Values-Based Self-Affirmation as an Intervention for Reducing Nonclinical Rumination

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Abstract

Rumination refers to repetitive patterns of negative thinking, which is a maintaining factor for numerous mental health difficulties and occurs nonclinically. According to control theory (Martin & Tesser, 1996), rumination is triggered by a blocked goal and can be reduced by decreasing the resultant actual-ideal self-discrepancy. Steele's (1988) well-validated self-affirmation theory proposes that the act of affirming a core value, known as value-affirmation, helps to buffer against psychological threats by maintaining a positive self-view. Furthermore, clinical applications of values and goals (e.g., Acceptance and Commitment Therapy) suggest that it is not simply the act of reflecting on a core value, but also the setting and attaining of value-driven goals, that has positive effects on well-being. This study tested whether value-affirmation, particularly with a goal-setting component, would reduce rumination immediately post-intervention and after two weeks. The study hypotheses were: following the intervention, value-affirmation (VA) and value-affirmation plus goal-setting (VA+GS) groups would report lower state rumination than a standardised non-affirmation control group (NAC); at two-week follow-up, VA+GS would report the lowest level of rumination, followed by VA, then NAC; and this would not be mediated by positive mood. A randomised-controlled mixed design was utilised, with self-reported state rumination and positive affect measured over three time points (pre- and post-intervention and two-week follow-up) within a nonclinical sample. Findings did not support these hypotheses: there were no significant main or interaction effects of state rumination over time. Exploratory analysis revealed there was a significant difference in rumination levels between goal-completers and noncompleters within the VA+GS group at follow-up, and VA and

VA+GS conditions resulted in immediately improved positive affect. There are numerous possible reasons for the null main findings, including the conceptualisation of rumination, or the possible roles of positive affect, behaviour change or self-esteem. Alternatively, the study may have been insufficiently powered to find an effect because there appeared to be a trend towards some of the expected results. It was concluded that whilst this study did not find the expected results, value-affirmation may under certain circumstances be an effective intervention for rumination and thus warrants further investigation.

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1. Introduction

1.1 Overview

Rumination refers to repetitive patterns of negative thinking, which is a maintaining factor for many mental health difficulties and occurs in the general population (Nolen-Hoeksema, 2000). There are numerous negative consequences to rumination even in nonclinical samples, for instance it predicts later depression (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Therefore, interventions for alleviating rumination in nonclinical samples are important in their own right, as well as their potential utility for informing the development of clinical interventions. However, the literature investigating interventions for rumination is relatively small and focuses predominantly on depression.

There has been increasing focus within clinical and social psychology on the benefits of reflecting on and affirming core values. Within social psychology, it has been suggested that affirming a core value helps to buffer against psychological threats by maintaining a positive self-view in the face of actual-ideal self-discrepancy. This may be relevant to rumination; control theory (Martin & Tesser, 1996) stipulates that rumination can be reduced by decreasing actual-ideal self-discrepancy. A previous study found that affirming a core value resulted in reduced rumination immediately after participants were given false feedback regarding task failure (Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999). Furthermore, within clinical psychology, it has been suggested that devising value-driven goals produces further positive effects on wellbeing.

The current study aims to extend the work of Koole et al. (1999) by investigating whether values alone, or with the addition of values-derived goals, can help to reduce rumination over a two-week period. This review will begin with an introduction to the definitions and conceptualisations of rumination and a summary and critique of current interventions for rumination. It will then present values-based interventions, including value-affirmation and Acceptance and Commitment Therapy (ACT). An argument for investigating values, particularly with the addition of a goal-setting component, as an intervention for reducing rumination will be presented, followed by an overview of the current study hypotheses.

1.2 Rumination

The literature reports several definitions of rumination, based on differing psychological perspectives, but broadly refers to repetitive patterns of negative thinking (Papageorgiou & Wells, 2004; Smith & Alloy, 2009). Rumination contributes to the development of numerous mental health difficulties (Ehring & Watkins, 2008; Harvey, 2004); it is a symptom of depression, anxiety disorders, eating disorders and substance misuse (Brozovich et al., 2015; Cowdrey & Park, 2011; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, 2000; Skitch & Abela, 2008). Researchers have found that elevated repetitive negative thought, including rumination, is associated with increased vulnerability to several emotional disorders and may therefore account for the high levels of comorbidity between mental health problems (McEvoy, Watson, Watkins, & Nathan, 2013; Ruscio, Seitchik, Gentes, Jones, & Hallion, 2011). For example, rumination was shown to be a full mediator of

the association between symptoms of depression and anxiety in adolescents and a partial mediator in adults (McLaughlin & Nolen-Hoeksema, 2011). Similarly, experimental studies have shown that rumination exacerbates both depressed and anxious mood (McLaughlin, Borkovec, & Sibrava, 2007).

Researchers have found that nonclinical populations also report ruminative thoughts, but applied to negative moods and feelings, rather than symptoms of depression. The existing research suggests that the process of rumination is quantitatively but not qualitatively different between clinical and nonclinical populations (Garnefski et al., 2002; Siegle, Moore, & Thase, 2004). For example, (Garnefski et al., 2002) found that both a nonclinical and clinical population (individuals on a waitlist for treatment for depression or anxiety at a psychiatric clinic) self-reported ruminative thoughts, although this was predictably higher in the clinical population. This is also reflected in the same measures of rumination being used within both populations (Gortner, Rude, & Pennebaker, 2006; Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1993; Roberts, Watkins, & Wills, 2013; Strauss, Muday, McNall, & Wong, 1997). Interventions targeting rumination may be able to reduce the onset, relapse, and maintenance of emotional disorders (Michalak, Hölz, & Teismann, 2011) as well as the other numerous consequences of rumination established in nonclinical studies.

The subsequent section provides a more in-depth explanation and critique of two key theories underlying differing definitions of rumination. Following this, the literature concerning rumination in the nonclinical population, and then interventions for reducing rumination, will be presented.

1.2.1 Theoretical models. A full review of the many theories of rumination is beyond the scope of this study, however a description and critique of RST (Nolen-Hoeksema, 1991) and CT (Martin & Tesser, 1996) is discussed below.

1.2.1.1 The response styles theory (RST). In RST, Nolen-Hoeksema (1991) suggested that rumination is a habitual, stable and enduring *trait-like tendency* to repetitively focus on one's symptoms of depression, and on the causes, meanings and consequences of depressive symptoms. This perspective views rumination as a process or style of thinking rather than being defined by specific thought-content or behaviours. It is a popular definition within clinical investigations of rumination and, in particular, depression (Smith & Alloy, 2009). The questionnaire designed to measure this conceptualisation of rumination, the Response Styles Questionnaire-Ruminative Response Scale (RSQ-RRS; Nolen-Hoeksema & Morrow, 1991), is also frequently utilised in the literature (Smith & Alloy, 2009). RST does not provide an explanatory account for state episodes of rumination (Chan, Davey, & Brewin, 2013; Watkins & Nolen-Hoeksema, 2014) but rather an explanation of how the *tendency* to ruminate leads to depression.

Within RST, rumination is considered a clinical phenomenon that helps to explain vulnerability to and maintenance of clinical depression: the theory was originally proposed to explain the maladaptive relationship between rumination and depression, particularly how rumination exacerbates and prolongs depressive symptoms by intensifying negative thinking, leading to disengagement from goal-driven behaviours, impairment of problem-solving and reduced social support (Nolen-Hoeksema et al., 2008). It suggests one's tendency to engage in rumination is a

pathological enduring cognitive style when responding to, or trying to cope with, negative mood (Nolen-Hoeksema, 1991; Nolen-Hoeksema & Davis, 1999). It will lead people to remain fixated on the ruminative trigger and their feelings surrounding this, without taking action (Nolen-Hoeksema et al., 2008).

There is some evidence for this conceptualisation of rumination as a pathological enduring cognitive style. Firstly, rumination has been shown to be stable over time (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema, 2000). However, this finding may be due to the overlap of items on RSQ-RRS with other measures of depressive symptoms (Kasch, Klein, & Lara, 2001). Secondly, rumination is a maintaining factor and trigger for depression (Nolen-Hoeksema & Morrow, 1991). It predicts the onset of major depressive episodes in people who have never been depressed and it predicts the severity of episodes in people with chronic depression (Nolen-Hoeksema, 2000). Cognitive behavioural therapy (CBT) effectively treats depression (Hollon et al., 2002), but people are often left with residual symptoms such as rumination, and relapse is common (Paykel et al., 2005). Most trials of CBT do not directly assess rumination, but a high level of rumination is associated with slower and worse treatment response to both medication and cognitive therapy (Ciesla & Roberts, 2002; Jones, Siegle, & Thase, 2008; Schmaling, Dimidjian, Katon, & Sullivan, 2002). Levels of rumination post-treatment also predict the risk of relapse in major depressive disorder (Michalak et al., 2011), thus rumination is an important target for relapse prevention. However, rumination is implicated in other mental health difficulties beyond depression (Brozovich et al., 2015; Cowdrey & Park, 2011; Skitch & Abela, 2008).

