Time 2 | β_{01} | 0.286 | 0.237 | .234 |
| Stress score | | | | |
| Time 1 | β_{01} | 1.084 | 0.664 | .109 |
| Time 2 | β_{01} | 0.059 | 0.798 | .942 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | 0.529 | 0.680 | .440 |
| Time 2 | β_{01} | 0.259 | 0.807 | .749 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | -0.073 | 0.438 | .869 |
| Time 2 | β_{01} | 0.740 | 0.460 | .114 |
| Positive reframing | | | | |
| Time 1 | β_{01} | -0.129 | 0.185 | .488 |
| Time 2 | β_{01} | 0.029 | 0.166 | .860 |
| Acceptance | | | | |
| Time 1 | β_{01} | 0.184 | 0.171 | .288 |
| Time 2 | β_{01} | 0.019 | 0.204 | .927 |
| Humour | | | | |
| Time 1 | β_{01} | 0.236 | 0.183 | .205 |
| Time 2 | β_{01} | -0.032 | 0.190 | .865 |
| Religion | | | | |
| Time 1 | β_{01} | -0.040 | 0.229 | .862 |
| Time 2 | β_{01} | -0.000 | 0.200 | .998 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.6.1 Effects of daily hassles on mood/coping in high stress group

At Time 1, daily hassles were found to be significantly associated with a number of mood/coping variables: negative mood, mood rating, stress score, adaptive coping, acceptance and humour such that on days where more hassles are experienced, individuals report more negative mood, lower mood ratings, greater stress scores, and greater use of adaptive coping, acceptance coping and humour. At Time 2, daily hassles were found to be significantly associated with negative mood, stress score, maladaptive coping and

adaptive coping (see Table 15) such that at Time 2 on days where more hassles were experienced by participants more negative mood, greater stress scores, more maladaptive coping and more adaptive coping was reported.

3.6.2 Cross-level interaction with writing condition in high stress group

A statistically significant cross-level interaction between daily hassles-acceptance and writing condition (Coeff = -0.249, $p < .05$) was found in the high stress group at Time 1. In addition there was a trend towards a significant cross-level interaction between daily hassles-negative mood and writing condition (Coeff = -0.788, $p = .057$) which warranted further investigation (see Table 15). The results from these analyses are presented in the next section after findings from the low stress group. No cross-level interactions were found at Time 2 for the high stress group.

Table 15

The association of daily hassles on mood and coping (β_{10}), and as moderated by writing condition (β_{11}) in the high stress group at Time 1 and 2

| MRCM: Dependent variable | Symbol | Coeff | SE | p |
|--|--------------|--------|-------|-----------------|
| <i>Level 1 slope (hassles-negative mood)</i> | | | | |
| Time 1 | β_{10} | 1.207 | 0.289 | <.001 |
| Time 2 | β_{10} | 0.829 | 0.371 | <.05 |
| <i>Cross-level interaction (cond. x hassles-negative mood)</i> | | | | |
| Time 1 | β_{11} | -0.788 | 0.395 | .057 |
| Time 2 | β_{11} | -0.026 | 0.519 | .961 |
| <i>Level 1 slope (hassles-positive mood)</i> | | | | |
| Time 1 | β_{10} | -0.554 | 0.373 | .155 |
| Time 2 | β_{10} | -0.236 | 0.371 | .531 |
| <i>Cross-level interaction (cond. x hassles-positive mood)</i> | | | | |
| Time 1 | β_{11} | 0.592 | 0.513 | .260 |
| Time 2 | β_{11} | 0.816 | 0.522 | .131 |
| <i>Level 1 slope (hassles-mood rating)</i> | | | | |
| Time 1 | β_{10} | -0.776 | 0.132 | <.001 |
| Time 2 | β_{10} | -0.301 | 0.188 | .123 |
| <i>Cross-level interaction. (cond. x hassles-mood rating)</i> | | | | |
| Time 1 | β_{11} | 0.288 | 0.179 | .121 |
| Time 2 | β_{11} | 0.118 | 0.259 | .653 |
| <i>Level 1 slope (hassles-stress score)</i> | | | | |
| Time 1 | β_{10} | 2.102 | 0.272 | <.001 |
| Time 2 | β_{10} | 2.899 | 0.237 | <.001 |
| <i>Cross-level interaction. (cond. x hassles-stress score)</i> | | | | |
| Time 1 | β_{11} | 0.071 | 0.370 | .850 |
| Time 2 | β_{11} | -0.416 | 0.331 | .221 |
| <i>Level 1 slope (hassles-maladaptive coping)</i> | | | | |

| | | | | |
|---|--------------|--------|-------|------|
| Time 1 | β_{10} | 0.443 | 0.262 | .108 |
| Time 2 | β_{10} | 0.689 | 0.247 | <.05 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.037 | 0.359 | .919 |
| Time 2 | β_{11} | -0.280 | 0.347 | .427 |
| Level 1 slope (<i>hassles- adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.416 | 0.197 | <.05 |
| Time 2 | β_{10} | 0.705 | 0.195 | <.05 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | 0.117 | 0.267 | .665 |
| Time 2 | β_{11} | -0.149 | 0.273 | .589 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |
| Time 1 | β_{10} | 0.087 | 0.115 | .457 |
| Time 2 | β_{10} | 0.149 | 0.099 | .148 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | 0.047 | 0.155 | .765 |
| Time 2 | β_{11} | 0.034 | 0.137 | .807 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |
| Time 1 | β_{10} | 0.216 | 0.073 | <.05 |
| Time 2 | β_{10} | 0.119 | 0.087 | .185 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.249 | 0.099 | <.05 |
| Time 2 | β_{11} | -0.074 | 0.119 | .543 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.193 | 0.076 | <.05 |
| Time 2 | β_{10} | -0.026 | 0.093 | .783 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.102 | 0.104 | .336 |
| Time 2 | β_{11} | 0.112 | 0.129 | .391 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.087 | 0.052 | .106 |
| Time 2 | β_{10} | 0.002 | 0.036 | .949 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.049 | 0.072 | .494 |
| Time 2 | β_{11} | -0.012 | 0.050 | .812 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.6.3 Effects of daily hassles on mood/coping in low stress group

At Time 1, daily hassles were found to be significantly associated with a number of mood/coping variables: negative mood, stress score, adaptive coping and humour, such that on days when participants experience more hassles they also report more negative mood, stress, use of adaptive coping and use of humour to cope. At Time 2, there was a significant daily hassles-mood rating and daily hassles-stress score relationship such that

individuals were reporting more negative mood and more stress on days when they experienced a greater number of hassles (see Table 16).

3.6.4 Cross-level interaction with writing condition in low stress group

Examination of the daily hassles-mood/coping cross-level interactions with writing condition for the low stress group, found no statistically significant cross-level interactions at Time 1 but at Time 2 there was a significant cross-level interaction between daily hassles-stress score and writing condition (Coeff = -0.667, $p = .05$) and between daily hassles-religion and writing condition (Coeff = 0.093, $p < .05$). Both variables require further investigation to determine the nature of the cross-level interactions (see Table 16). The results from the analysis are reported in the next section.

Table 16

The association of daily hassles on mood and coping (β_{10}), and as moderated by writing condition (β_{11}) in the low stress group at Time 1 and 2.

| MRCM: Dependent variable | Symbol | Coeff | SE | p |
|--|--------------|--------|-------|-----------------|
| <i>Level 1 slope (hassles-negative mood)</i> | | | | |
| Time 1 | β_{10} | 0.659 | 0.246 | <.05 |
| Time 2 | β_{10} | 0.400 | 0.258 | .128 |
| <i>Cross-level interaction (cond. x hassles-negative mood)</i> | | | | |
| Time 1 | β_{11} | -0.255 | 0.297 | .396 |
| Time 2 | β_{11} | -0.016 | 0.334 | .963 |
| <i>Level 1 slope (hassles-positive mood)</i> | | | | |
| Time 1 | β_{10} | 0.059 | 0.276 | .833 |
| Time 2 | β_{10} | -0.402 | 0.323 | .220 |
| <i>Cross-level interaction (cond. x hassles-positive mood)</i> | | | | |
| Time 1 | β_{11} | -0.013 | 0.332 | .970 |
| Time 2 | β_{11} | 0.084 | 0.425 | .844 |
| <i>Level 1 slope (hassles-mood rating)</i> | | | | |
| Time 1 | β_{10} | -0.134 | 0.096 | .171 |
| Time 2 | β_{10} | -0.340 | 0.112 | <.05 |
| <i>Cross-level interaction (cond. x hassles-mood rating)</i> | | | | |
| Time 1 | β_{11} | 0.029 | 0.117 | .804 |
| Time 2 | β_{11} | 0.016 | 0.146 | .913 |
| <i>Level 1 slope (hassles-stress score)</i> | | | | |
| Time 1 | β_{10} | 1.852 | 0.231 | <.001 |
| Time 2 | β_{10} | 2.330 | 0.160 | <.001 |
| <i>Cross-level interaction. (cond. x hassles-stress score)</i> | | | | |
| Time 1 | β_{11} | -0.234 | 0.289 | .423 |
| Time 2 | β_{11} | -0.667 | 0.209 | <.05 |

| | | | | |
|---|--------------|--------|-------|----------------|
| Level 1 slope (<i>hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.023 | 0.184 | .902 |
| Time 2 | β_{10} | 0.107 | 0.213 | .618 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | 0.132 | 0.222 | .553 |
| Time 2 | β_{11} | 0.177 | 0.282 | .534 |
| Level 1 slope (<i>hassles- adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.420 | 0.176 | <.05 |
| Time 2 | β_{10} | 0.273 | 0.203 | .186 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.176 | 0.216 | .419 |
| Time 2 | β_{11} | 0.413 | 0.268 | .130 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |
| Time 1 | β_{10} | 0.022 | 0.075 | .771 |
| Time 2 | β_{10} | 0.077 | 0.071 | .285 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | 0.085 | 0.091 | .360 |
| Time 2 | β_{11} | 0.123 | 0.092 | .188 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |
| Time 1 | β_{10} | 0.084 | 0.073 | .253 |
| Time 2 | β_{10} | 0.079 | 0.083 | .344 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.032 | 0.088 | .718 |
| Time 2 | β_{11} | -0.102 | 0.109 | .355 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.255 | 0.078 | <.05 |
| Time 2 | β_{10} | 0.042 | 0.077 | .584 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.091 | 0.096 | .348 |
| Time 2 | β_{11} | 0.040 | 0.099 | .687 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.043 | 0.034 | .214 |
| Time 2 | β_{10} | 0.049 | 0.031 | .127 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.039 | 0.043 | .365 |
| Time 2 | β_{11} | -0.093 | 0.041 | <.05 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.6.5 Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions in the high/low stress groups

Where a cross level interaction between daily hassles-coping/mood was found, analysis was re-run separately on the expressive writing and control conditions in order to explore the nature of the interaction (see Table 17). At Time 1, in the high stress group negative mood and acceptance coping were subject to further analysis. No Time 2 variables were subject to further analysis in the high stress group. A significant positive daily hassles-negative mood relationship was found in the expressive writing condition (Coeff = 1.247, $p < .01$) and although not significant in the control condition, there was still a trend towards a positive daily hassles-negative mood relationship (Coeff = 0.476, $p = .086$), albeit not as strong as in the expressive writing condition. However, the relationship between daily hassles-acceptance coping remained only in the expressive writing condition (Coeff = 0.227, $p < .01$). No daily hassles-acceptance coping relationship was found in the control condition (Coeff = -0.036, $p = .620$, ns).

In the low stress group, two variables were subject to further exploration: stress score and religion. Both variables were at Time 2. A significant positive relationship remained between daily hassles-stress score in both conditions but the relationship was stronger in the GDP condition (Coeff = 2.304, $p < .001$) than in the control condition (Coeff = 1.694, $p < .001$). The daily hassles-religion relationship remained significant only for the control condition (Coeff = 0.055, $p < .05$) where there was a significant negative correlation between hassles and use of religion as a method of coping. No relationship was found in the experimental condition (Coeff = 0.045, $p < .250$, ns).