There are several limitations of RST theory. Firstly, RST does not explain why rumination can have constructive consequences (Watkins, 2008). For example, (Taylor, Pham, Rivkin, & Armor, 1998) suggest that rumination can, in some situations, allow individuals to mentally rehearse the steps they need to go through to reach a goal, leading to goal attainment. Similarly, researchers have shown that rumination can motivate individuals to engage in healthy behaviour change (Hay, McCaul, & Magnan, 2006).

Another limitation of the theory is that it places rumination within a pathological context, as it refers to focusing on symptoms of depression and does not consider the process of rumination outside of this context. This goes against the idea that rumination lies on a continuum within the general population (Garnefski et al., 2002) and that it is a transdiagnostic process (McLaughlin & Nolen-Hoeksema, 2011; Watkins, 2009).

Additionally, the theory suggests rumination is triggered by negative mood, for which evidence exists (Lyubomirsky & Nolen-Hoeksema, 1995; Watkins, 2008). However, rumination is not an inevitable consequence of negative mood, even in 'high-ruminators' (Chan et al., 2013). Moreover, rumination can also be triggered by unresolved goals or life events outside of the context of negative mood (Lavallee & Campbell, 1995; Martin & Tesser, 1996; Robinson & Alloy, 2003).

1.2.1.2 Control theory (CT). CT suggests that rumination is triggered by a discrepancy in goal progress, serves to facilitate progress towards this unmet goal, and continues until the person's goal is met or abandoned. The theory suggests that focusing on the discrepancy between one's current status and one's target status

drives rumination, an idea based on Self-discrepancy theory (SDT; Higgins, 1987). According to SDT, individuals have three domains of self: the actual self, the ideal self, and the ought self. The actual self represents an individual's own perception of their attributes and characteristics; the ideal self represents the attributes that the individual hopes to possess; and the ought self represents attributes the individual should have. Discrepancies between the actual self and the ideal or ought self drive rumination. The theory implicates the rate of goal progress, rather than the size of discrepancy, in driving rumination: low perceived rates of goal progress are associated with higher levels of rumination.

According to CT, individuals can disengage from rumination via one of three mechanisms: temporarily through distraction, or more permanently through goal disengagement or attainment. Goals are hierarchically organised from abstract superordinate values-based goals down to more specific subordinate goals. The higher-order goals are pursued by specifying lower-level goals that work towards the more abstract higher-order goals.

CT specifies that the function of rumination is to facilitate progress towards an unmet goal. Little research has addressed the function of rumination, but Martin, Shira, & Startup (2004) found that rumination was associated with right hemispheric activation, which authors concluded indicated a role in looking for methods of goal attainment. Thus, contrary to RST's definition, rumination can be constructive, for example if it leads to goal progress, or unconstructive, for example if the goal is pursued despite being unachievable, or if it only increases awareness of the discrepancy (Watkins & Moulds, 2005; Watkins & Teasdale, 2001, 2004).

CT stipulates that rumination is caused by the Zeigarnik effect (Zeigarnik, 1938): information regarding incomplete tasks remain in memory for longer than completed tasks. Rumination occurs because goal-related information is easily accessible (Martin, Tesser, & McIntosh, 1993), and, in turn, rumination keeps goal-related information accessible. The theory proposes that rumination is more likely to occur as a result of failure to progress toward higher-order, rather than lower-order, goals. This is firstly because higher-order goals are more closely related to an individual's values and therefore their self-identity and what is important to them; this makes higher-order goals more difficult to abandon. Secondly, higher-order goals are more abstract; the goal may be difficult to attain because it may take a long time, it may be loosely defined, it may be difficult to ascertain what is required to complete the goal or, if it refers to a value or life direction, it may be ongoing rather than something that can be completed.

The proposal that lack of goal progress or receiving goal-related information about lack of goal progress leads to ruminative thinking is evidence-based (e.g., Martin et al., 1993; Roberts, Watkins, & Wills, 2013). For example, Roberts, Watkins, and Wills (2013) found that cueing an unresolved goal resulted in greater recurrent ruminative thoughts than cueing a resolved goal. In an experience sampling study, (Moberly & Watkins, 2010) found that greater goal success was associated with less rumination. Similarly, in a diary study, goal-related events were associated with higher levels of rumination than other 'bothersome' events that were not goal-related (Lavallee & Campbell, 1995). However, participants also ruminated in response to goal-unrelated negative events, although this was less common.

According to CT theory, rumination is more likely to be triggered by higher-order goal-discrepancy or value-inconsistent behaviour, as these are more closely related to our values and self-identity. Research has found that rumination can be triggered by goal-discrepancy whether the goal is higher-order and abstract (e.g., 'being compassionate'), or lower-order and concrete (e.g., 'being an ideal weight'; (McIntosh, Harlow, & Martin, 1995). However, individuals who link their lower-order goals with higher-order goals experience greater levels of rumination (McIntosh et al., 1995). In line with CT, the authors suggested that higher-level goals are less well-defined and more closely tied to the individual's sense of self and their values, thus more difficult to abandon, leading to rumination. In line with this, rumination impairs goal disengagement: it leads individuals to persevere with unattainable goals (Randenborgh, Hüffmeier, LeMoult, & Joormann, 2010). Reducing goal-discrepancy via goal-setting interventions have been shown to result in reduced rumination in a student sample (Sheldon, Kasser, Smith, & Share, 2002), as well as generally improved subjective wellbeing in a student population (MacLeod, Coates, & Hetherton, 2007) and a depressed population (Coote & MacLeod, 2012). However, goal attainment may be difficult in practice as people can set never-ending or unrealistic goals for themselves (Armor & Taylor, 1998).

In summary, there are at least two key ways of conceptualising rumination: as an enduring trait-like response style to depressive mood or as a transient, state-like, universal process that occurs in response to a thwarted goal. There is a growing evidence-base looking at rumination in nonclinical populations, for which the latter definition is more appropriate.

1.2.2. Rumination in the general population. There is a significant literature concerning rumination in the nonclinical population, particularly because it has allowed researchers to have a better understanding of clinical rumination, state episodes of rumination, and longitudinal aspects of rumination (Nolen-Hoeksema, 2000; Querstret & Cropley, 2013; Smith & Alloy, 2009). The tendency to ruminate is typically assessed using the same measure in clinical and nonclinical samples, using the RSQ-RSS (N. Cohen, Mor, & Henik, 2015; Grisham, Flower, Williams, & Moulds, 2009; Lyubomirsky & Nolen-Hoeksema, 1995; Robinson & Alloy, 2003; Sloan, Marx, Epstein, & Dobbs, 2008). As such, researchers have shown that rumination is present in nonclinical samples, albeit to a quantitatively lesser extent than in clinical populations. Scores on the RSQ-RRS can range from 22-88, with higher scores indicating greater rumination. In nonclinical student samples, (Roelofs et al., 2007) and (Siegle et al., 2004) reported mean scores of 40.7 (SD = 11.1) and 46.0 (SD = 11.0) respectively. (Portero, Durmaz, Raines, Short, & Schmidt, 2015) reported a mean RSQ-RRS of 35.64 (SD = 12.72) in a student sample and mean of 53.89 (SD = 13.97) in a community transdiagnostic sample. Such findings suggest that rumination is similar across clinical and nonclinical populations, but clinical samples experience it to a greater extent.

State episodes of rumination can also be easily triggered in nonclinical samples using the rumination induction designed by (Nolen-Hoeksema & Morrow, 1993). Participants are given simple instructions to "think about" a series of items such as, "why you react the way you do" or "what your feelings might mean" (Lyubomirsky & Nolen-Hoeksema, 1993). Given the simplicity of these instructions it is apparent that this is a process that individuals engage in outside of the research

laboratory, as shown by (Morrison & O'Connor, 2005) in a longitudinal study of rumination in a student population.

Findings show that, when in the context of low mood, there are numerous negative consequences to rumination even in nonclinical samples. Rumination prolongs negative mood (Morrow & Nolen-Hoeksema, 1990) and anxiety symptoms (Blagden & Craske, 1996). Rumination also exacerbates negative thinking (Greenberg, Pyszczynski, Burling, & Tibbs, 1992; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999). For example, in a student sample comparing dysphoric participants who ruminated versus being distracted, ruminators interpreted hypothetical situations more negatively and were more pessimistic about the future (Lyubomirsky & Nolen-Hoeksema, 1995). It results in increased recall of negative memories and maladaptive recall of over-general memories (Crane, Barnhofer, & Williams, 2007; Moulds, Kandris, Starr, & Wong, 2007). Rumination also impairs problem-solving (Lyubomirsky & Nolen-Hoeksema, 1995). Dysphoric ruminators tend to rate their problems as more serious and less solvable (Lyubomirsky et al., 1999).

One of the behavioural impacts of rumination is that it leads people to disengage from goal-driven behaviours. For example, (Lyubomirsky & Nolen-Hoeksema, 1993) found that participants, induced to ruminate, reported less willingness to engage in activities they believed would improve their mood. Moreover, women with breast cancer who scored higher on trait rumination took 39 days longer on average to speak to their doctor about their initial symptoms (Lyubomirsky, Kasri, Chang, & Chung, 2006). Rumination can also lead individuals to behave in a manner that impacts negatively on social relationships: rumination is

associated with neediness and dependency (Spasojević & Alloy, 2001), and an experimental study using fictional scenarios reported that participants viewed ruminative fictional characters more negatively (Schwartz & Thomas, 1995).

Studying rumination in the general population has allowed researchers to develop a better understanding of clinical rumination and longitudinal aspects of rumination. Rumination in nonclinical samples is common and continuous with clinical samples and it predicts later depression (Nolen-Hoeksema et al., 2008). There are many more similarities than differences between clinical and nonclinical rumination. For example, goal-discrepancy is a trigger in nonclinical as well as clinical populations (Thomsen, Tønnesvang, Schnieber, & Olesen, 2011). Likewise, positive beliefs about rumination, such as "I must ruminate to better understand my feelings", are closely linked to the tendency to ruminate in clinical and nonclinical samples (Costas Papageorgiou & Wells, 2003; Roelofs et al., 2007). Laboratory-based nonclinical studies have allowed the use of active control conditions that would otherwise not be ethical in clinical research (Levin, Hildebrandt, Lillis, & Hayes, 2012). Additionally, clinical studies are often correlational and therefore difficult to draw conclusions regarding causality, and clinical populations often contain many confounding variables. In contrast, contextual variables can be controlled for in nonclinical laboratory studies.

However, investigating rumination in the general population, particularly as an analogue sample, has limitations. For example, the mechanisms underlying depressive rumination may not be the same as those underlying nonclinical reactions to experimental stressors. Indeed, self-reported measures of rumination have not consistently shown the same pattern of results as experimentally-induced rumination

(Nolen-Hoeksema et al., 2008). A factor analysis of the RSQ-RRS did not show consistent results between clinical and nonclinical samples (Whitmer & Gotlib, 2011), as they found two factors ('brooding' and 'reflection') in the nonclinical sample but not in the clinical sample. Another limitation of analogue studies relates to their time-limited effects: in studies where nonclinical participants are induced to ruminate, the impact can only be assessed short-term. This means that for any findings regarding induced rumination, the longer-term benefits of an intervention cannot be assessed nor can it be established whether findings relate to either development or maintenance of psychopathology. Therefore any results of nonclinical studies cannot be generalised to the clinical population with any degree of certainty. However, analogue samples that measure rumination over time without a rumination induction, may be more ecologically valid.

In conclusion, rumination is present in both clinical and nonclinical populations and results in many negative consequences. It is therefore important to find effective ways of reducing rumination. The following section provides an overview of current interventions for rumination.

1.2.3 Cognitive and Acceptance-based Interventions for Reducing Rumination.

Interventions targeting rumination may be able to reduce the onset, relapse, and maintenance of emotional disorders (Michalak et al., 2011) as well as the other numerous consequences of rumination established in nonclinical studies. However, the literature investigating interventions for rumination is relatively small and mostly focused on reducing rumination in depressed samples, despite the prevalence of rumination transdiagnostically and in the general population. Much of

the research focuses on traditional cognitive behavioural techniques, but there is a growing body of literature investigating third-wave interventions (e.g., acceptance, mindfulness and values) for rumination. These are discussed below.

1.2.3.1 Cognitive-based interventions. Traditional cognitive behavioural interventions often use 'reframing' techniques to address rumination; that is identifying and then challenging maladaptive thoughts. For example, Metacognitive therapy (MCT) is a form of cognitive restructuring that looks at challenging an individual's metacognitions, or thoughts about thoughts. (Wells, 2008) suggests that rumination is initiated by positive metacognitive beliefs about its positive consequences (e.g., "focusing on how I feel will help me know when I'm better") and is then exacerbated by negative metacognitive beliefs about its negative consequences (e.g., "I can't control my thinking"; (Wells et al., 2012). In an uncontrolled trial of eight sessions of MCT (Wells et al., 2012), recovery rates from treatment-resistant depression (individuals who had previously not responded to anti-depressant medication and a psychological intervention) were 60-80% depending on the criteria applied. Statistically significant improvements were seen in rumination and metacognitive beliefs and this was maintained at one-year follow-up. A randomised controlled trial (RCT) is required to investigate this intervention further as this study was uncontrolled. The applicability of this strategy for the whole continuum of rumination also requires further consideration.

CT (Martin & Tesser, 1996) predicted that abstract goals are likely to cause more problematic goal progress because they are more difficult to achieve or abandon. In line with this, rumination is associated with the tendency to process

information in an abstract and over-generalised manner (Koster, De Lissnyder, Derakshan, & De Raedt, 2011). Concreteness training (CNT) was designed to counter this bias by increasing specificity of processing. Participants are taught to focus on details and context of events using mental exercises. In a nonclinical study, CNT (as a facilitated self-help intervention with one initial training session and seven days practicing the learned techniques with audio exercises), was compared to a 'bogus CNT' (without active engagement in concrete thinking but matched on treatment rationale, contact and duration) and a waitlist control group (Watkins et al., 2009). CNT reduced rumination after one week, but no significant difference was shown between treatment groups, suggesting nonspecific therapy factors were contributing to the effect.

In a review of interventions for depressive rumination, (Querstret & Cropley, 2013) identified 10 studies measuring rumination. Nine of these studies measured rumination as a secondary outcome and only one measured rumination as the primary outcome of the intervention: this was a study looking at 'Rumination-focused CBT' (RFCBT; Watkins et al., 2011). It is a 12-week intervention in which individuals are taught to view rumination as a form of behavioural avoidance and encourages behaviour change rather than targeting cognitions (Watkins & Nolen-Hoeksema, 2014). Using functional analysis, RFCBT aims to help patients identify the cues that increase rumination, and practice alternative more helpful approach responses such as assertiveness (Watkins, 2010). In an RCT with a sample of individuals with medication-refractory residual depression (N = 42; (Edward R. Watkins et al., 2011), treatment-as-usual (TAU; ongoing antidepressant medication and out-patient clinical management) was compared to RFCBT. They found there was a significant

improvement in residual symptoms and remission rates, mediated by a reduction in rumination: 62% met full remission post-treatment in the RFCBT group, compared to 21% in the TAU group. Follow-up data were not collected so the long-term benefits are unknown. Additionally, the authors noted that the sample size was quite small.

A group version of RFCBT has also been investigated (Teismann, Brachel, et al., 2014): the treatment programme, named 'cognitive-behavioural group program for depressive rumination' (CBT-DR), is an integration of techniques from BA and RFCBT. A sample of patients with residual depression were randomised to either 11 weekly sessions of CBT-DR or to waitlist control. CBT-DR resulted in significant improvements in mood, rumination, perceived control over rumination and unhelpful metacognitive beliefs and this was maintained at one-year follow-up. The CBT-DR remission rate was 42% and the relapse rate was 26%. However, RFCBT moves away from the more traditional method of 'reframing' ruminative thoughts. Instead it overlaps with more recent third wave interventions, namely mindfulness and acceptance, because it encourages individuals to be mindful of when they begin to ruminate, to accept this as a cognitive process and to focus on behaviour change (Arch & Craske, 2008; Edward R. Watkins et al., 2011). These concepts have been examined separately as methods for reducing rumination, as will now be discussed.