Table 17

Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions for high/low stress groups

| MRCM: Dependent variable and time | Symbol | Coeff | SE | <i>p</i> |
|-----------------------------------|--------------|--------|-------|----------|
| High Stress | | | | |
| Negative mood (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 9.278 | 1.153 | <.001 |
| Level 1 slope | β_{10} | 1.247 | 0.349 | <.01 |
| <i>Control intercept</i> | β_{00} | 6.749 | 0.498 | <.001 |
| Level 1 slope | β_{10} | 0.476 | 0.255 | 0.086 |
| Acceptance coping (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 2.317 | 0.181 | <.001 |
| Level 1 slope | β_{10} | 0.227 | 0.071 | <.01 |
| <i>Control intercept</i> | β_{00} | 2.169 | 0.201 | <.001 |
| Level 1 slope | β_{10} | -0.036 | 0.070 | .620 |
| Low Stress | | | | |
| Stress Score (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 4.675 | 0.472 | <.001 |
| Level 1 slope | β_{10} | 2.304 | 0.155 | <.001 |
| <i>Control intercept</i> | β_{00} | 4.731 | 0.591 | <.001 |
| Level 1 slope | β_{10} | 1.694 | 0.151 | <.001 |
| Religion coping (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 1.294 | 0.112 | <.001 |
| Level 1 slope | β_{10} | 0.045 | 0.038 | <.250 |
| <i>Control intercept</i> | β_{00} | 1.295 | 0.152 | <.001 |
| Level 1 slope | β_{10} | -0.055 | 0.025 | <.05 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.7 The moderating effect of alexithymia on the main effect of writing condition (GDP, control) on mood and coping

To investigate the hypothesis that individuals who score high on the TAS measure of alexithymia might benefit differently from expressive writing than people who score low a median split on total TAS score was used to create two groups: high and low alexithymia. The HLM analysis was then repeated on these data sets separately for each of the groups. For the high alexithymia group, no main effects of writing condition on mood or coping variables was found at Time 1 (see Table 18). At Time 2, there was a significant main effect of writing condition on mood rating (Coeff = 0.134, $p < .001$). Examination of the means suggests that daily mood ratings were significantly lower for expressive writers ($M = 6.33$, $SD = 1.52$) as compared to the control condition ($M = 6.45$, $SD = 1.21$). In addition there was a trend towards a main effect of writing condition on adaptive coping (Coeff 0.818, p

<.080). Examination of the means suggests that expressive writers reported using significantly less adaptive coping strategies ($M = 6.72$, $SD = 2.20$) as compared to controls ($M = 7.50$, $SD = 2.05$).

Table 19 shows the main effects of writing on mood for individuals in the low alexithymia group. Again there were no significant main effects at Time 1 but at Time 2, there were two main effects of writing on mood/coping variables. The first was a main effect of writing condition on mood rating (Coeff = 0.675, $p < .01$). Examination of the means suggests that expressive writers reported significantly lower daily mood ratings ($M = 6.12$, $SD = 1.62$) compared to controls ($M = 6.82$, $SD = 1.32$). However this main effect was also found in the *high* alexithymia group at Time 2 suggesting that alexithymia is not a moderating factor on the writing-mood rating relationship. There was however a significant main effect of writing on religion (Coeff = -0.380, $p < .05$) at Time 2. Examination of the means suggests that expressive writers reported significantly more use of religious coping ($M = 1.48$, $SD = 0.86$) as compared to controls ($M = 1.07$, $SD = 0.28$). This was evident only in the low alexithymia group.

Table 18

Main effects of writing condition on mood/coping in the high alexithymia group at Time 1 and Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|-----------------|
| Negative mood | | | | |
| Time 1 | β_{01} | -0.925 | 1.066 | .392 |
| Time 2 | β_{01} | -1.592 | 0.916 | .092 |
| Positive mood | | | | |
| Time 1 | β_{01} | 0.248 | 0.868 | .777 |
| Time 2 | β_{01} | .0328 | 1.000 | .745 |
| Mood out of 10 | | | | |
| Time 1 | β_{01} | -0.042 | 0.333 | .900 |
| Time 2 | β_{01} | 0.134 | 0.330 | <.001 |
| Stress score | | | | |
| Time 1 | β_{01} | -0.372 | 1.170 | .752 |
| Time 2 | β_{01} | -0.557 | 1.206 | .647 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | 0.011 | 0.695 | .987 |
| Time 2 | β_{01} | 0.594 | 0.804 | .466 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | 0.423 | 0.455 | .360 |
| Time 2 | β_{01} | 0.818 | 0.453 | .080 |
| Positive Reframing | | | | |
| Time 1 | β_{01} | 0.028 | 0.234 | .906 |
| Time 2 | β_{01} | 0.025 | 0.192 | .898 |
| Acceptance | | | | |
| Time 1 | β_{01} | -0.165 | 0.177 | .357 |
| Time 2 | β_{01} | -0.049 | 0.225 | .827 |
| Humor | | | | |
| Time 1 | β_{01} | 0.292 | 0.256 | .264 |
| Time 2 | β_{01} | 0.126 | 0.234 | .538 |
| Religion | | | | |
| Time 1 | β_{01} | 0.324 | 0.286 | .266 |
| Time 2 | β_{01} | 0.333 | 0.246 | .187 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

Table 19

Main effects of writing condition on mood and coping in the low alexithymia group at Time 1 and Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|--------------------------|--------------|--------|-------|------------------------|
| Negative mood | | | | |
| Time 1 | β_{01} | -0.018 | 0.758 | .981 |
| Time 2 | β_{01} | -1.162 | 0.793 | .151 |
| Positive mood | | | | |
| Time 1 | β_{01} | 0.409 | 0.944 | .667 |
| Time 2 | β_{01} | 0.459 | 1.001 | .649 |
| Mood rating | | | | |
| Time 1 | β_{01} | 0.355 | 0.228 | .128 |
| Time 2 | β_{01} | 0.675 | 0.256 | <i>p</i><.01 |
| Stress score | | | | |
| Time 1 | β_{01} | 0.160 | 1.067 | .882 |
| Time 2 | β_{01} | -0.463 | 1.057 | .664 |
| Maladaptive coping | | | | |
| Time 1 | β_{01} | 0.257 | 0.840 | .761 |
| Time 2 | β_{01} | -0.132 | 0.886 | .883 |
| Adaptive coping | | | | |
| Time 1 | β_{01} | -0.098 | 0.605 | .873 |
| Time 2 | β_{01} | -0.074 | 0.584 | .900 |
| Positive reframing | | | | |
| Time 1 | β_{01} | -0.108 | 0.233 | .644 |
| Time 2 | β_{01} | 0.055 | 0.219 | .804 |
| Acceptance | | | | |
| Time 1 | β_{01} | 0.376 | 0.230 | .110 |
| Time 2 | β_{01} | 0.102 | 0.225 | .654 |
| Humour | | | | |
| Time 1 | β_{01} | -0.030 | 0.193 | .875 |
| Time 2 | β_{01} | -0.140 | 0.197 | .481 |
| Religion | | | | |
| Time 1 | β_{01} | -0.031 | 0.193 | .875 |
| Time 2 | β_{01} | -0.380 | 0.160 | <.05 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.7.1 Effects of daily hassles on mood/coping in the high alexithymia group

The moderating effects of high alexithymia on the daily hassles-mood/coping relationship are shown in Table 20. At Time 1, daily hassles were found to be significantly associated with a number of mood/coping variables: negative mood, mood rating, stress score, humour and adaptive coping in the high alexithymia group ($p<.05$) such that on days when more hassles are experienced, individuals report more negative mood, lower mood

ratings, greater stress scores and increased use of humour and adaptive coping strategies. At Time 2, daily hassles were significantly associated with only one variable, mood rating ($p < .001$) although there was a trend towards significance for the relationship between daily hassles, negative mood ($p = .092$) and adaptive coping ($p = .080$), such that greater hassles reported results in lower daily mood ratings, more negative mood and greater use of adaptive coping strategies.

3.7.2 Cross-level interaction with writing condition in high alexithymia group

When examining the daily hassles-mood/coping cross-level interactions with writing condition at Time 1, no statistically significant cross-level interactions with writing condition were found for daily hassles-mood/coping relationships (see Table 20) but there was a trend towards a significant cross-level interaction between daily hassles-negative mood (Coeff = -0.727, $p = .083$) such that it may be moderated by writing condition and so warranted further investigation. At Time 2 one variable, stress score reached statistical significance (Coeff = 0.825, $p < .05$) suggesting a possible moderating effect of writing condition on the daily hassles-stress score relationship and therefore needed to be investigated further to determine the nature of this association. Results from this analysis are presented in the next section after the findings for the low alexithymia group.

Table 20

The association of daily hassles on mood and coping (β_{10}), and as moderated by writing condition (β_{11}) in the high alexithymia group at Time 1 and Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | p |
|--|--------------|--------|-------|----------------|
| Level 1 slope (<i>hassles – negative mood</i>) | | | | |
| Time 1 | β_{10} | 0.859 | 0.277 | <.01 |
| Time 2 | β_{10} | 0.590 | 0.294 | =.05 |
| Cross-level interaction (<i>cond. x hassles-negative mood</i>) | | | | |
| Time 1 | β_{11} | -0.727 | 0.407 | .083 |
| Time 2 | β_{11} | -0.089 | 0.440 | .842 |
| Level 1 slope (<i>hassles – positive mood</i>) | | | | |
| Time 1 | β_{10} | -0.204 | 0.270 | .455 |
| Time 2 | β_{10} | -0.427 | 0.280 | .137 |
| Cross-level interaction (<i>cond. x hassles-positive mood</i>) | | | | |
| Time 1 | β_{11} | 0.373 | 0.396 | .354 |
| Time 2 | β_{11} | 0.489 | 0.420 | .254 |
| Level 1 slope (<i>hassles-mood rating</i>) | | | | |
| Time 1 | β_{10} | -0.252 | 0.123 | <.05 |
| Time 2 | β_{10} | -0.328 | 0.105 | <.01 |
| Cross-level interaction (<i>cond. x hassles-mood rating</i>) | | | | |

| | | | | |
|---|--------------|--------|-------|-----------------|
| Time 1 | β_{11} | 0.097 | 0.180 | .595 |
| Time 2 | β_{11} | 0.094 | 0.158 | .557 |
| Level 1 slope (<i>hassles-stress score</i>) | | | | |
| Time 1 | β_{10} | 1.806 | 0.263 | <.001 |
| Time 2 | β_{10} | 2.537 | 0.197 | <.001 |
| Cross-level interaction (<i>cond. x hassles-stress score</i>) | | | | |
| Time 1 | β_{11} | -0.250 | 0.385 | .522 |
| Time 2 | β_{11} | -0.825 | 0.303 | <.05 |
| Level 1 slope(<i>hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.321 | 0.191 | .103 |
| Time 2 | β_{10} | 0.359 | 0.232 | .131 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.055 | 0.281 | .845 |
| Time 2 | β_{11} | 0.238 | 0.356 | .509 |
| Level 1 slope (<i>hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.473 | 0.188 | <.05 |
| Time 2 | β_{10} | 0.436 | 0.200 | .102 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | -0.338 | 0.276 | .229 |
| Time 2 | β_{11} | 0.039 | 0.307 | .900 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |
| Time 1 | β_{10} | 0.104 | 0.078 | .193 |
| Time 2 | β_{10} | 0.101 | 0.085 | .244 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | 0.070 | 0.115 | .543 |
| Time 2 | β_{11} | 0.116 | 0.130 | .382 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |
| Time 1 | β_{10} | 0.095 | 0.073 | .202 |
| Time 2 | β_{10} | 0.182 | 0.071 | <.05 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.038 | 0.107 | .723 |
| Time 2 | β_{11} | -0.102 | 0.107 | .348 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.237 | 0.074 | <.01 |
| Time 2 | β_{10} | 0.081 | 0.068 | .241 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.080 | 0.108 | .462 |
| Time 2 | β_{11} | 0.068 | 0.101 | .509 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.032 | 0.036 | .381 |
| Time 2 | β_{10} | 0.038 | 0.031 | .229 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.044 | 0.052 | .407 |
| Time 2 | β_{11} | -0.012 | 0.046 | .792 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.7.3 Effects of daily hassles on mood/coping in the low alexithymia group

The daily hassles-mood coping relationship was found to be significant for the following variables in the low alexithymia group at Time 1: negative mood, mood rating, stress score, acceptance and humour, such that on days when individuals experience increased hassles they also report more negative mood, lower mood ratings, increased stress scores and greater use of acceptance and humour when coping (see Table 21). Of these relationships, only the daily hassles-acceptance relationship was not found to be also significant in the high alexithymia group. At Time 2, a number of mood variables are significantly associated or there was a trend towards a relationship with daily hassles including negative mood, mood rating and stress score, however again these relationships were also evident in the high alexithymia groups ($p < .05$). No coping variables were significantly associated with daily hassles for the low alexithymia group which is in contrast to the high alexithymia group hassles where hassles are significantly associated with both adaptive coping and acceptance ($p < .05$).

3.7.4 Cross-level interaction with writing condition in low alexithymia group

No significant cross-level interaction with writing condition for low alexithymia was found (see Table 21) at Time 1. However, there was a trend towards a daily hassles-mood rating relationship moderated by writing (Coeff = 2.193, $p = .081$) and also for a hassles-acceptance relationship (Coeff = -0.172, $p = .082$). In line with previous analyses protocol, further analysis was performed on the data when a trend had been found to determine further the nature of these associations. Results from this analysis are presented in the next section. No significant cross-level relationships were found at Time 2 in the low alexithymia group.