1.2.3.2 Mindfulness and acceptance based interventions. Mindfulness and acceptance are two closely related concepts that emphasise the importance of 'decentering', that is, to see thoughts and feelings come and go without attaching truth or meaning to them (J. Kabat-Zinn & Burney, 1981), rather than the 'reframing' techniques seen within most cognitive behavioural interventions. They provide an

alternative way of responding to negative experiences other than rumination. Generally, the practice of mindfulness teaches individuals to intentionally and nonjudgmentally bring one's attention back to the present moment (Segal, 2001). Acceptance means being open to remaining in the present with your current experience. These concepts are hypothesised to promote disengagement from rumination as when a negative thought or feeling occurs, it is mindfully observed and accepted as a mental event that will pass, rather than a truth that will drive rumination (Hodo, 2002).

Acceptance within ACT is taught as an alternative to rumination and involves learning to experience consciously and actively unwanted private experiences, such as low mood, without attempting to alter them (S. C. Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Numerous studies have compared an acceptance induction to a rumination induction and measured distress (rather than rumination) as an outcome: studies have shown that when acceptance is taught as an alternative to rumination, it reduces negative mood and negative attitudes towards negative experiences (Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Huffziger & Kuehner, 2009; Singer & Dobson, 2007; Wade, George, & Atkinson, 2009). In addition, (Ed Watkins & Baracaia, 2002) found that just increasing awareness of mental processes can move people away from ruminative thinking in depressed and recovered depressed participants. Other studies investigating acceptance for rumination have utilised mindfulness, because this is considered a technique for accepting current experiences (Kohl, Rief, & Glombiewski, 2012).

There are several mindfulness-based interventions for clinical disorders. Mindfulness-based cognitive therapy (MBCT) was originally designed to help

depressed clients in remission to learn skills to reduce the risk of relapse, partly by targeting rumination (Segal, 2001). It consists of eight weekly two-hour manualized group sessions, intended to teach individuals to become more aware of, and alter their relationship with, their internal experiences: they learn to recognise counterproductive automatic modes of thinking and respond by decentering from these internal experiences (Kuyken et al., 2008). This approach can reduce risk of depressive relapse by up to 50% (Hofmann, Sawyer, Witt, & Oh, 2010; Piet & Hougaard, 2011). In trials of MBCT for individuals with recurrent depression compared to waitlist control (Geschwind, Peeters, Drukker, van Os, & Wichers, 2011) or TAU (van Aalderen et al., 2012), the intervention reduced rumination. This has also been found in a nonclinical population (Shapiro, Oman, Thoresen, Plante, & Flinders, 2008): increases in mindfulness mediated the reduction found in rumination.

Mindfulness-based stress reduction (MBSR; (J. Kabat-Zinn, 1982; Jon Kabat-Zinn, 2013) is another mindfulness-based intervention, which is an eight-session group based intervention originally designed for individuals with chronic health conditions. It contains mindfulness training as well as other types of meditation, such as yoga, designed to reduce stress. MBSR training was shown to reduce rumination in patients with long-term mood disorders (Ramel, Goldin, Carmona, & McQuaid, 2004), although the study did not randomise participants and so sampling bias may have occurred.

Often these interventions contain a number of other treatment components beyond mindfulness, for example behavioural activation or stress management. Some are quite time-consuming interventions and identifying the active ingredient may help to make these interventions more time-efficient. In a review of mindfulness

interventions, effect sizes were significantly associated with the number of treatment sessions and not type of mindfulness intervention, suggesting that more exposure to mindfulness practice generally results in better outcomes (Klainin-Yobas, Cho, & Creedy, 2012). However, as many studies used nontreatment controls such as waitlist or TAU, effects found may be attributable to other factors such as attending a group therapy or regular contact with a therapist, rather than the practice of mindfulness (Skerrett, 2013). In a study comparing MBCT and MBSR, researchers found that engaging in formal (rather than informal) mindfulness practice was associated with decreased rumination and symptom reduction (Hawley et al., 2013).

Mindfulness is negatively correlated with rumination (Brown & Ryan, 2003). It has also been investigated nonclinically as a stand-alone brief intervention (Deyo, Wilson, Ong, & Koopman, 2009). Participants who receive mindfulness training demonstrate reduced levels of rumination (Deyo et al., 2009; Feldman, Greeson, & Senville, 2010; Hawley et al., 2013). (Hilt & Pollak, 2012) induced negative mood in a nonclinical sample of adolescents and then compared three brief interventions for rumination: distraction, problem-solving and mindfulness. Both distraction and mindfulness reduced state rumination compared to problem-solving, although longer-term effects were not measured. It has also been investigated in a student population in an RCT of mindfulness meditation compared to relaxation (Jain et al., 2007). Although there was no significant difference on distress and positive mood states between groups, mindfulness showed a significant decrease in rumination compared to the control group.

Both mindfulness and acceptance techniques have been well researched in the context of rumination and shown to have positive effects. This is thought to be

achieved by providing an alternative response to negative thoughts and feelings. However, mindfulness practice requires significant commitment from participants given the time-consuming nature of the intervention, including the homework tasks that are set.

In summary, the literature on interventions primarily designed to target rumination is limited, despite its prevalence transdiagnostically and nonclinically, being a maintaining factor of psychopathology and a significant risk factor for relapse (Nolen-Hoeksema et al., 2008). Interventions have started to focus on rumination as a cognitive process rather than modifying the content of ruminative thoughts. There has been a move away from the more traditional cognitive restructuring, as theoretical models conceptualise rumination as a process and research has shown that challenging individual ruminative thoughts can at best be difficult (e.g., how to challenge 'why do I feel depressed?') and at worst could lead to thought suppression and thus increased negative thinking (S. C. Hayes, Strosahl, & Wilson, 1999). More successful interventions have incorporated mindfulness and acceptance components, as well as behaviour change. Overall, they provide an alternative to avoidance of negative thoughts and emotions and are interventions that have been applied transdiagnostically and within the broad continuum of rumination. However, these are fairly time-consuming interventions and often contain numerous treatment components.

CT proposes that rumination is triggered by actual-ideal self-discrepancy and interferes with instrumental behaviour (Nolen-Hoeksema et al., 2008): working with higher-order goals and introducing flexibility in goal-driven behaviours could reduce the ruminative process. A brief intervention that may target this process is focusing on

values. Reflecting on one's values may allow individuals to defuse from ruminative thoughts about a blocked goal and move toward values-based behaviour change. The next section will look at the increasing interest within clinical psychology on using values as a brief intervention that addresses rumination on a process level, transdiagnostically and nonclinically.

1.3 Values

Values have been conceptualised in a variety of ways in psychology (Dahl, 2015; Lundgren, Luoma, Dahl, Strosahl, & Melin, 2012; Plumb, Stewart, Dahl, & Lundgren, 2009; S. Schwartz, 2012). Within social psychology, values are thought of as the internalised standards we use to evaluate ourselves. They are broad desirable goals that guide people's perceptions, attitudes, and behaviours across contexts, cultures and time; examples include 'knowledge', 'friendship', or 'health' (S. Schwartz, 2012). From an ACT perspective, values are 'chosen concepts linked with patterns of action that provide a sense of meaning and that can co-ordinate our behaviour over long time frames' (Dahl, 2015). According to ACT, values are not the same as goals: values represent a life direction and are hierarchically related to goals but, unlike goals, values are never obtained (Dahl, 2015). Examples of values within this conceptualisation are 'compassion', 'honesty', or 'independence'. It may be that values could provide a flexible way to reduce self-discrepancy because goals that are value-driven can be more flexible. For example, you may value 'health' and may express this value by playing football regularly. However, if you are injured and unable to play football, you may instead express this value by setting yourself a goal

of eating more fruit and vegetables. Values are individual: not everyone has the same values, and people hold their values with varying degrees of importance. Values in this context are intrinsic in nature, meaning they provide a natural reinforcer or motivator (Lekes, Hope, Gouveia, Koestner, & Philippe, 2012).

There has been increasing focus within clinical psychology on the possible psychological benefits of helping clients to reflect on, and connect with, their core values by developing goals that are derived from these core values (Plumb et al., 2009). The clinical application of values to improving mental health is most prominent within ACT (discussed below), but dismantling studies have not been conducted to test the stand alone benefits of values. However, within social psychology literature, values have been investigated extensively. Self-affirmation literature has demonstrated that reflecting on a core value is an effective means of buffering the self in the face of self-threatening information. This may be relevant to rumination: CT stipulates that rumination is triggered by lack of goal attainment and can be reduced via goal disengagement or attainment (Martin & Tesser, 1996). Although self-affirmation and values within ACT differ in some ways, both suggest that clarifying one's values may reduce rumination by allowing an individual to disengage from blocked goals and/or focus on attaining alternative value-driven goals. The following sections will focus on values and the psychological benefits of values by first considering self-affirmation literature and then ACT literature. A theoretical argument will be presented on the potential for values to be used as an intervention to reduce rumination.

1.3.1 Self-affirmation theory and methods. The psychological benefits of working with an individual's values has been demonstrated in the field of social psychology, which has predominantly focused on nonclinical populations. Value-affirmation is a particular type of self-affirmation, in which participants write a brief essay about why a chosen value is important to them and describe a time when it was important (McQueen & Klein, 2006). An extensive literature demonstrates that this can generate a range of health and psychological benefits. Before reviewing this literature, self-affirmation theory will be described.

According to self-affirmation theory (Steele, 1988), we are all driven to maintain a positive self-view. Thus, when we receive information or experience a life event that threatens our self-view, or triggers a discrepancy between our ideal versus our real self, we are motivated to resolve this (D. K. Sherman & Cohen, 2006). Our self-view refers to a flexible global narrative, rather than a specific self-concept; people have various adaptable roles and identities within their self-view. Furthermore, self-affirmation theory proposes that our self-view is determined by a collection of valued domains. According to self-affirmation, a threat to one domain can be tolerated by reflecting on competence in another valued domain. This means that when we are faced with a psychological threat, such as a blocked goal, our self-view can be protected by reflecting on competence and success in another valued domain. This may have important implications for reducing rumination (see section 1.3.3).

Evidence that our overarching goal is to find a way to maintain our positive self-view comes from research showing that when someone's positive view of themselves is under threat, they often react defensively. For example, if someone receives health information that goes against their lifestyle choices, they may question

the truth of that information (Reed & Aspinwall, 1998). However, self-affirmation theory posits that, rather than reacting defensively, we can instead maintain our positive self-view via self-affirmation: "an act that demonstrates one's adequacy" (D. K. Sherman & Cohen, 2006). If individuals are given the opportunity to affirm their positive self-view, this buffers the self against the psychological threat imposed by the health message: they then react less defensively to information that threatens this ideal-actual self-discrepancy (D. K. Sherman, 2013).

Affirming the self can occur spontaneously in day-to-day life (Emanuel et al., 2016), such as by purchasing status goods (Sivanathan & Pettit, 2010) or updating one's Facebook page (Toma & Hancock, 2013). Spontaneous self-affirmations have been associated with better psychological wellbeing, including greater happiness and optimism (Emanuel et al., 2016). There are also numerous experimental manipulations of self-affirmation reported in the literature (McQueen & Klein, 2006), for example providing positive feedback about a personally meaningful skill (G. L. Cohen, Aronson, & Steele, 2000) or asking participants to reflect on their own previous acts of kindness (Armitage, Harris, Hepton, & Napper, 2008; Reed & Aspinwall, 1998).

The most widely studied experimental manipulation of self-affirmation is value-affirmation (McQueen & Klein, 2006), which uses values to buffer the self. The technique usually involves an individual viewing a list of values, ranking them in order of importance to them, choosing the one that is most important to them, then writing a brief essay about why their chosen value is important to them and a time when it was important. McQueen and Klein (2006), in their review of experimental

manipulations of self-affirmation, suggest the value essay is the best option for comparison with other studies because it has been used successfully many times.

However, there are some issues of note with the value-affirmation procedure. This methodology often uses a global values scale such as the Allport-Vernon-Lindzey (AVL) values scale (Allport, Vernon, & Lindzey, 1960), which contains values such as 'politics' or 'religion'. The AVL is a restrictive list of values that is now considered outdated in content and language (Kopelman, Rovenpor, & Guan, 2003) and is difficult for individuals with low literacy or education to utilise (McQueen & Klein, 2006). Other provided lists have also been restrictive, for example only five values were available to choose from in a study by (Creswell et al., 2005). This relatively limited range of values may reduce the strength of value-affirmation effects as some participants may not find any of the values available to them personally meaningful. It may also increase the chance of socially desirable responses rather than personally meaningful affirmations.

Within ACT literature, values lists usually contain a much broader number of items, often between 40-60 items, with a brief description of what each value means (R. Harris, 2008, 2011). The list of values used within ACT represent life directions (rather than life domains) and are intrinsic in nature, such as 'forgiveness'. Additionally, within self-help ACT literature, individuals are usually instructed to sort the list of values into groups labelled 'very important to me', 'quite important to me' and 'not important to me', as this is considered a more meaningful activity than ranking every value in order (R. Harris, 2008, 2011). Sorting an extensive list of values into categories, rather than ranking every value, allows individuals to gradually

determine their most important value, rather than be spending time focusing on and ranking values that are not so important to them.

Another issue regarding the value-affirmation procedure is that there is some debate about whether it is the focus on values in values essays that produces the positive effects of value-affirmation. For example, (Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013) examined the content of the values essays written by middle school students. This revealed that writing about social belonging, defined as affirming bonds with others in their social network, was key to buffering against identity threat. An affirmation-training intervention has been compared to a social belonging intervention for women in male-dominated university courses (Walton, Logel, Peach, Spencer, & Zanna, 2015). Both interventions successfully reduced the gender differences in academic grades, suggesting they may work via similar mechanisms. However, it has been suggested that the active ingredient of value-affirmation is social belonging only when the individual is faced with a social-identity threat (Shnabel et al., 2013). An alternative idea to social belonging is that of focusing on social relationships. Researchers have suggested that most value-affirmation essays focus on social relationships such as friends and family (Crocker, Yu Niiya, & Mischkowski, 2008) and that it is this focus, rather than values per se, that produces the positive effects of value-affirmation (G. L. Cohen & Sherman, 2014). Taken together, the importance of affirming an intrinsic aspect of the self, meaning relating to one's own interests, goals or choices, rather than a socially imposed basis of self-worth has been highlighted (McQueen & Klein, 2006; Schimel, Arndt, Banko, & Cook, 2004). It would be important to emphasise to participants in a value-affirmation

manipulation study that values are unique to the individual and there are no right or wrong answers when choosing important values.

Relevant value-affirmation effects, and the possible mechanisms by which these effects work, will now be presented. A theoretical and empirical argument for using value-affirmation to reduce rumination will then be presented.

1.3.2 Value-affirmation effects. The process of reflecting on a core value has significant psychological benefits, resulting in a range of emotional, cognitive and behavioural outcomes that propagate through time (G. L. Cohen & Sherman, 2014).

Evidence shows that value-affirmation reduces the impact of a psychological threat. Value-affirmed individuals show reduced physiological reactions to stress (Creswell et al., 2005; D. K. Sherman, Bunyan, Creswell, & Jaremka, 2009). Sherman et al. (2009) instructed students to complete two value-affirmation exercises over the two weeks before a stressful exam. The students provided urine samples to measure epinephrine levels, an indicator of sympathetic nervous system activation that increases with stress. Students in the control condition showed an increase in epinephrine levels over the two weeks; value-affirmed individuals did not. However, another study told participants they had to give an impromptu speech in front of an audience. They found no difference in self-reported anticipatory or post-task anxiety in participants who engaged in a value-affirmation writing task compared to a control writing task (Czech, Katz, & Orsillo, 2011). The authors speculated whether self-reported stress or anxiety was not a helpful measure of value-affirmation effects, as it may be the *tolerance* of distress rather than distress itself that is altered (Branstetter-Rost, Cushing, & Douleh, 2009; Páez-Blarrina et al., 2008). (Gregg, Namekata,

Louie, & Chancellor-Freeland, 2014) suggested that writing for 20 minutes about a strongly held value may actually inadvertently generate more stress for participants, particularly if it generates negative thoughts about living value-inconsistently. The authors found significantly lower cortisol levels following a social stressor task for individuals who had value-affirmed both by writing about an important value *and* reflecting on how they have recently lived in line with this value, compared to a non-affirmation control: authors suggested this addition may have minimised short-term stress reaction related to not currently living value-consistently. In summary, research suggests that value-affirmation reduces stress and increases tolerance of pain to enable engagement in meaningful tasks (Feldner, Zvolensky, Eifert, & Spira, 2003; Levitt, Brown, Orsillo, & Barlow, 2004).