Table 21

The association of daily hassles on mood and coping (β_{10}), and as moderated by writing condition (β_{11}) in the low alexithymia group at Time 1 and Time 2

| MRCM: Dependent variable | Symbol | Coeff | SE | <i>p</i> |
|---|--------------|--------|-------|-----------------|
| Level 1 slope (<i>hassles-negative mood</i>) | | | | |
| Time 1 | β_{10} | 0.921 | 0.266 | <.01 |
| Time 2 | β_{10} | 0.629 | 0.301 | <.05 |
| Cross-level interaction (<i>cond. x hassles-negative mood</i>) | | | | |
| Time 1 | β_{11} | -0.413 | 0.310 | .192 |
| Time 2 | β_{11} | -0.140 | 0.371 | .708 |
| Level 1 slope (<i>hassles-positive mood</i>) | | | | |
| Time 1 | β_{10} | -0.203 | 0.369 | .586 |
| Time 2 | β_{10} | -0.420 | 0.406 | .309 |
| Cross-level interaction (<i>cond. x hassles-positive mood</i>) | | | | |
| Time 1 | β_{11} | 0.234 | 0.429 | .588 |
| Time 2 | β_{11} | 0.410 | 0.500 | .417 |
| Level 1 slope (<i>hassles-mood rating</i>) | | | | |
| Time 1 | β_{10} | -0.396 | 0.114 | <.01 |
| Time 2 | β_{10} | -0.369 | 0.169 | <.05 |
| Cross-level interaction. (<i>cond. x hassles-mood rating</i>) | | | | |
| Time 1 | β_{11} | 0.237 | 0.132 | .081 |
| Time 2 | β_{11} | 0.103 | 0.207 | .622 |
| Level 1 slope (<i>hassles-stress score</i>) | | | | |
| Time 1 | β_{10} | 2.193 | 0.253 | <.001 |
| Time 2 | β_{10} | 2.447 | 0.234 | <.001 |
| Cross-level interaction. (<i>cond. x hassles-stress score</i>) | | | | |
| Time 1 | β_{11} | -0.291 | 0.303 | .344 |
| Time 2 | β_{11} | -0.424 | 0.290 | .151 |
| Level 1 slope (<i>hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.091 | 0.209 | .664 |
| Time 2 | β_{10} | 0.232 | 0.252 | .363 |
| Cross-level int. (<i>cond. x hassles-maladaptive coping</i>) | | | | |
| Time 1 | β_{11} | 0.085 | 0.245 | .729 |
| Time 2 | β_{11} | 0.001 | 0.309 | .998 |
| Level 1 slope (<i>hassles- adaptive coping</i>) | | | | |
| Time 1 | β_{10} | 0.321 | 0.191 | .102 |
| Time 2 | β_{10} | 0.356 | 0.223 | .119 |
| Cross-level interaction (<i>cond. x hassles-adaptive coping</i>) | | | | |
| Time 1 | β_{11} | 0.060 | 0.225 | .793 |
| Time 2 | β_{11} | 0.402 | 0.275 | .152 |
| Level 1 slope (<i>hassles-positive reframing</i>) | | | | |
| Time 1 | β_{10} | -0.037 | 0.097 | .701 |
| Time 2 | β_{10} | 0.111 | 0.088 | .214 |
| Cross-level interaction (<i>cond. x hassles-positive reframing</i>) | | | | |
| Time 1 | β_{11} | 0.112 | 0.114 | .334 |
| Time 2 | β_{11} | 0.101 | 0.108 | .359 |
| Level 1 slope (<i>hassles-acceptance</i>) | | | | |

| | | | | |
|---|--------------|--------|-------|------|
| Time 1 | β_{10} | 0.204 | 0.083 | <.01 |
| Time 2 | β_{10} | -0.047 | 0.088 | .597 |
| Cross-level interaction (<i>cond. x hassles-acceptance</i>) | | | | |
| Time 1 | β_{11} | -0.172 | 0.096 | .082 |
| Time 2 | β_{11} | 0.031 | 0.108 | .778 |
| Level 1 slope (<i>hassles-humour</i>) | | | | |
| Time 1 | β_{10} | 0.215 | 0.089 | <.05 |
| Time 2 | β_{10} | -0.045 | 0.091 | .627 |
| Cross-level interaction (<i>cond. x hassles-humour</i>) | | | | |
| Time 1 | β_{11} | -0.073 | 0.105 | .490 |
| Time 2 | β_{11} | 0.080 | 0.113 | .481 |
| Level 1 slope (<i>hassles-religion</i>) | | | | |
| Time 1 | β_{10} | 0.044 | 0.037 | .251 |
| Time 2 | β_{10} | 0.009 | 0.036 | .797 |
| Cross-level interaction (<i>cond. x hassles-religion</i>) | | | | |
| Time 1 | β_{11} | -0.028 | 0.044 | .528 |
| Time 2 | β_{11} | -0.041 | 0.044 | .356 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.7.5 Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions in high/low alexithymia groups

Where a cross-level interaction between daily hassles-coping/mood was found, analysis was re-run separately on the expressive writing and control conditions in order to explore the nature of the interaction. For the high alexithymia group, only negative mood at Time 1 was subject to further analysis. A significant positive relationship between daily hassles-mood remained only in the expressive writing condition (Coeff = 0.853, $p < .05$). No daily hassles-negative mood relationship was found in the control condition (Coeff = 0.047, .864, ns) such that the daily hassles-negative mood relationship is evident only in the expressive writing group for those high in alexithymia.

At Time 2 in the high alexithymia group, there was a significant cross-level interaction between condition and the daily hassles-stress score relationship that warranted further investigation. A positive significant association for both writing conditions, expressive (Coeff = 2.549, $p < .001$) and control (Coeff = 1.778 $p < .001$) remained but the daily hassles-stress score association was stronger for those in the expressive writing condition (see Table 22).

For the low alexithymia group, both mood rating and acceptance coping were subject to further analysis at Time 1 (see Table 22 for results). Daily hassles were found to

be significantly negatively correlated with mood rating and this association was stronger for the expressive writing condition (Coeff = -0.289, $p < .001$) than the control (Coeff = -0.162, $p < .05$). For acceptance, there remained a positive daily hassles-acceptance association for the expressive writing condition only (Coeff = 0.219, $p < .01$). No significant relationship was found for the control condition (Coeff = 0.032, $p = .510$, ns). There were no significant cross-level interactions at Time 2 that needed to be investigated.

Table 22

Associations between daily hassles and mood/coping at Time 1 and 2 separately in GDP and control writing conditions in the high/low alexithymia groups

| MRCM: Dependent variable and time | Symbol | Coeff | SE | p |
|-----------------------------------|--------------|--------|-------|-----------------|
| High Alexithymia | | | | |
| Negative mood (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 8.691 | 0.769 | <.001 |
| Level 1 slope | β_{10} | 0.853 | 0.321 | <.05 |
| <i>Control intercept</i> | β_{00} | 7.678 | 0.711 | <.001 |
| Level 1 slope | β_{10} | 0.047 | 0.271 | .864 |
| Stress score (Time 2) | | | | |
| <i>GDP intercept</i> | β_{00} | 5.660 | 0.790 | <.001 |
| Level 1 slope | β_{10} | 2.549 | 0.169 | <.001 |
| <i>Control intercept</i> | β_{00} | 5.101 | 0.921 | <.001 |
| Level 1 slope | β_{10} | 1.778 | 0.304 | <.001 |
| Low Alexithymia | | | | |
| Mood rating (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 6.472 | 0.223 | <.001 |
| Level 1 slope | β_{10} | -0.289 | 0.094 | <.001 |
| <i>Control intercept</i> | β_{00} | 6.900 | 0.116 | <.001 |
| Level 1 slope | β_{10} | -0.162 | 0.072 | <.05 |
| Acceptance Coping (Time 1) | | | | |
| <i>GDP intercept</i> | β_{00} | 1.993 | 0.135 | <.001 |
| Level 1 slope | β_{10} | 0.219 | 0.069 | <.01 |
| <i>Control intercept</i> | β_{00} | 2.283 | 0.150 | <.001 |
| Level 1 slope | β_{10} | 0.032 | 0.048 | .510 |

Note. MRCM = multilevel random coefficient model; β = hierarchical multivariate linear modeling symbol; Coeff = standard coefficient; SE = standard error.

3.8 Summary of results

A summary of the results follows with the main findings for each hypothesis presented under the appropriate heading.

3.8.1 The effect of writing condition (GDP, control) on mood and coping

Hypothesis 1: It was expected that participants who engaged in expressive writing would experience more negative mood than controls immediately following writing (Time 1) but that this trend would be reversed at follow-up (Time 2) such that expressive writers experience less negative mood than controls.

Hypothesis 2: That expressive writers would report greater use of adaptive coping strategies and less use of maladaptive coping strategies than controls

Main findings:

- No main effects of writing condition on mood were found at Time 1. Participants who engaged in expressive writing did not experience more negative mood than controls immediately following writing. However, there was a trend towards participants in the control condition experiencing more positive mood.
- At Time 2, there was a main effect of writing condition on negative mood but not in the direction hypothesised, such that participants who engaged in expressive writing showed significantly greater negative mood compared to controls. In addition, a main effect of writing on mood-rating almost reached conventional statistical significance such that expressive writers reported lower mood ratings than controls.
- No main effects of writing condition on any coping variables at were found at Time 1 or Time 2.
- No significant interactions between writing condition and time were found for DAS total score, depression, stress or anxiety subscales however there was a significant main effect of time on DAS total scores as well as the stress and anxiety subscales regardless of writing condition. This suggests that participants' negative affect worsened over time regardless of writing condition.

Conclusion: These findings do not support the above hypotheses.

3.8.2 The effect of writing condition (GDP, control) on the daily hassles-mood/coping relationship

Hypothesis 3: It was expected that the daily hassles-mood/coping relationship would be moderated by writing condition such that on days of greater hassles, expressive writers would experience less low mood compared to controls.

Hypothesis 4: It was expected that on days of greater hassles, expressive writers would report less use of maladaptive coping strategies and greater use of adaptive coping strategies than controls.

Main findings:

- At Time 1, negative mood was positively associated with hassles in both writing conditions but the relationship was stronger in the expressive writing condition compared to the control such that expressive writers experienced more negative mood in response to daily hassles than controls.
- A significant positive daily hassles-acceptance relationship was found when individuals engaged in expressive writing but not in the control condition such that on days when expressive writers experienced more hassles they reported greater use of acceptance coping strategies.
- At Time 2, there were no significant daily hassles-mood/coping associations but there was a trend towards a daily hassles-stress cross-level interaction such that expressive writers experienced more stress in response to daily hassles as compared to controls.

Conclusion: These findings provide no support for the hypothesis that expressive writers may experience less low mood in response to daily hassles than controls. However it provides partial support for a hypothesis that expressive writers may use some forms of more adaptive coping strategies (in this case acceptance) on days of increased hassles.

3.8.3 The effect of baseline depression on the main effect of writing condition (GDP, control) on the mood/coping and the daily hassles-mood/coping relationship

Hypothesis 5: It was expected that individuals who are high in depression would benefit more from expressive writing than participants who score low on baseline measures of depression.

Main findings:

- In the high depression group at both Time 1 and Time 2 there was a main effect of writing condition on negative mood such that experimental writers experienced greater negative mood than controls. No main effect of writing condition on mood/coping was found in the low depression group.
- In the high depression group at Time 1 the daily hassles-negative mood relationship was significant in both writing conditions but the relationship was stronger in the expressive writing condition as opposed to the control condition.
- In the high depression group at Time 2, there was a positive daily hassles-positive reframing relationship found in the control condition only not in expressive writers.
- In the low depression group at Time 1 a significant positive daily hassles-stress score relationship remained for both writing conditions but was stronger in the expressive writing condition than the control. The daily hassles-acceptance relationship was only significant in the expressive writing condition at Time 1.
- At Time 2 in the low depression group a daily hassles-stress score relationship was significant in both conditions but the relationship was stronger among expressive writers as compared to controls.

Conclusion: There is no evidence that expressive writing is more beneficial to individuals who are high in depression than those low in depression.

3.8.4 The effect of baseline stress on the main effect of writing condition (GDP, control) on the mood/coping and the daily hassles-mood/coping relationship

Hypothesis 6: *It was expected that individuals who are high in stress would benefit more from expressive writing than participants who score low on baseline measures of stress.*

Main findings:

- At Time 1, in the high stress group there were main effects of writing condition on positive mood and mood rating and a trend for negative mood such that expressive writers experienced less positive mood, rated their day more negatively and experienced greater negative mood than controls. No main effects of writing condition on mood/coping variables were found in the low stress group.