Self-affirmation theory posits that value-affirming reduces people's usual defensive response to self-view threats by maintaining a positive global self-concept and reducing ideal-actual self-discrepancy. People are therefore more able to respond in ways that are not dominated by the drive to minimise actual-ideal self-discrepancy (D. K. Sherman, 2013). This reduces the defensive reactions to threat and allows change or learning to occur for the individual. Value-affirmation reduces defensive reactions such as rationalising away threatening information, denial, rumination, paranoia, or use of alcohol (Armitage, Harris, & Arden, 2011; Kingston & Ellett, 2014; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Sherman & Cohen, 2006).

Self-affirmation has been associated with positive cognitive outcomes: more positive perceptions of threatening health information, attitude change, less biased information processing, and reduced stereotyping (G. L. Cohen et al., 2000; Fein &

Spencer, 1997; Reed & Aspinwall, 1998; Spencer, Fein, & Lomore, 2001). For example, in a study where smokers were given information about smoking being life-threatening (a psychological threat), after one week value-affirmed individuals were more distressed by the information, and reported stronger motivation and greater confidence in their ability to quit smoking (P. R. Harris, Mayle, Mabbott, & Napper, 2007).

Several studies have shown value-affirmation procedures to have durable effects. For example, in relation to academic performance in minority groups, (G. L. Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009) and Sherman et al. (2013) found improved academic grades in at-risk minority students at two-year follow-up after completing a set of four value-affirmation interventions over one year. This finding has been observed in a number of different minority groups (Cohen, Garcia, Apfel, & Master, 2006; Miyake et al., 2010; Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013). The authors suggested that self-affirmation buffers against identity threat by broadening an individual's self-view and this effect can then propagate over time because, as self-affirmed individuals have better outcomes, they are re-affirmed and the cycle continues. This is particularly apparent in academic settings where performance is evaluated on an ongoing basis and each time this happens is an opportunity for the self to be affirmed (G. L. Cohen et al., 2009).

Longer-term effects have also been observed in health settings in the form of behaviour change, although findings are mixed (P. R. Harris & Epton, 2009). For example, (Logel & Cohen, 2012) reported that self-affirmation resulted in more weight loss, lower body mass indexes and smaller weight circumferences in people trying to lose weight; the authors suggested that self-affirmation reduced the effects of

stress, resulting in better self-control and less preoccupation with weight. (van Koningsbruggen & Das, 2009) found that people at risk of diabetes were more likely to take a screening test if they had self-affirmed. Similarly, self-affirmation increased risk perceptions of HIV and HIV preventative behaviours, such as purchasing condoms (D. A. K. Sherman, Nelson, & Steele, 2000) and resulted in less alcohol consumption at one-month follow-up (Armitage et al., 2011), compared to nonaffirmed individuals. However, other studies have not demonstrated long term effects. For example, (P. R. Harris et al., 2007) found that at one-week follow-up, self-affirmed individuals reported higher motivation to quit smoking but no reduction in cigarette consumption. One study found that self-affirmation only resulted in improved physical activity in asthmatic patients in those with greater psychological threats such as hospitalisation (Mancuso et al., 2012).

On examining other studies that have reported positive behaviour change, some have utilised the addition of an implementation intentions intervention: similar to goal-setting, participants design an action plan for behaviour change which incorporates when, where and how goal-directed behaviour will occur, but they also consider the link between what they will do if specific situations arise, known as if-then planning (P. M. Gollwitzer, Marquardt, Scherer, & Fujita, 2013). This has been shown to increase the likelihood of goal attainment (Orbell & Sheeran, 2000). Combining self-affirmation with implementation intentions resulted in the participants eating more fruit and vegetables at a three-month follow-up than either intervention alone (P. R. Harris et al., 2014). Similarly, (Ferrer, Shmueli, Bergman, Harris, & Klein, 2012) investigated how self-affirmation facilitated behaviour change: self-affirmed participants were more likely to develop a list of implementation intentions

to reduce alcohol consumption, compared to nonaffirmed control participants. However, the effect was only found for participants experiencing positive affect, indicating a moderating role of affect on self-affirmation.

Other studies have reported differing effects of value-affirmation and implementation intentions. One study reported that implementation intentions, and not value-affirmation, had a positive effect on alcohol consumption in the one-week follow-up (Norman & Wrona-Clarke, 2016). Furthermore, Jessop et al. (2013) found *less* of an increase in exercise behaviour when combining self-affirmation and implementation intentions compared to self-affirmation alone. However, the self-affirmation intervention was a 'reflection on kindness behaviours' intervention rather than value-clarification.

Reflecting on this literature, Cohen and Sherman (2014) suggest that self-affirmation effects will only be carried forward longer term if a behaviour change, in the form of an 'early behavioural win' is triggered. They suggested that if self-affirmation is able to trigger an immediate positive change in behaviour, this could not only show people that behaviour change is possible, but could also change the individual's self-view so they will continue to behave in a way that is congruent with this altered self-view. This could carry forward self-affirmation effects longer term, by reducing ideal-actual self-discrepancy, seeing that change is possible, and seeing oneself acting value-consistently (G. L. Cohen & Sherman, 2014). Acting more value-consistently extends the self-affirmation effect by promoting and maintaining a positive self-view (D. K. Sherman & Cohen, 2006). Further research is required into how self-affirmation can trigger the potentially important 'early behavioural win' (G.

L. Cohen & Sherman, 2014); a goal-setting component may be of potential benefit (Peter M. Gollwitzer & Sheeran, 2006).

The majority of research into self-affirmation effects use undergraduate student samples rather than addressing clinical problems. Unfortunately, many studies only measure the immediate or short-term impact (Howell, 2016) and many studies do not report effect sizes (McQueen & Klein, 2006). Additionally, although self-affirmation effects are wide-ranging, it is unclear exactly *how* self-affirmation effects work.

1.3.2.1 Possible mechanisms of change. A range of mechanisms have been proposed for how self-affirmation works. In particular it has been suggested that self-affirmation broadens the perspective by which people view information and life experiences, thus reducing the impact of the threat on self-discrepancy (D. K. Sherman, 2013). Consistent with this, self-affirmation resulted in less rumination or dwelling on past or possible future failures (Koole et al., 1999; Sherman, Bunyan, et al., 2009) because it allowed people to view a psychological threat from the perspective of a positive global self-concept, rather than a narrow view of the self that is under threat. This suggests that when an individual is faced with a thwarted goal, ideal-actual self-discrepancy is not increased because the overarching higher-order goal of maintaining positive self-view is still achieved.

(Wakslak & Trope, 2009) found that self-affirmation altered participants' cognitive processing; objects and events were viewed in more superordinate and structured ways. They concluded that self-affirmation results in processing at a higher level of construal, allowing individuals to focus on the big picture. This notion was

replicated in an academic setting looking at minority student identity threat (D. K. Sherman et al., 2013). In the minority student sample (Latino American) self-affirmations resulted in a higher level of construal, whereas in the nonminority group (White) self-affirmation had no effect on construal level. The self-affirmation resulted in less of an association between daily stresses and perceptions of racial threat. It allowed individuals experiencing daily threats to consider this from a broader perspective and not perceive them as threats to their positive self-view, leading to better academic grades (D. K. Sherman et al., 2013). (Critcher & Dunning, 2015) also found self-affirmed individuals reported that self-threats were less all-defining, which mediated a reduction in defensiveness. Indeed, they found that an exercise intended to broaden perspective reduced defensiveness as effectively as a self-affirmation exercise.

There are several possible mediators or moderators to the success of self-affirmation, a thorough examination of which is beyond the scope of this review (see (G. L. Cohen & Sherman, 2014; Howell, 2016; McQueen & Klein, 2006; D. K. Sherman, 2013). However, positive affect and self-esteem will briefly be discussed as these are frequently cited.

Positive affect. Positive affect is a potential mediator of self-affirmation effects. (Koole et al., 1999) found that the effect of self-affirmation on reducing rumination was mediated by an implicit measure of positive affect. However, most studies find that self-affirmation does not affect self-reported mood (Fein & Spencer, 1997; Lannin, Guyll, Vogel, & Madon, 2013; Schmeichel & Martens, 2005; Sherman et al., 2000; Spencer et al., 2001). (Steele, Spencer, & Lynch, 1993) reported that self-affirmation resulted in self-justifying attitude change but positive affect alone did not

have the same effect. However, participants in this study did not maintain their induced positive affect throughout the experiment. It may be that self-affirmation does not result in changes to explicit positive affect, but when measured implicitly, as with (Koole et al., 1999), it does. One study has also investigated the role of affect as a moderator to self-affirmation effects (Ferrer et al., 2012): self-affirmation effects were only found for participants experiencing positive affect.