- At Time 2, there were main effects of writing on daily mood ratings and negative mood. No main effects of writing condition on mood/coping variables were found in the low stress group.
- In the high stress group, at Time 1 there was a significant positive daily hassles-negative mood relationship in the expressive writing condition that was also evident as a trend although did not meet conventional levels of significance in the control condition. But a relationship between daily hassles-acceptance coping was only evident in the expressive writing condition, not in the control condition. No Time 2 daily hassles-mood/coping cross level interactions with writing condition were found in the high stress group.
- In the low stress group, significant positive daily hassles-stress score relationships at Time 2 were found for participants in both writing conditions however the relationship was stronger for expressive writers than for controls.
- There was a significant negative daily hassles-religion coping relationship at Time 2 that was evident only in the control condition.

Conclusion: There is no evidence that expressive writing is more beneficial to individuals who are high in stress compared to participants scoring low in baseline stress.

3.8.5 The effect of alexithymia on the main effect of writing condition (GDP, control) on the mood/coping and the daily hassles-mood/coping relationship

Hypothesis 7: It was expected that alexithymia would moderate the impact of writing condition on mood/coping and the daily hassles-mood/coping relationship but it was unclear what direction this might be.

Main findings:

- In the high alexithymia group, no main effects of writing condition on mood/coping variables were found at Time 1 but at Time 2 there was a main effect of writing condition on mood rating, such that expressive writers reported lower mood ratings than those in the control condition. In addition there was a trend towards a main effect of writing condition on adaptive coping, such that expressive writers reported less adaptive coping compared to control.
- In the low alexithymia group, no main effects of writing condition on mood/coping variables were found at Time 1 but at Time 2 a main effect was found between

writing condition and mood rating, again showing that expressive writers reported lower daily mood ratings compared to controls. In addition there was a main effect of writing condition on religion (coping). Control participants reported less use of religion coping than expressive writers.

- A significant positive daily hassles-negative mood relationship was only present in expressive writers but not controls at Time 1 in the high alexithymia group, such that on days when participants experienced increased hassles, they also reported more negative mood. At Time 2 in the high alexithymia group there was a significant daily hassles-stress score relationship but it was stronger in expressive writers than controls.
- In the low alexithymia group, daily hassles were significantly negatively correlated with mood rating for both writing conditions but the relationship was stronger in expressive writing. The daily hassles-acceptance coping relationship was only evident in expressive writers, not in the control condition.

Conclusion: There is no evidence that alexithymia moderates the impact of expressive writing on mood/coping variables or on the daily hassles/mood-coping relationship.

DISCUSSION

4.1 Overview

This chapter will explore the findings from this study in detail and place them in the context of previous research. Next, clinical and theoretical implications of the findings will be considered. The chapter will culminate in a critique of the current study, evaluating its strengths and weaknesses and recommendations for future research will be made.

4.2 Review of study aims

The current research aimed to evaluate the effectiveness of the GDP (Gidron, et al., 2002) in improving the mood of individuals who engaged in expressive writing. It was theorised that after expressive writing, participants might adopt more adaptive and less maladaptive coping strategies which may result in a temporary increase in negative mood immediately post-writing, before an improvement at follow-up. In addition the study aimed to explore the possibility that the GDP might work by enabling individuals to cope better with day-to-day hassles. It was theorised that processing a traumatic or stressful event through expressive writing might free up cognitive resources that could then be applied to coping with day-to-day hassles. In addition, the GDP would model a successful, adaptive, coping process that participants could then apply when dealing with daily stressors. Finally, the study aimed to examine potential moderators of expressive writing effects and as such considered whether the GDP might be of more benefit to people higher in baseline depression, stress and measures of alexithymia. Each of these aims are discussed in turn.

4.3 The efficacy of the GDP in improving mood and coping outcomes

This study found no support for the hypothesis that expressive writing would reduce negative mood, such that individuals did not benefit from the expressive writing condition over controls. Unexpectedly, a main effect of expressive writing on negative mood was found at follow up, but this was against the direction hypothesised, such that expressive writers reported significantly more negative mood at Time 2 than controls. Furthermore, the expected increase of negative mood for expressive writers immediately after writing was not found.

There were two further important findings to note. First, participants, irrespective of writing condition were found to worsen on measures of negative affect from Time 1 to Time 2. Second, no main effects of condition on any coping variables were found. In other words, there was no support for a hypothesis that expressive writers used more adaptive and less maladaptive coping strategies compared to controls.

The lack of support found in this study for expressive writing improving mood outcomes for individuals over controls is contrary to three recent meta-analyses which each demonstrated the efficacy of the expressive writing paradigm (Frattaroli, 2006; Frisina, et al., 2004; Smyth, 1998). However, our findings are consistent with a fourth meta-analysis conducted by Meads and Nouwen (2005) which found no evidence of any beneficial effects of disclosure on measures of depression or emotional distress in ten studies. In fact, Meads and Nouwen (2005) found evidence of a possible *increase* in depression for the expressive writing group. This is line with our findings at follow-up which also show an increase in negative mood for expressive writers as compared to controls. Several factors may account for these findings.

First, it is possible that higher negative mood reported by expressive writers at follow-up is as a result of individuals engaging more fully with stressors. Facing problems more directly may be accompanied by a temporary increase in negative mood until the problem is ultimately resolved. Conversely, it might be expected that when action is not taken (e.g. distraction or denial), the reverse may be true and removing attention from a problem might result in a temporary reduction in negative mood (Marco, et al., 1999). Indeed, support for such a hypothesis has been found in a daily diary study conducted by Stone, Kennedy-Moore and Neale (1995) which required participants to select their most stressful event of the day, each day, for 82 days and indicate how they coped with it. Mood was better (more positive, less negative) when distraction was used but worse (more negative, less positive) when direct action was used. However, if this explanation was able to account for the increase in negative mood observed in expressive writers at follow-up over controls then it would be expected that expressive writers would report greater use of adaptive coping strategies. Conversely it would also be expected that controls would report less use of adaptive, and more use of maladaptive coping strategies than expressive writers but this was not found.

Second, participants' reports of how they coped may not be accurate representations of the actual coping occurring at the time of the event (Marco, et al., 1999). For instance, Stone et al. (1998) found cognitive coping efforts were more likely to be forgotten on retrospective recall and that behavioural coping efforts were more likely to be "generated" on a retrospective recall. Since most adaptive coping strategies require a planning phase (which would be considered cognitive in orientation) whilst most maladaptive strategies require some kind of additional activity such as switching to another activity or venting one's anger (e.g. behavioural responses) it might be expected that any increases in participants adaptive coping might not be reported accurately.

Third, the further finding from this study that all participants, irrespective of condition, worsened on measures of negative affect over time suggests that it is possible that participants might be reacting to the method of measurement itself. A major concern of diary studies is the issue of reactivity; that is, sampling reports over multiple occasions may change the phenomenon under study (Marco, et al., 1999). In the present study, monitoring coping behaviours may have heightened participants' awareness of their coping efforts which may have altered their coping or mood responses over time. It is important to note that it is not just diary studies that are vulnerable to participant reactivity. Expressive writing researchers have found results consistent with reactivity effects without using daily diary methodology (Earnhardt, et al., 2002). For instance, Earnhardt et al. (2002) found improvements in body image and mood, irrespective of condition.

The notion that self-report measures may not be reliable is certainly not new. All research using psychological outcomes may be prone to potential participant biases, especially where individuals are expected to admit to holding and disclosing negative self-images that may be largely beyond their conscious control or which may be at odds with their explicit attitudes to the self (O'Connor et al., In press). Indeed in expressive writing studies, researchers are increasingly seeking more objective measures of outcome to overcome problems with self-report. For instance, a recent study on emotional disclosure, self-esteem and body image, found statistically significant main effects of writing condition on self-esteem only for an implicit measure of self-esteem but not for an explicit measure (O'Connor et al., in press). Such a finding suggests that objective and implicit outcome measures may prove more sensitive than self-report measures in expressive writing

studies, and as such might be responsible for differences in effect sizes observed across studies. Indeed, Smyth's (1998) meta-analysis reported the largest effect sizes for studies that included objective measures of physiological function. Such measures are free from self-report and experimental bias and are unlikely to be contaminated by participant expectations (Langens & Schüler, 2007; O'Connor, et al., In press; Patterson & Singer, 2007). In contrast, measures of psychological wellbeing are open to potential participant biases or may not always be sensitive enough to detect subtle changes following psychological interventions such as emotional disclosure (O'Connor et al., in press). Future research will need to address this issue.

Finally, there are a number of methodological features in this study which may account for the lack of main effects of writing condition on mood/coping variables observed. These will be discussed in turn. First, participants may have been less engaged with the study because they disclosed at home. Larger effect sizes might be expected from studies run in laboratory style settings since controlled settings are likely to offer greater opportunities for compliance monitoring and less room for participant error (Frattaroli, 2006). Indeed in the thirteen studies analysed by Smyth (1998) where a large effect size was found ($d = .47$) all but one study had all participants disclose in a controlled setting. However, Frattaroli (2006) found no evidence that disclosing in a controlled laboratory setting was beneficial over other settings. Moreover within-study analysis found studies in which participants disclosed at home had larger psychological health effect sizes than studies in which participants disclosed in controlled settings (Frattaroli, 2006). It is possible participants might be more comfortable and relaxed at home allowing for more engagement in the disclosure process (Frattaroli, 2006). There is some evidence that engagement in psychotherapeutic treatment is greater in home-based rather than office-based programmes (Slesnick & Prestopnik, 2004) and greater involvement in the experimental disclosure process has been associated with better outcomes (Frattaroli, 2006; Lutgendorf, Antoni, Kumar, & Schneiderman, 1994). Indeed in the current study, the high reported hassle rate recorded by participants in the daily diary component of the study is in contrast to previous daily diary studies which have found significantly lower rates suggesting good engagement with the study protocol (O'Connor & Ashley, 2008; O'Connor, et al., 2008).

Second, participants in this study were asked to return expressive writing essays and therefore might have been less compliant with the study protocol than if they were able to keep essays private. Frattaroli's (2006) recent meta-analysis reported that studies looking into psychological outcomes had greater effect sizes if participants were able to keep essays rather than return them to the experimenters. Nevertheless, the two studies that have tested this hypothesis directly do not support this finding. Both Kunkel (2001) and Raval (2000) found no benefit in expressive writing effects if participants kept essays. Indeed Raval (2000) actually reported improved results for those returning essays. Furthermore, when location was controlled for in Frattaroli's (2006) meta-analysis, differences in effect sizes between whether or not essays were returned became non significant. Most studies where essays were kept were conducted at home and this variable accounted for most of the variance (Frattaroli, 2006).

Third, the GDP may not be as effective as traditional writing paradigms in obtaining effects. The GDP is a directed approach that provides participants with specific instructions regarding the content and order of their expressive writing. It has been found that studies in which participants were given directed questions or specific examples of what to disclose had larger overall effect sizes, including psychological effect sizes than studies without directed protocols (Frattaroli, 2006). However, the evidence is more mixed for studies providing specific writing instructions. Kovac and Range (2002) provided participants' either with instructions designed to promote cognitive processing and insight or traditional expressive writing instructions. They found no expressive writing effects in either condition. Although Broderick, Stone, Smyth and Kaell (2004) found greater benefits in participants who received more specific instructions, their use of video-delivery makes comparisons difficult to make. Therefore there is no clear evidence that using the GDP should have negative consequences on the psychological outcomes included in the current study.

4.4 The effect of expressive writing on the daily hassles-mood/coping relationship

A third major and novel aim of this study was to explore whether expressive writing might change the nature of the daily hassles-mood/coping relationship, such that it was hypothesised that on days of greater hassles, expressive writers would experience less negative mood compared to controls. It was theorised that processing a traumatic or

stressful event through expressive writing might free up cognitive resources that could then be applied to coping with day-to-day hassles. In addition, the GDP would guide participants to apply a more adaptive coping process to their most stressful, traumatic or upsetting event which could then be adhered to when dealing with lesser daily stressors. More adaptive coping would result in a reduction in the negative impact of hassles, resulting in less negative mood. It was hypothesised therefore that individuals would report greater use of adaptive and less use of maladaptive coping than controls. Findings observed in the current study provide no support for the hypothesis that expressive writers may experience less negative mood in response to daily hassles than controls. Although there is partial support for the hypothesis that expressive writers may use more adaptive coping strategies than controls. On days when participants experienced greater hassles, expressive writers reported more use of acceptance but this relationship was not found in control participants. However, it is important to note that this was only found at Time 1, immediately following writing and was not sustained to follow-up.