Self-esteem. Self-esteem has been investigated as a mediator and a moderator of self-affirmation effects. Self-affirming may work by boosting one's self-esteem (mediation), meaning their global evaluation of their self-worth (Rosenberg, 1965): a person can accept threats to self-identity that would otherwise lower their self-esteem (Fein & Spencer, 1997). However, there have been mixed results concerning whether self-affirmation results in improved self-esteem, with Fein and Spencer (1997) finding it improved self-esteem and Schmeichel and Martens (2005) finding it had no effect on self-esteem. (Crocker et al., 2008) found that self-affirmation increased acceptance of self-threatening information, thereby reducing defensiveness, via self-transcendence (defined as feelings of love and connectedness to others), rather than by boosting self-worth or self-esteem. People are reminded of important things beyond themselves and so are better able to manage threats to self-integrity. Another study concluded that affirming a value did not affect self-esteem whereas affirming an attribute did: different affirmation interventions may work by different mechanisms (Stapel & van der Linde, 2011). Two reviews of self-affirmation literature have concluded that self-affirmation does not work by improving self-esteem, but that self-affirmation and self-esteem can show similar effects (McQueen & Klein, 2006; D. K. Sherman & Cohen, 2006).

In terms of moderation, there is some debate as to whether individuals with lower trait self-esteem benefit more or less from self-affirmation (Gibbons, Eggleston, & Benthin, 1997, p. 200; Steele et al., 1993). This may be context-dependent (Jaremka, Bunyan, Collins, & Sherman, 2011; Landau & Greenberg, 2006). Jaremka et al. (2011) suggested that in their study people with high self-esteem did not actually feel threatened by psychological threats to self-integrity so did not benefit from self-affirmation. (Marigold, Holmes, & Ross, 2007) found that high self-esteem individuals were more likely to self-generate self-affirmations and so benefitted less from a self-affirmation intervention. On the other hand, in a previously described study looking at the effect of self-affirmation on stress, self-reported stress was only lower for self-affirmation participants who were high in self-resources (i.e., high self-esteem, self-enhancement and optimism), whereas self-affirmed participants with low self-resources reported the most stress (Creswell et al., 2005). Similarly, another study found that self-affirmation was particularly beneficial for individuals with low self-esteem for promoting openness towards health-risk information (Düring & Jessop, 2015). The suggestion is that high self-esteem individuals have a more positive self-integrity from which to draw alternative self-resources. It would be important to control for trait self-esteem when investigating self-affirmation effects.

Taken together, the mechanisms by which self-affirmation works is debateable. Nonetheless, there is good evidence to suggest self-affirmation buffers against psychological threats by broadening the perspective from which people view information and life experiences. This reduces the impact of the threat on self-discrepancy (D. K. Sherman, 2013). The following section considers how this mechanism may be useful for reducing rumination.

1.3.3 Value-affirmation and rumination. According to self-affirmation theory, affirming a core value could be a possible way of reducing rumination. Self-affirmation buffers against threat by maintaining a broad self-view, broadening the perspective by which people view information and life experience, thereby uncoupling the self and the threat, and reducing the impact of the threat on self-discrepancy (G. L. Cohen & Sherman, 2014; D. K. Sherman, 2013). Martin and Tesser (1996)'s CT suggests state rumination is triggered by a thwarted goal, or discrepancy in goal progress. (Smith & Alloy, 2009) suggested rumination is triggered by awareness of an actual-ideal self-discrepancy, which could incorporate the thwarted goal of value incongruence or be related to a more concrete goal-discrepancy. This suggests that value-affirmation may help individuals to cope when unable to progress with a particular goal, by focusing and affirming the self in another valued domain. This may protect the self from ruminative processes by broadening their perspective, viewing the self-threat from a position of maintained positive self-view. (Koole et al., 1999) suggested that people are flexible in dealing with specific threats to their self-view when they have affirmed a core value because their higher-order goal of maintained positive self-view (Carver & Scheier, 1981) is attained.

The idea that value-affirmation could be useful for reducing rumination has been previously investigated (Koole et al., 1999). Participants were given failure feedback after an alleged intelligence test before or after completing a value-affirmation intervention or a non-affirmation control condition. The failure feedback was a self-identity threat intended to induce rumination because it triggered an actual-ideal self-discrepancy through lack of goal progress towards the goal of being

intelligent. The value-affirmation exercise was intended to remind participants that they had attained their higher-order goal of being competent. Value-affirmation lead to lower accessibility of goal-related thoughts, as measured by both the recognition of words from the intelligence test and by a lexical decision task. As accessibility of goal-related cognitions is a trigger for rumination, they concluded that self-affirmation reduces rumination. This study suggests that value-affirmation may help to reduce rumination in students, following an experimentally manipulated failure feedback (rumination trigger) task. However, there are a few limitations to the study.

Of significant note, rather than the well-validated value-affirmation method previously described (D. A. K. Sherman et al., 2000), Koole et al. (1999) used a value-affirmation manipulation in which participants were only asked to rate and rank order a list of six values from the AVL values scale (Allport et al., 1960), but not write about or reflect on their most important value. There are several issues regarding this. The value-affirmation intervention did not involve reflecting on values in a personally-relevant way, as more often utilised in value-affirmation research (McQueen & Klein, 2006). Additionally, as previously noted, the AVL is a restrictive list of values that is now considered outdated in content and language (Kopelman et al., 2003), and a more meaningful activity may be to sort values into piles labelled ‘very important to me’, ‘quite important to me’ and ‘not important to me’ rather than rank them (R. Harris, 2008, 2011).

In addition, the conclusions of Koole et al. (1999) are restricted to immediate effects of value-affirmation on induced rumination. It is unclear whether the reduction in rumination would be maintained longer-term and in response to naturally-occurring threats. Previous research has suggested that early behavioural change is required to

buffer and maintain value-affirmation effects over time (see section 1.3.2.1). An additional goal-setting component to a value-affirmation intervention may help to trigger value-consistent behavioural change. Living more value-consistently could augment the self-affirmation effect and thus in turn increase the buffer effect and reduce rumination further. This notion is in line with ACT theory (S. C. Hayes et al., 2006; Levin et al., 2012). Individuals work towards increasing valued living by identifying their values and committing to value-consistent action through goal-setting (McCracken, 2013; McCracken & Yang, 2006).

It is also important to acknowledge that, although Koole et al. (1999) concluded that value-affirmation reduced rumination, they used two measures of accessibility of failure-related cognitions as proxies for rumination, rather than a validated measure of rumination. There are advantages and disadvantages of measuring rumination via the availability of failure-related cognitions versus the more commonly used self-report questionnaires (e.g., Gortner, Rude, & Pennebaker, 2006; Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1993; Roberts, Watkins, & Wills, 2013; Strauss, Muday, McNall, & Wong, 1997). On the one hand, there are many factors that can impact on results when relying on self-report measures, such as participant understanding of questions and rating scales, response bias, or introspective ability (Bernard, Killworth, Kronenfeld, & Sailer, 2003; Fan et al., 2006; Stone et al., 2000). For example, if rumination is an unconscious involuntary process, as some authors suggest (Smith & Alloy, 2009), this may not be captured in self-report questionnaires. Self-report questionnaires assume that people can directly access their internal responses and are willing to report them. However, there is less evidence supporting the construct validity of this proxy

measure (Luminet, 2004) and even Koole et al. (1999) reported that accessibility of failure-related cognitions does not equate with ruminative thinking, but rather it is the instigating mechanism of ruminative thinking. Consequently it may be more appropriate to use a validated self-report questionnaire for measuring rumination.

The use of a proxy measure is also only possible in studies with a rumination induction. The use of a rumination induction reduces the likelihood of floor effects in nonclinical studies, but also means only the immediate impact of an intervention can be assessed. It is therefore less helpful for comparison with other studies measuring the effects of an intervention on rumination over time. It would be more ecologically valid to measure rumination in response to naturally-occurring threats, rather than induced rumination, which has not shown the same pattern of results as self-reported measures of rumination (Nolen-Hoeksema et al., 2008).