The null findings reported here of the effect of expressive writing on the daily hassles-negative mood relationship may be accounted for by the many factors previously discussed. However a number of additional factors may have contributed. First, asking individuals to focus on stressors whilst completing a daily diary might lead to increased reporting of negative mood. Indeed, Marco and Suls (1993) showed that daily stressors were associated with higher negative mood both at the time of the hassle occurring *and* at the subsequent report. However, the relationship was much weaker at a several-hour follow-up, suggesting that it is possible that diary designs that encourage participants to focus and report on daily stressors may pick up increased negative mood in the short term.

Second, it is possible that expressive writing may work on some hassles but not others. Not all hassles are equal and some hassles may have a stronger effect on mood and other psychological outcomes such as stress than others (McIntyre, et al., 2008). Research on hassles has increasingly distinguished between different types of hassles to examine this possibility (McIntyre, et al., 2008). For instance, recent research examining the impact of daily hassles on eating behaviour found that ego-threatening, interpersonal and work-related hassles were associated with increased snacking but physical hassles were associated with decreased snacking (O'Connor, et al., 2008). Other researchers have distinguished between interpersonal and non-interpersonal hassles and have shown that

interpersonal hassles are perceived as more stressful than other hassle types (Bolger, DeLongis, Kessler, & Schilling, 1989). However, even when research considers the impact of different types of hassles, the most important consideration is how an individual responds to that hassle. The response of individuals to daily hassles is idiosyncratic (McIntyre, et al., 2008). A hassle to one person might be a minor irritation to another, furthermore, how an individual might cope with a hassle might change during the course of a day, week or lifetime. Therefore, although it might be important for future research to consider the impact of expressive writing on how individuals cope with different types of daily hassles it is important to maintain the use of daily diary methodology in order to be open to within person effects.

Third, coping efforts may be moderated by an additional variable. Recent research suggested that expressive writing was helpful in reducing depression symptoms among individuals with a maladaptive ruminative tendency to brood but that it was not helpful in individuals who ruminate using a more adaptive task focused style known as reflective pondering (Sloan, Marx, Epstein, & Dobbs, 2008). Since adopting a coping strategy requires some degree of initial cognitive thought process first, it is possible that how an individual copes with daily hassles following expressive writing might be moderated by their ruminative style.

Rumination is defined as a mode of coping with negative mood or distress that involves self-focussed attention with the individual repeatedly and passively focusing on distress and its possible causes and consequences (Nolen-Hoeksema, 1998; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Researchers have more recently identified two ruminative styles, brooding and reflective pondering (Nolen-Hoeksema, et al., 2008; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). In brooding, the cognitive focus is more abstract and contains a high degree of self judgements (Gortner, Rude, & Pennebaker, 2006; Sloan, et al., 2008). In addition, it contains more global constructs and focuses on obstacles preventing an individual overcoming problems, facilitating belief that a situation is hopeless e.g. 'why do I always feel this way' (Sloan et al., 2008). In contrast, reflective pondering denotes a more adaptive problem solving style of thinking in which an individual attends inwardly to their thoughts without the addition of negative self- judgement (Gortner, et al., 2006; Sloan, et al., 2008). Brooding has been associated with greater depressive symptoms over time as well as an association with a greater history of

depression and attentional biases toward negative stimuli (i.e. negative memory) (Sloan et al., 2008). In contrast, although engaging in reflective pondering is associated with more immediate depressive symptoms than brooding rumination, presumably while one is facing the emotionally distressing topic, the fact that it is associated with less depression over time suggests that the process of reflective pondering is adaptive.

Sloan et al. (2008) examined whether ruminative style as measured by the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991) moderated the effects of expressive writing using a replication of Pennebaker's (1997) standardised procedure. Sixty-nine college students assessed for ruminative style and depression symptoms were randomised into an expressive writing or control writing condition. Results at two month follow-up indicated that brooding was a significant predictor of depression outcome for the expressive writing condition but not for reflective pondering. In other words, the expressive writing paradigm appeared to work for brooders, who reported less depression symptom severity post-intervention, but not for reflective ponderers. These differences were maintained at the four and six-month follow-ups. This finding suggests that expressive writing may promote resilience against the maladaptive effects of brooding rumination since it requires the individual to face and engage with the stressor more directly. It is quite possible that expressive writing might work to help brooding ruminators utilise more adaptive coping strategies and that null effects were found in this study because no distinction was made between brooding and task focused ruminators. The latter being already in possession of the skills to cope better with daily stressors and thus differences were not detected. Future research ought to include a measure of rumination in order to examine this hypothesis.

The final finding that there was a relationship between daily hassles and the use of acceptance in expressive writers immediately following writing but not in controls suggests that the use of acceptance is not related to a reduction in negative mood since this was not observed in expressive writers. Such a finding is in contrast to that from a daily diary study investigating coping on end-of-day mood conducted by Stone et al. (1995). In this study, mood was better (more positive, less negative) when acceptance of the problem was reported by individuals compared to times when it was not. But other researchers have found use of acceptance to be related to increased report in negative mood (Marco, et al., 1999). There is considerable evidence from both longitudinal and cross-sectional studies

that link coping to mental and physical health outcomes (Aldwin & Park, 2004; Aldwin & Revenson, 1987). However, other researchers have also failed to consistently detect mood changes in response to coping efforts in daily diary studies, questioning the suitability of daily diary methodology to measuring coping outcomes (Marco, et al., 1999). Although daily diary methodology is designed to overcome problems associated with retrospective reporting, it is possible that use of an end-of-day, interval-contingent method in the current study may have resulted in the under-reporting of hassles that were coped with quickly and efficiently at the time. Such hassles would have made less of an impact and therefore might be more likely to be forgotten at end-of-day report. Indeed, Marco, et al., (1999) did find that some participants remarked during debriefing interviews that they did not report problems if they thought their coping efforts were successful. As such, it is possible that successful coping efforts that would most likely lead to improvements in mood might have been under-reported (Marco, et al., 1999).

4.5 The effect of baseline depression on the main effect of writing condition on mood/coping and the daily hassles-mood/coping relationship

It was expected that individuals who were high in depression would benefit more from expressive writing than participants low on measures of depression. That negative mood leads to greater perceived stress is well replicated, and participants who are higher in stress have been found to be more likely to benefit from expressive writing (Frattaroli, 2006; Watson, 1988). However this study found no evidence that expressive writing is more beneficial to individuals high in depression. In fact, this study found the reverse to be true, such that there was a main effect of writing condition on negative mood in the high depression group but it was against the direction hypothesised. Expressive writers in the high depression group experienced greater negative mood at Time 1 and at follow-up as compared to the high depression control. However, expressive writers in the low depression group did not experience greater negative mood than low depression controls. Furthermore, there was no evidence that expressive writers high in depression were able to cope better with daily hassles than high depression controls.

That expressive writing was not found to be more beneficial to individuals with high depression symptoms is in line with findings from Frattaroli's (2006) recent meta-analysis. However, Frattaroli (2006) argued that null effects were more likely due to a lack

of power in past studies. Indeed many expressive writing studies do have small samples however this study, with a sample of 88 is relatively large in comparison to studies including in Frattaroli's recent meta-analysis (Frattaroli, 2006). Furthermore, studies with considerably smaller samples have detected significant main effects (Smyth, 1998).

Alternatively, a lack of support for a hypothesis that expressive writing may benefit those high in depression may be due to floor effects on measures of depression. The study sample was not taken from a clinical population and thus it is unlikely that participants in the high depression group would meet clinical criteria for depression. The depression scale of the DAS-21 does not include information on clinical cut-offs but was used in this study to maintain consistency with other expressive writing studies investigating mood outcomes. However, unlike many physical health variables used as outcome measures in expressive writing studies such as clinic attendance, psychological health variables are not as subject to floor effects since participants who do not have a diagnosis for psychological health problems could easily be experiencing symptoms of depression, stress or anxiety. Indeed the depression scale of the DAS-21 was used as the main outcome measure in a recent study that found expressive writing effects in a sample of healthy college students (Sloan, et al., 2008). Furthermore the finding that expressive writing resulted in increased negative mood for those high in depression compared to those low in depression suggests that floor effects are unlikely to be a factor.

4.6 The effect of baseline stress on the main effect of writing condition on mood/coping and the daily hassles-mood/coping relationship

This study found no evidence that expressive writing was more beneficial to individuals high in baseline stress than those low in baseline stress. Indeed, there was some evidence that the reverse was true, such that main effects of writing condition on negative mood and writing condition on mood ratings were found at follow up in the high stress group but not in the low stress group. Expressive writers in the high stress group reported significantly higher negative mood and lower daily mood ratings than high stress controls. The only daily hassles-mood/coping relationship that were unique to expressive writers but not found in controls was a Time 1 daily hassles-acceptance coping relationship, such that in the high stress group, on days when greater hassles were reported, more acceptance coping was reported but this was not found in controls.

The finding that expressive writing was not more beneficial to individuals who experienced higher stress compared to those experiencing lower stress is contrary to the finding from Frataroli's (2006) recent meta-analysis which reported that participants who were higher in stress were more likely to benefit from expressive writing. Again, as in the case for the depression findings, it is important to consider the same arguments for and against a hypothesis that floor effects accounted for null effects found in this study. Frataroli's (2006) meta-analysis identified that studies using participants with a history of stressors or trauma had larger subjective impact effect sizes. Frataroli (2006) theorises that expressive writing studies that include individuals without sufficient stressors or trauma might be prone to participants becoming bored and not staying engaged with the protocol. Although an inclusion criterion of this study was a need to have experienced a traumatic, stressful or upsetting event in the past five years, it is admitted that this was a subjective qualifier and there was no objective measure of how stressful, upsetting or traumatic an event was to justify inclusion in the study. It is possible that the healthy participants accessed in this study had not experienced enough stress or trauma for significant effects to emerge.

Furthermore, other studies have found null effects in participants who have already disclosed, for instance through previous psychological therapy (Batten, 2001; Batten, 2002). Although others have found no differences when tested directly it would be recommended that future studies should assess such data (Greenberg & Stone, 1992). However, the daily hassle rate recorded in daily diaries across conditions and groups ($m > 2.5$) was high compared to studies investigating the effects of daily hassles using similar daily diary methodology ($m < 1$) (O'Connor, et al., 2008). This suggests not only good engagement with the study but also illustrates that individuals were experiencing a sizable degree of subjective daily stress. In addition, other studies have found main effects of expressive writing in healthy participants, such as college students, without including previous experience of a stressful event as an inclusion criteria (Sloan, et al., 2008).

4.7 The moderating effects of alexithymia on the main effect of writing condition on mood/coping and the daily hassles-mood/coping relationship

It was expected that alexithymia might moderate the efficacy of expressive writing however the current study found little evidence to support this hypothesis. Scoring high

on measures of alexithymia suggests a difficulty in recognising and identifying emotion. Researchers have proposed that expressive writing might benefit individuals who would struggle alone to access the emotional content deemed necessary for successful trauma disclosure but others have argued that such cognitive traits mean expressive writing is unlikely to work for alexithymics. For both high and low alexithymia groups a main effect of writing condition on daily mood rating was found at Time 2, such that expressive writers reported lower daily mood ratings than controls. For those high in alexithymia, the only daily hassles-mood/coping relationship that was present in expressive writers but not controls was a significant daily hassles-negative mood relationship, such that on days of greater hassles, greater negative mood was reported in expressive writers but not controls. Although this relationship was not found in the low alexithymia group, daily hassles was found to be related to another mood variable, mood rating such that in the low alexithymia group, on days when greater hassles were reported, lower daily mood ratings were also reported. This relationship was consistent however across conditions, but the relationship was stronger in expressive writers as compared to controls.

In other words, these findings suggest that there was no evidence that alexithymia moderated the efficacy of expressive writing. This finding is in line with conclusions from Frattaroli's (2006) meta-analysis which found null effects for alexithymia as a moderator of expressive writing effects. However, it is contrary to the findings of two more recent studies that have shown some support for alexithymia moderating the effects of expressive writing, albeit in different directions (Baikie & McIlwain, 2008; O'Connor & Ashley, 2008). These studies resulted in authors concluding that for individuals with high alexithymia, expressive writing is both beneficial (Baikie & McIlwain, 2008) and potentially harmful due to the higher distress reported at follow-up in expressive writers than controls (O'Connor & Ashley, 2008).

Such disagreement amongst these findings is illustrative of the degree of disagreement evident across studies on the role of alexithymia on expressive writing. The presence of conflicting and null findings in the current study make it difficult to contribute to debate on the mechanisms that might mediate expressive writing effects in high or low alexithymics. However this study has found that individuals high in alexithymia can recognise and label negative mood in response to daily hassles after expressive writing, but this finding was not replicated in a high alexithymic control. This suggests partial support

for a theory that expressive writing may support individuals to identify and label negative emotions. This is important since exposure accounts of expressive writing rely on individuals accessing and restructuring emotions, feelings and cognitions linked to a stressful or traumatic event (O'Connor & Ashley, 2008; Sloan & Marx, 2004a; Sloan & Marx, 2004b). Furthermore, it might be important for a theory that expressive writing might help individuals cope better with daily hassles since it would be expected that the next step after the individual assimilates the trauma and begins to recognise associated negative mood states would be that they seek to find ways to cope with the traumatic or stressful encounter (O'Connor & Ashley, 2008). Therefore, it could be that null effects on coping variables found in this study were as a result of individuals still being at the stage of assimilating the trauma and therefore had not yet moved on to seeking and using coping strategies to deal with the negative mood.

Indeed, it is possible that a follow-up period of two months used in the current study was not long enough to detect such changes. Frattaroli's (2006) recent meta-analysis found a mean follow-up period of three months and some researchers have reported finding that the psychological effects of expressive writing can take ten weeks to emerge (Wetherell, et al., 2005). However others have found main effects of expressive writing on physical outcomes in just two weeks (Smyth, Stone, Hurewitz, & Kaell, 1999). It is possible therefore that the psychological effects of expressive writing may take longer to observe and thus may require a longer follow-up period.

4.8 Clinical implications

The current climate of rising healthcare costs (and predicted budget cuts) have prompted research into low cost interventions to reduce healthcare bills (Smyth & Catley, 2002). Psychological treatments often have to compete for financial resources alongside more traditional medical treatments. One way they can succeed is to demonstrate that psychological treatments can offset costs of physical healthcare (Smyth & Catley, 2002). Indeed psychological stress contributes to the etiology, maintenance and progression of many illnesses and a lack of recognition of underlying psychological problems can lead to recurrent ineffective treatment (Smyth & Catley, 2002).

The efficacy of expressive writing has been studied on many clinical populations, including individuals with a diagnosis of cancer, rheumatoid arthritis, asthma, or kidney

failure (Possemato, 2008; Smyth, et al., 1999; Stanton, et al., 2002). As a result, many studies have recommended that expressive writing may be a suitable, low cost, clinical intervention and discussions have begun that propose a programme of effectiveness research to test this proposition (Smyth & Catley, 2002). However, as is reported here, the evidence for expressive writing, particularly in studies measuring self-report, psychological outcomes is more mixed, with many studies reporting no change or even a deterioration (Gidron, et al., 1996; Kovac & Range, 2002; Meads & Nouwen, 2005).

Indeed, the current study found no support for recommending the use of the GDP as an expressive writing intervention. The GDP, a guided form of expressive writing instructions, was proposed to support participants in processing trauma but this study has found no evidence of improved outcomes after use. Furthermore, since this study found an increase in negative mood at follow up in expressive writers the use of the GDP on clinical populations is not recommended until further research has considered possible moderators of these effects.

The current study's investigation of possible moderators found levels of negative mood increased for participants with higher depression symptoms and high baseline stress, but that these were not found in expressive writers in the low depression/stress groups. As such the GDP cannot be recommended for individuals high in depression or stress. This study found no evidence that alexithymia moderated expressive writing efficacy. However it was apparent that following expressive writing, individuals high on alexithymia were able to identify and report on negative mood. It is possible that further investigation could result in expressive writing being adapted for use as a tool to support individuals with emotional expression.

Finally, it is important to note that this study found that participants, irrespective of condition, deteriorated on measures of negative affect. It is possible that diary studies that direct the attention of individuals to daily hassles and coping efforts may foster increased depression and greater stress. This is important because many psychological interventions, particularly in the field of cognitive behavioural therapy require some form of monitoring of an antecedent event, subsequent behaviour and mood. It is possible that monitoring such events and subsequent coping efforts may result in subjective report of increased negative mood.

4.9 Implications for theory of expressive writing

A number of mechanisms of action have been suggested to account for expressive writing effects including theories of inhibition, cognitive-adaption, exposure and self-regulation. The current study proposed that a possible mechanism of action responsible for expressive writing effects is improvements in an individual's ability to cope better with daily hassles. It was speculated that better coping may occur as a result of two possible processes, which may take place independently or in combination. First, processing a traumatic or stressful event through expressive writing might free up cognitive resources. Klein & Boals (2001) argued that although individuals persist at achieving goals in the face of interference or distraction from intrusive cognitions there is only finite capacity for controlled and sustained attention (Working Memory Capacity). Reducing interference, from cognitions associated with stress or trauma, would free up cognitive resources for focusing on an individual's main goals, such as coping with daily hassles (Klein & Boals, 2001). Second, the GDP would model an adaptive coping process. By adhering to the GDP individuals would experience themselves facing, engaging and ultimately coping with their most stressful, traumatic or upsetting event. The protocol might then be applied by individuals when dealing with lesser daily stressors.

It was not intended that the current study would be able to decipher if one or both of the accounts of how individuals may cope better with daily hassles were most accurate. However, an important objective of this study was to explore the possibility that individual's may cope better with daily hassles as a result of engaging in expressive writing. The lack of main effects of writing condition on mood and coping outcome variables make it impossible to support this hypothesis however. In addition, there is no evidence that individuals cope better with daily hassles except for some support that expressive writers engage in more acceptance coping than controls. However, use of acceptance was not accompanied by a reduction in negative mood, therefore not providing any support for the theory that this is a helpful, adaptive coping strategy that may lead to positive mood outcomes (Carver & Connor-Smith, 2010).

There is some evidence that individuals high in alexithymia are able to identify negative mood in response to daily hassles as a result of expressive writing which was not found in high alexithymic controls. This provides some very limited support for expressive writing theories in which emotional change is a necessary component, e.g. exposure

theories. However there is no evidence that emotional change will account for beneficial effects of expressive writing since reductions in negative mood were not found.

4.10 Study strengths

The most notable strengths in this exploratory study are related to the innovative methodological approach adopted. This study is novel methodologically for a number of reasons. First, it is one of only a few studies to explore the efficacy of more directed expressive writing instructions and one of the first to investigate the efficacy of the GDP. Second, it is the first study to directly investigate whether expressive writing may influence individuals' coping responses. Third, it is unique in its aim to examine the effect of expressive writing on the daily hassles-mood/coping relationship. Finally, it is novel because it utilises multilevel analysis techniques for the first time in expressive writing research.

Multilevel analysis techniques are increasingly popular options for the statistical treatment of experimental data and are particularly helpful in studies assessing stress and coping outcomes (Affleck, Zautra, Tennen, & Armeli, 1999). In the current study, the use of a multilevel design enabled within-person analysis to be conducted which was necessary to explore the hypothesis that individuals may benefit from expressive writing because they cope better with daily hassles. Statistically, the current study, in common with many multi-level studies benefits from the use of random effect models in analysis, in this case hierarchical linear models (Raudenbush, et al., 2004). Random effect models treat individuals and daily observations as independent sampling units. As a result, they are useful for unbalanced designs in which participants provide varying numbers of level 1 observations or where level 1 data is missing (Affleck, et al., 1999). This was helpful in the current study to overcome attrition at Time 2 and also on days when individuals did not report any hassles.

Additional noteworthy strengths of this study include the use of a relatively large sample size for expressive writing studies ($n = 88$) and the fact that it considers the effect of several possible variables (levels of baseline mood, stress and alexithymia) that have been identified as potential moderators of expressive writing effects in recent studies (Frattaroli, 2006).

4.11 Study weaknesses and future research recommendations

There are a number of limitations to the current research however that requires comment. The most significant of these is that this study used only explicit measures of mood and coping. Recent research has shown that null effects of expressive writing found using explicit measures can be reversed with the use of more implicit measures (O'Connor et al., in press). As previously discussed it is quite possible that individuals may not be accurately reporting coping strategies, or indeed may be changing their coping response as a direct result of engaging in the study itself. This study would have benefited from the use of more implicit measures of mood and coping in order to assess for this occurrence.

Second, the current design did not allow us to precisely determine whether the experience of daily hassles occurred before or after the experience of negative mood. However, individuals were required during the daily diary procedure to write down hassles experienced during each day *prior* to completing the mood measure. Including a measure of negative mood prior to reporting the hassle may help to overcome this problem.

Third, this study used an opportune sample of people who responded to an advert for participants who had experienced a stressful or upsetting event. The benefits of this approach meant the sample was more varied in the age and educational levels of participants compared with many other expressive writing studies conducted on healthy individuals which tend to recruit only college students. However the problems associated with this approach are that the representativeness of this sample was unknown. In addition, a high proportion of females and a low proportion of participants from ethnic minority backgrounds mean it is unclear whether these results would generalise across gender and cultural groups.

Fourth, it has already been acknowledged that failure to detect possible mood or coping changes may have been as a result of too short a follow-up period. Since it is unclear from correlation analysis whether mood or coping changes occur first it is difficult to assess whether a longer follow up may have resulted in increased coping or mood effects. The average follow-up period reported by Frattaroli (2006) was three months and some researchers have found it takes 10 weeks for psychological effects of expressive to occur (Wetherell, et al., 2005). With this in mind, this study would have benefitted from a second follow-up. Inclusion of an additional time point may provide more information on the order of mood and coping changes.

4.12 Recommendations for future research

The efficacy of expressive writing has been investigated for over two decades and well over 200 studies have been conducted (Smyth, 1998). Yet still, it remains the situation that no-one can reliably predict under what conditions and with whom it will work, let alone why it may work (King, 2002). This situation suggests that the time has come for the application of more diverse methodologies in an attempt to further understanding of the expressive writing phenomenon. The weaknesses of multilevel daily diary designs and the application of this research methodology to expressive writing research has been discussed elsewhere in the current study but a number of recommendations for future research can be made as a result of this study.

First, future research should include more implicit outcomes. Expressive writing studies investigating psychological outcomes have benefited from the use of implicit measures of outcomes to overcome participant reactivity effects (O'Connor et al., in press). It is recommended that future research includes implicit measures of outcome alongside explicit measures in daily diary designs. Use of such measures may well increase effect sizes observed. Second, future research investigating psychological variables should include a longer follow up period to ensure enough time is allowed for effects to develop. Finally, daily diary methodology allows for the study of numerous potential mediating variables. Exploration of such variables is necessary to enhance our understanding of mechanisms of action accounting for expressive writing effects.

4.13 Conclusions

The findings from this study have shown no support for beneficial effects of expressive writing which is contrary to three recent meta-analyses (Frattaroli, 2006; Frisina, et al., 2004; Smyth, 1998). Furthermore there was evidence that expressive writing may lead individuals to experience more negative mood than controls a finding in line with a fourth meta-analysis recently published (Meads & Nouwen, 2005). However, there was some indication that expressive writing might moderate a daily hassles-acceptance relationship, such that on days when expressive writers experience more daily hassles, they also report greater use of acceptance coping strategies. This is important because Stone, et al., (1995) found use of acceptance as a method of coping was associated with improvements in mood, although this was not found in this study. There was little support

for the hypothesis that a potential mechanism of action of expressive writing is that it helps individuals cope better with daily hassles. In addition, there was no evidence that expressive writing benefits individuals higher in baseline depression, stress or alexithymia.

This study was the first to apply daily diary methodology to expressive writing research and it is possible that failure to find expressive writing effects may be due to reactivity effects inherent in daily diary studies. Indeed the exploratory nature of this study should serve as a reminder against over-interpretation of results. Nevertheless, conclusions from the current study suggest that until we know more, researchers should be cautious about overselling the benefits of expressive writing.

REFERENCES

- Affleck, G., Zautra, A., Tennen, H., & Armeli, S. (1999). Multilevel daily process designs for consulting and clinical psychology: A preface for the perplexed. *Journal of Consulting and Clinical Psychology, 67*, 746-754.
- Aldwin, C. M., & Park, C. L. (2004). Coping and physical health outcomes: An overview. *Psychology & Health, 19*, 277-281.
- Aldwin, C. M., & Revenson, T. A. (1987). Does coping help? A reexamination of the relation between coping and mental health. *Journal of Personality and Social Psychology, 53*, 337-348.
- Alexander, F. (1939). Emotional factors in essential hypertension. *Psychosomatic Medicine, 1*, 173-179.
- Alexander, F. (1950). *Psychosomatic medicine. Its principles and applications*. New York: Norton.
- Almeida, D. M. (2005). Resilience and Vulnerability to Daily Stressors Assessed via Diary Methods. *Current Directions in Psychological Science, 14*, 64-68.
- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*, 176-181.
- Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia scale--I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*, 23-32.

- Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1994). The twenty-item Toronto Alexithymia Scale: II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research, 38*, 33-40.
- Baikie, K. A., & McIlwain, D. (2008). Who does expressive writing work for? Examination of alexithymia, splitting, and repressive coping style as moderators of the expressive writing paradigm. *British Journal of Health Psychology, 13*, 61-66.
- Baikie, K. A., & Wilhelm, K. (2005). Emotional and physical health benefits of expressive writing. *Advances in Psychiatric Treatment, 11*, 338-346.
- Batten, S. V. (2001). *Testing the effects of a written disclosure task with sexual abuse survivors*. Batten, Sonja Victoria: U Nevada, Reno, US.
- Batten, S. V. (2002). Written disclosure as a therapeutic tool. In L. VandeCreek & T. L. Jackson (Eds.), *Innovations in clinical practice: A source book (Vol 20)* (pp. 257-268). Sarasota, FL: Professional Resource Press/Professional Resource Exchange.
- Berman, J. (2003). Review of The Writing Cure: How Expressive Writing Promotes Health and Emotional Well-Being. *Psychoanalytic Psychology, 20*, 575-578.
- Bolger, N., DeLongis, A., Kessler, R. C., & Schilling, E. A. (1989). Effects of daily stress on negative mood. *Journal of Personality and Social Psychology, 57*, 808-818.
- Booztin, R. R. (1997). Examining the theory and clinical utility of writing about emotional experiences. *Psychological Science, 8* 167-169.
- Broderick, J. E., Stone, A. A., Smyth, J. M., & Kaell, A. T. (2004). The Feasibility and Effectiveness of an Expressive Writing Intervention for Rheumatoid Arthritis via Home-Based Videotaped Instructions. *Annals of Behavioral Medicine, 27*, 50-59.
- Carver, C. S. (1997). You want to Measure Coping But Your Protocol's Too Long: Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*, 92 - 100.

- Carver, C. S., & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology, 61*, 679-704.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283.
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin, 127*, 87-127.
- Conner, M., Fitter, M., & Fletcher, W. (1999). Stress and snacking: A diary study of daily hassles and between-meal snacking. *Psychology & Health, 14*, 51-63.
- Danoff-Burg, S., Agee, J. D., Romanoff, N. R., Kremer, J. M., & Strosberg, J. M. (2006). Benefit finding and expressive writing in adults with lupus or rheumatoid arthritis. *Psychology & Health, 21*, 651-665.
- DeLongis, A., Coyne, J. C., Dakof, G., Folkman, S., & Lazarus, R. S. (1982). Relationship of daily hassles, uplifts, and major life events to health status. *Health Psychology, 1*, 119-136.
- DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology, 54*, 486-495.
- Duncan, E., Gidron, Y., Biderman, A., & Shvartzman, P. (1998). *Rationale and development of a guided written disclosure paradigm*. Paper presented at the British Psychological Society, Division of Health Psychology, Bangor, UK.
- Dunnack, E. S., & Park, C. L. (2009). The effect of an expressive writing intervention on pronouns: The surprising case of I. *Journal of Loss and Trauma, 14*, 436-446.

- Earnhardt, J. L., Martz, D. M., Ballard, M. E., & Curtin, L. (2002). A writing intervention for negative body image: Penebaker fails to surpass the placebo. *Journal of College Student Psychotherapy, 17*, 19-35.
- Esterling, B. A., Antoni, M. H., Fletcher, M. A., Margulies, S., & Schneiderman, N. (1994). Emotional disclosure through writing or speaking modulates latent Epstein-Barr virus antibody titers. *Journal of Consulting & Clinical Psychology, 62*, 130-140.
- Foa, E. B., & Kozak, M. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*, 20-35.
- Foa, E. B., Molnar, C., & Cashman, L. (1995). Change in rape narratives during exposure therapy for posttraumatic stress disorder. *Journal of Traumatic Stress, 8*, 675-690.
- Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape: Cognitive-behavioural therapy for PTSD*. New York Guilford Press
- Frattaroli, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin, 132*, 823-865.
- Frisina, P. G., Borod, J. C., & Lepore, S. J. (2004). A meta-analysis of the effects of written emotional disclosure on the health outcomes of clinical populations. *Journal of Nervous and Mental Disease, 192*, 629-634.
- Gidron, Y., Duncan, E., Lazar, A., Biderman, A., Tandeter, H., & Shvartzman, P. (2002). Effects of guided written disclosure of stressful experiences on clinic visits and symptoms in frequent clinic attenders. *Family Practice, 19*, 161-166.
- Gidron, Y., Peri, T., Connolly, J. F., & Shalev, A. Y. (1996). Written disclosure in posttraumatic stress disorder: Is it beneficial for the patient? *Journal of Nervous and Mental Disease, 184*, 505-507.

- Gortner, E.-M., Rude, S. S., & Pennebaker, J. W. (2006). Benefits of Expressive Writing in Lowering Rumination and Depressive Symptoms. *Behavior Therapy, 37*, 292-303.
- Green, A. S., Rafaeli, E., Bolger, N., Shrout, P. E., & Reis, H. T. (2006). Paper or plastic? Data equivalence in paper and electronic diaries. *Psychological Methods, 11*, 87-105.
- Greenberg, M. A., & Stone, A. A. (1992). Emotional disclosure about traumas and its relation to health: Effects of previous disclosure and trauma severity. *Journal of Personality and Social Psychology, 63*, 75-84.
- Greenberg, M. A., Wortman, C. B., & Stone, A. A. (1996). Emotional expression and physical health: Revising traumatic memories or fostering self-regulation? . *Journal of Personality and Social Psychology, 71*, 588-602.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.
- Hobfoll, S. E. (1998). *Stress, culture, and community: The psychology and philosophy of stress*. New York, NY US: Plenum Press.
- Johnstone, K. A., & Page, A. C. (2004). Attention to phobic stimuli during exposure: The effect of distraction on anxiety reduction, self-efficacy and perceived control. *Behaviour Research and Therapy, 42*, 249-275.
- Jorgensen, R. S., Johnson, B. T., Kolodziej, M. E., & Schreer, G. E. (1996). Elevated blood pressure and personality: A meta-analytic review. *Psychological Bulletin, 120*, 293-320.
- King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin, 27*, 798-807.
- King, L. A. (2002). Gain without pain? Expressive writing and self-regulation. In S. J. Lepore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and*

- emotional well-being*. (pp. 119-134). Washington, DC US: American Psychological Association.
- King, L. A., & Miner, K. N. (2000). Writing about the perceived benefits of traumatic events: Implications for physical health. *Personality and Social Psychology Bulletin*, *26*, 220-230.
- Klein, K. (2002). Stress, expressive writing, and working memory. In S. J. Lepore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 135-155). Washington, DC: American Psychological Association.
- Klein, K., & Boals, A. (2001). Expressive writing can increase working memory capacity. *Journal of Experimental Psychology: General*, *130*, 520-533.
- Kloss, J. D., & Lisman, S. A. (2002). An exposure-based examination of the effects of written emotional disclosure. *British Journal of Health Psychology*, *7*, 31-46.
- Kovac, S. H., & Range, L. M. (2002). Does writing about suicidal thoughts and feelings reduce them? *Suicide and Life-Threatening Behavior*, *32*, 428-440.
- Kunkel, A. W. (2001). *Coping with emotional distress: Effects of disclosure mode on cognitive, affective, and health outcomes*. ProQuest Information & Learning, US.
- Langens, T. A., & Schöler, J. (2007). Effects of written emotional expression: The role of positive expectancies. *Health Psychology*, *26*, 174-182.
- Lazarus, R. S. (1984). Puzzles in the study of daily hassles. *Journal of Behavioral Medicine*, *7*, 375-389.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisals and coping*. New York: Springer.

- Lepore, S. J. (1997). Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. *Journal of Personality and Social Psychology, 73*, 1030-1037.
- Lepore, S. J., & Greenberg, M. A. (2002). Mending broken hearts: Effects of expressive writing on mood, cognitive processing, social adjustment and health following a relationship breakup. *Psychology & Health, 17*, 547-560.
- Lepore, S. J., Greenberg, M. A., Bruno, M., & Smyth, J. M. (2002). Expressive writing and health: Self-regulation of emotion-related experience, physiology, and behavior. In S. J. Lepore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 99-117). Washington, DC: American Psychological Association.
- Lestideau, O. T., & Lavalley, L. F. (2007). Structured writing about current stressors: The benefits of developing plans. *Psychology & Health, 22*, 659-676.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*, 335-343.
- Lumley, M. A. (2004). Alexithymia, emotional disclosure, and health: A program of research. *Journal of Personality, 72*, 1271-1300.
- Lumley, M. A., Asselin, L. A., & Norman, S. (1997). Alexithymia in chronic pain patients. *Comprehensive Psychiatry, 38*, 160-165.
- Lutgendorf, S. K., Antoni, M. H., Kumar, M., & Schneiderman, N. (1994). Changes in cognitive coping strategies predict EBV-antibody titre change following a stressor disclosure induction. *Journal of Psychosomatic Research, 38*, 63-78.

- Marco, C. A., Neale, J. M., Schwartz, J. E., Shiffman, S., & Stone, A. A. (1999). Coping with daily events and short-term mood changes: an unexpected failure to observe effects of coping. *Journal of Consulting & Clinical Psychology, 67*, 755-764.
- Marco, C. A., & Suls, J. (1993). Daily stress and the trajectory of mood: Spillover, response assimilation, contrast, and chronic negative affectivity. *Journal of Personality and Social Psychology, 64*, 1053-1063.
- McIntyre, K. P., Korn, J. H., & Matsuo, H. (2008). Sweating the small stuff: How different types of hassles result in the experience of stress. *Stress and Health: Journal of the International Society for the Investigation of Stress, 24*, 383-392.
- Meadows, E. A., & Foa, E. B. (1999). Cognitive-behavioural treatment of traumatized adults. *Posttraumatic stress disorder: A comprehensive text* (pp. 376-390). Needham Heights, MA: Allyn & Bacon.
- Meads, C., & Nouwen, A. (2005). Does emotional disclosure have any effects? A systematic review of the literature with meta-analyses. *International Journal of Technology Assessment in Health Care, 21*, 153-164.
- Nolen-Hoeksema, S. (1998). The other end of the continuum: The costs of rumination. *Psychological Inquiry, 9*, 216-219.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*, 115-121.
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science, 3*, 400-424.
- Norman, S. A., Lumley, M. A., Dooley, J. A., & Diamond, M. P. (2004). For Whom Does It Work? Moderators of the Effects of Written Emotional Disclosure in a Randomized

- Trial Among Women With Chronic Pelvic Pain. *Psychosomatic Medicine*, 66, 174-183.
- O'Cleirigh, C., Ironson, G., Fletcher, M. A., & Schneiderman, N. (2008). Written emotional disclosure and processing of trauma are associated with protected health status and immunity in people living with HIV/AIDS. *British Journal of Health Psychology*, 13, 81-84.
- O'Connor, D. B., & Ashley, L. (2008). Are alexithymia and emotional characteristics of disclosure associated with blood pressure reactivity and psychological distress following written emotional disclosure? *British Journal of Health Psychology*, 13, 495-512.
- O'Connor, D. B., Hurling, R., Herdrichs, H., Osbourne, G., Hall, J., Walklet, E., et al. (In press). Effects of written emotional disclosure on implicit self-esteem and body image.
- O'Connor, D. B., Jones, F., Conner, M., McMillan, B., & Ferguson, I. (2008). Effects of daily hassles and eating style on eating behaviour. *Health Psychology*, 27, S20 - S31.
- Oliver, N. S., & Page, A. C. (2003). Fear reduction during in vivo exposure to blood-injection stimuli: Distraction versus attentional focus. . *British Journal of Clinical Psychology*, 42, 13-25.
- Park, C. L., & Blumberg, C. J. (2002). Disclosing trauma through writing: Testing the meaning-making hypothesis. *Cognitive Therapy and Research*, 26, 597-616.
- Patterson, C. L., & Singer, J. A. (2007). Exploring the role of expectancies in the mental and physical health outcomes of written self-disclosure. *Imagination, Cognition and Personality*, 27, 99-115.

- Pennebaker, J. W. (1989). Cognition, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 22, pp. 211-244). New York: Academic Press.
- Pennebaker, J. W. (1993). Putting stress into words: Health, linguistic & therapeutic implications. *Behaviour Research and Therapy*, 31, 539-548.
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, 8, 162-166.
- Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274-281.
- Pennebaker, J. W., Colder, M., & Sharp, L. K. (1990). Accelerating the coping process. *Journal of Personality and Social Psychology*, 58, 528-537.
- Pennebaker, J. W., & Francis, M. (1996). Cognitive, emotional, and language processes in disclosure. *Cognition and Emotion*, 10, 601-626.
- Pennebaker, J. W., Kiecol-Glaser, J. K., & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology*, 56, 239-245.
- Possemato, K. A. (2008). *An internet-based expressive writing intervention for kidney transplant recipients*. Possemato, Kyle A : Drexel U , US.
- Rabkin, J. G., & Struening, E. L. (1976). Life events, stress, and illness. *Science*, 194, 1013-1020.
- Raudenbush, S. W., Bryk, A. S., Cheong, Y. F., & Congdon Jr., R. T. (2004). *HLM 6: hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.

- Raval, A. A. (2000). *The role of emotional expression in physical health: A relational perspective*. ProQuest Information & Learning, US.
- Schwarzer, R., & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping* (pp. 107-132). New York Wiley.
- Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, *129*, 216-269.
- Slesnick, N., & Prestopnik, J. L. (2004). Office versus Home-Based Family Therapy for Runaway, Alcohol Abusing Adolescents: Examination of Factors Associated with Treatment Attendance. *Alcoholism Treatment Quarterly*, *22*, 3-19.
- Sloan, D., M, & Marx, B., P. (2004a). A closer examination of the structured written disclosure procedure. *Journal of Consulting and Clinical Psychology*, *72*, 165-175.
- Sloan, D. M., & Marx, B. P. (2004b). Taking Pen to Hand: Evaluating Theories Underlying the Written Disclosure Paradigm. *Clinical Psychology: Science and Practice*, *11*, 121-137.
- Sloan, D. M., Marx, B. P., & Epstein, E. M. (2005). Further Examination of the Exposure Model Underlying the Efficacy of Written Emotional Disclosure. *Journal of Consulting and Clinical Psychology*, *73*, 549-554.
- Sloan, D. M., Marx, B. P., Epstein, E. M., & Dobbs, J. L. (2008). Expressive writing buffers against maladaptive rumination. *Emotion*, *8*, 302-306.
- Smyth, J., True, N., & Souto, J. (2001). Effects of writing about traumatic experiences: The necessity for narrative structuring. *Journal of Social & Clinical Psychology*, *20*, 161-172.

- Smyth, J. M. (1998). Written emotional expression: Effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology, 66*, 174-184.
- Smyth, J. M. (1999). *Written emotional disclosure: Effects on symptoms, mood, and disease status in patients with asthma or rheumatoid arthritis*. Smyth, Joshua Morrison: State U New York at Stony Brook, US.
- Smyth, J. M., & Catley, D. (2002). Translating research into practice: Potential of expressive writing in the field. *The Writing Cure: How Expressive Writing Promotes Health and Emotional Well-being* (pp. 199-214). Washington DC: American Psychological Association
- Smyth, J. M., Hockemeyer, J. R., & Tulloch, H. (2008). Expressive writing and post-traumatic stress disorder: Effects on trauma symptoms, mood states, and cortisol reactivity. *British Journal of Health Psychology, 13*, 85-93.
- Smyth, J. M., Stone, A. A., Hurewitz, A., & Kaell, A. (1999). Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis. *Journal of American Medical Association, 281*, 1304-1329.
- Spera, S. P., Buhrfeind, E. D., & Pennebaker, J. W. (1994). Expressive Writing and Coping with Job Loss. *Academy of Management Journal, 37*, 722-733.
- Stanton, A. L., Danoff-Burg, S., Sworowski, L. A., Collins, C. A., Branstetter, A. D., Rodriguez-Hanley, A., et al. (2002). Randomized, Controlled Trial of Written Emotional Expression and Benefit Finding in Breast Cancer Patients. *J Clin Oncol, 20*, 4160-4168.
- Stone, A. A., Kennedy-Moore, E., & Neale, J. M. (1995). Association between daily coping and end-of-day mood. *Health Psychology, 14*, 341-349.

- Taylor, G. J., Bagby, R. M., & Parker, J. D. (1992). The Revised Toronto Alexithymia Scale: Some reliability, validity, and normative data. *Psychotherapy and Psychosomatics*, 57, 34-41.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination Reconsidered: A Psychometric Analysis. *Cognitive Therapy and Research*, 27, 247-259.
- Watson, D. (1988). Intraindividual and interindividual analyses of positive and negative affect: Their relation to health complaints, perceived stress, and daily activities. *Journal of Personality and Social Psychology*, 54, 1020-1030.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Wetherell, M. A., Byrne-Davis, L., Dieppe, P., Donovan, J., Brookes, S., Byron, M., et al. (2005). Effects of Emotional Disclosure on Psychological and Physiological Outcomes in Patients with Rheumatoid Arthritis: An Exploratory Home-based Study. *Journal of Health Psychology*, 10(2), 277-285.
- Zakowski, S. G., Ramati, A., Morton, C., Johnson, P., & Flanigan, R. (2004). Written Emotional Disclosure Buffers the Effects of Social Constraints on Distress Among Cancer Patients. *Health Psychology*, 23(6), 555-563.
- Zutra, A. J. (2003). *Emotions, Stress, and Health*. New York: Oxford University Press
- Zeitlin, S. B., & McNally, R. J. (1993). Alexithymia and anxiety sensitivity in panic disorder and obsessive-compulsive disorder. *American Journal of Psychiatry*, 150, 658-660.
- Zohar, D. (1999). When things go wrong: The effect of daily work hassles on effort, exertion and negative mood. *Journal of Occupational and Organizational Psychology*, 72, 265-283.

APPENDICES

Certificate of ethical approval #09070-04

Title: Exploring the mechanisms of action
accounting for the beneficial effects of expressive

Researcher(s): Fiona Eldridge (DCLin student)

Supervisor: Daryl O'Connor

Date of approval: 2 November 2009



Ethics committee of the Institute of Psychological Sciences, Leeds University

Participant Information Sheet

Have you had a stressful, upsetting or traumatic experience in the last five years? If the answer to this question is yes, you may be eligible to take part in this groundbreaking research investigating how individuals cope with stress.

The study

There is now considerable evidence that writing for just twenty minutes over three consecutive days can help individuals to deal with stressful or traumatic events. The aim of this study is to increase the understanding of psychologists and researchers in to just who benefits from writing and how, with a view to contributing to the development of a mainstream writing treatment for stress. If you agree to participate in this study you will be asked to fill out a few brief questionnaires (approx 5- 10 minutes) and then asked to write for twenty minutes for three consecutive days. On the last day of writing you will be asked to complete a short daily diary every evening for seven days (5 minutes each evening) and again for seven days two months later.

The researchers

The research is being conducted as part of a Doctorate in Clinical Psychology at the University of Leeds currently being undertaken by the Lead Researcher, Fiona Eldridge and is supervised by Dr Daryl O'Connor from the Institute of Psychological Sciences at the University of Leeds.

Ethics procedures

The study is being conducted in accordance with British Psychological Society and the University of Leeds Department of Psychology ethics guidelines. It is anticipated that the findings of the study will be written up for publication in a peer-reviewed journal. In accordance with ethical guidelines, all data will be anonymised and it will not be possible to identify individual participant's data. Your ethical rights as a participant, including the right to withdraw at any point without offering a reason, are ensured.

Participant requirements

Eligible participants will need to be over the age of 18, be able to read and write in English and have experienced an event perceived by yourself to be stressful, upsetting or traumatic in the last five years. If you have a current *diagnosis* for a mental health condition or have sought treatment for a diagnosis in the last 6 months you will be unable to take part in this study.

Prize draw

On completion of the study, all participants will be entered into a prize draw to win one of 3 prizes of between £50 and £100 worth of vouchers from your choice of either Amazon or M&S. Winners, who will be selected at random, will be notified by post in April/May 2010.

If you would like to participate in this study, and already have the participant information and writing pack, which is all you need for the first stage of this study, please open the pack and complete as directed. Alternatively if you would like to request a pack please email Fiona Eldridge, Lead Researcher as soon as possible on , enclosing a postal address to which the pack will be sent. If you have any questions regarding participation in the study please do not hesitate to email. Many thanks indeed for your support with this research.

Participant Instructions

Important: Please read these instructions through fully before beginning the study.

Day 1:

1. Complete the consent form and four brief questionnaires which should take up to 10 minutes.
2. Immediately after completing the questionnaires open the envelope marked 'WRITING – DAY 1' and follow instructions for the first twenty minute writing session.
3. After the first day of writing please return the questionnaires AND the first days writing to the Lead Experimenter in the stamped addressed envelope provided.

Day 2:

1. Open the instructions for writing for day 2. Please complete the twenty minute writing task and then put the writing back into the envelope that the instructions came out of and keep it with the envelope for day 3.

Day 3:

1. Open the instructions for writing for day 3. Please complete the twenty minute writing task and then put the writing back into the envelope that the instructions for day 3 came from.
2. Please post back the final two writing scripts in their respective envelopes (day 2 and 3) in the larger stamped addressed envelope provided.
3. In the evening of day three (ideally before bedtime) please open the envelope marked 'DAILY DIARY'. Please complete day 1 of the diary.

Day 4-9:

1. Every evening before bedtime please complete a day in the daily diary.
2. On day 9, after completion of the seven day daily diary, please send back the diary to the Lead Experimenter in the stamped addressed envelope provided.

Two months after writing, participants will be asked to complete another seven day diary which will be sent out along with a stamped addressed envelope. This diary follows the same format as the first. We will use the address provided on the demographics questionnaire to send this out. Please let the lead experimenter know if you change address on:

Please note:

Text reminders

In past research, participants have requested reminders sent by text to prompt completion of dairies. If there is a specific time you would like your text reminder, please let the Lead Experimenter know when you return your questionnaires. Numbers will strictly not be used for any other purposes.

Any further questions:

Please do not hesitate to contact Fiona Eldridge (Lead Experimenter) by email at if you have any questions at all about the study.

Thank you very much indeed for your participation in this research.

Consent Form

Thank you very much for agreeing to take part in our research on writing and stress. The purpose of this form is to make sure that you are happy to take part in the research and that you know what is involved.

| | |
|--|-----------|
| Do you feel you have had enough information to take part in this study? | YES/NO* |
| If you have asked questions have you had satisfactory answers to your questions? | YES/NO/NA |
| Do you understand that you are free to leave the study at any time? | YES/NO |
| Do you agree to write for three days consecutively for twenty minutes? | YES/NO |
| Do you agree to completing a daily diary each evening for one week starting on the last day of writing (taking approximately 5 minutes per evening)? | YES/NO |
| Do you agree to take part in this study and the follow up involving a completion of the daily diary for one week two months after initial participation? | YES/NO |
| Do you grant permission for your writing to be used for future research on the understanding that your anonymity will be maintained? | YES/NO |
| Do you agree that you have had a stressful event in the last 5 years? | YES/NO |
| Do you agree that you meet the eligibility criteria set out in the Participant Requirement section of the Participant Information Sheet? | YES/NO |

* please delete as appropriate

Signed

Name in Block Letters

Date

Please note: consent forms will NOT be kept with participant data to protect participants identity. To ensure anonymity please put the consent form in the separate envelope (attached) before posting back with the rest of the questionnaires in the SAE provided.

Dear Participant,

I am writing to thank you for your recent participation in the research study investigating how individuals cope with stress which was conducted as part of my Doctorate in Clinical Psychology and to debrief you on the study's aims and purpose.

This study is one of well over 200 writing studies that have investigated the impact of expressive writing on various outcomes including physical health and mood. Expressive writing has been theorised to be especially beneficial to individuals who perceive that they have experienced an upsetting, traumatic or stressful event which is why experience of such an event was a requirement of study participation (Frattaroli, 2006).

Participants in this study were randomised into either an experimental group who were asked to write for 20 minutes a day for three consecutive days about a stressful, upsetting or traumatic event following specific instructions or a control group, where participants were asked to write about their days activities without any emotions or opinions. The instructions used in the experimental group were a variation of expressive writing instructions. It was hypothesised that these might maximise expressive writing effects. In addition, it was hypothesised that participants might cope better with daily hassles as a result of engaging in expressive writing and thus participants in both conditions were required to keep a daily diary over two separate weeks to record how they coped with daily stressors to compare whether groups differed in this regard.

If you would like to read more about the research programme investigating expressive writing effects I would recommend the following references:

- Lepore, S. J. & Smyth, J. M. (2002). *The Writing Cure: How Expressive Writing Promotes Health and Emotional Well-Being*. American Psychological Association: Washington DC.
- Frattaroli (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin*, 132, pp 823-865.

Finally, writing about stressful experiences has been shown to benefit many individuals in the long-term however, inevitably asking participants to think about stressful , upsetting or traumatic events in the past is predicted to evoke some emotional reactions.

Participants in the expressive writing condition were provided with advice on what to do if they felt unduly concerned about their response to the expressive writing procedure. That advice still stands now and participants are encouraged to contact the lead researcher, Fiona Eldridge, or their GP if they would like any additional advice.

I would like to end by thanking you again for your participation in this research project.

Please do not hesitate to contact me on _____ if you would like to discuss this study further.

Yours sincerely,

Fiona Eldridge

Psychologist in Clinical Training