Another limitation to the conclusions that can be drawn from Koole's study was that findings were mediated by implicitly-measured positive affect: Koole et al. (1999) found that affirming an important value led to higher implicit positive affect, as measured by a disguised mood test. This suggests that value-affirmations work by improving affect that the participant is not aware of. However, the authors acknowledged that their measure was not well-established: in fact, it was originally designed to measure negative, rather than positive affect (Has, Katz, Rizzo, Bailey, & Moore, 1992), which are considered separate constructs (Crawford & Henry, 2004). Furthermore, this finding is anomalous to most self-affirmation research (McQueen & Klein, 2006; see section 1.3.2.1). It would be important to control for mediational effects of positive affect when investigating self-affirmation effects.

Tentatively, it is possible that value-affirmation may be useful for reducing rumination; however, this requires more thorough investigation. There are elements of the value-affirmation procedure that may benefit from adaptation, such as the use of a modern and broader list of values. Furthermore, it is possible that reflecting on values with the addition of behaviour change through value-consistent goals may be more efficacious than reflection in isolation. Given that ACT is a clinical intervention that has a substantial component focus on using values to reduce problematic psychological processes, and to increase value-consistent action, the following section will review the role of values within ACT, focusing specifically on rumination.

1.3.4 Acceptance and Commitment Therapy, values, and rumination. ACT is a third-wave transdiagnostic therapy in which individuals focus on changing their relationship to unwanted internal experiences rather than altering the experiences themselves. The therapy takes the perspective that psychological pain is a common and normal psychological process (Steven C. Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013) but maladaptive attempts at reducing psychological pain, such as rumination, can inadvertently increase it, which may then become psychopathological. The overarching goal of ACT is to increase psychological flexibility, meaning 'the ability to contact the present moment more fully as a conscious human being, and to change or persist in behaviour when doing so serves valued ends' (S. C. Hayes et al., 2006; McCracken, 2013; Twohig, 2012). There are six core processes within the model that work to increase psychological flexibility and these can be categorised into two broader groupings (S. C. Hayes et al., 2006): (i) mindfulness and acceptance processes, aiming to change one's relationship to difficult

internal and external events (previously described); and (ii) commitment to valued action, increasing the extent to which a client's life is guided by core values as compared to their struggle with difficult thoughts and feelings.

ACT has a number of exercises designed to help individuals clarify their values and ensure they are personally-relevant rather than socially-imposed. It is explained to the client that values provide a stable compass from which you can choose a life direction that is naturally reinforcing, rather than relying on thoughts and feelings to guide action, which can lead you in contradictory directions (S. C. Hayes et al., 2006). The client is taught how values create a sense of life direction over a long time frame. The 'committed action' component then encourages goal-setting according to the individual's chosen values, with the aim of leading a value-consistent life (Steven C. Hayes et al., 2013, p. 20). Any psychological barriers that are identified during this process are addressed with the other ACT processes. For example, ACT has frequently been used for people with chronic health conditions: for individuals who are low in mood because they are not able to engage in certain values-based activities due to their health condition, the higher-order value is identified and alternative value-consistent lower-order goals are explored (McCracken & Yang, 2006).

Rather than focusing on symptom reduction per se, the end goal of ACT is for individuals to live in accordance with their chosen values (S. C. Hayes et al., 2006). Evidence suggests ACT also effectively reduces the symptoms of depression and anxiety (Ruiz, 2010). Only one published study has looked at ACT for rumination specifically though (Harrington, 2008): this was a single-case design in which 10 'high-ruminator' students received two 90-minute thought control sessions followed

by two 90-minute group ACT-based sessions. The believability of ruminative thoughts and avoidance of internal experiences both decreased after the ACT intervention. An unpublished doctoral thesis also investigated a group ACT intervention for rumination both as a single case study design and as a group intervention (N = 40; (Slevison, 2013). The single participant experienced a reduction in rumination that was maintained at three-month follow-up, although changes in mindfulness and valued living were not maintained. Within the larger sample, rumination, mindfulness and valued living significantly improved by the end of the 10 sessions. However, only 18 participants completed post-treatment measures and the study had no control comparison. It is also not known from these studies whether and, if so, how the values component influenced outcome. Laboratory based studies investigating values and committed action would help us to have a better understanding of the mechanisms behind the efficacy of the values components specifically and provide a better understanding of the interactive and potentially cumulative effects of these components (Levin et al., 2012; Rosen & Davison, 2003). There is relatively little research within ACT literature investigating values-based interventions alone, or in combination with goal-setting, but early findings, as will now be presented, are promising.

1.3.4.1 Values-clarification and rumination. Research into the values-based components of ACT is fairly limited (Levin et al., 2012). It has been shown that individuals with a greater discrepancy between one's values and current behaviour show higher levels of distress and depression (Plumb et al., 2009; Wilson, Sandoz, Kitchens, & Roberts, 2010). According to CT, rumination can be reduced more

permanently through goal attainment or goal disengagement. Clarifying values could lead to reduced rumination via these two mechanisms. Firstly, in relation to goal attainment, value-clarification allows individuals to become more flexible about their goal pursuit. If individuals identify the higher-order value, alternative more attainable value-consistent lower-order goals, other than the blocked goal, can be explored (McCracken & Yang, 2006). This may prevent or lessen rumination by presenting an alternative avenue for value-consistent action and thus reducing any ideal-actual self-discrepancy. Secondly, in relation to goal disengagement, value-clarification may broaden the perspective by which individuals view their blocked goal. That is, individuals may compare the importance of the blocked goal and their values, resulting in adaptive goal disengagement because the blocked goal becomes subjectively less significant (Simon, Greenberg, & Brehm, 1995).

A value-clarification intervention for rumination that has been investigated involves 'writing about life goals' (Teismann, Het, Grillenberger, Willutzki, & Wolf, 2014). Nonclinical participants in the experimental intervention were helped to gain clarity on their life goals and values by completing three writing tasks on three consecutive days, for example ‘What should be said about you on your 75th birthday party to your guests?’ This was compared to a control condition in which participants wrote about commonplace topics, for example how they clean their house. The experimental intervention resulted in a modest reduction in rumination.

In chronic pain literature, value-clarification can result in improvements in values-based living, thus reduced ideal-actual self-discrepancy (Foote, Hamer, Roland, Landy, & Smitherman, 2015; McCracken & Vowles, 2008; Steiner, Bogusch, & Bigatti, 2013). This in turn has been found to mediate improvements in well-being

(Lundgren, Dahl, & Hayes, 2008; McCracken & Vowles, 2008; McCracken & Yang, 2006; Wilson, Sandoz, Kitchens, & Roberts, 2010). Acting in accordance with values may be more important for well-being than simply identifying what values are important (Sheldon & Krieger, 2014). Thus the addition of values-based committed action may improve outcomes.

1.3.4.2 Committed action. Increasing the extent to which a person's life is guided by core values (i.e., commitment to valued action), rather than by their struggle with difficult thoughts and feelings, is a core feature of ACT and some behavioural activation (BA) literature. It has been found that a values-based intervention can provide motivation for adaptive acceptance of distress and resultant committed action. For example, Branstetter-Rost, Cushing, and Douleh (2009) compared an acceptance intervention taken from ACT (S. C. Hayes et al., 2006) with an acceptance-plus-values intervention, where participants were instructed to imagine they were accepting pain in the service of their most important value. People had significantly higher pain tolerance if the pain was part of a valued action: the value acted as a motivation to persevere in difficult circumstances. The finding was replicated by(Páez-Blarrina et al., 2008): placing pain in a context of valued action increased pain tolerance. In both studies the participants were young, primarily female undergraduate students and the pain was acute and technically avoidable, so results may not be generalisable or ecologically-valid. However, in a clinical ACT intervention for 108 individuals with chronic pain, improvement of pain acceptance was associated with an increase in values-based actions (Vowles, McCracken, &

O'Brien, 2011). Similarly, values-based action is associated with lower impact of physical health problems (Foote et al., 2015).

Values-based committed action as an intervention has been investigated within BA literature "as a feature borrowed from acceptance and commitment therapy" (Veale, 2008). BA is intended to improve a person's mood by engaging in pleasant or neutral activities to increase the number of positively reinforcing experiences (Kanter et al., 2010). In a review of BA studies (Kanter et al., 2010), it was proposed that value-clarification can provide a reinforcement or longer term positive consequence for value-driven behaviour that may not be immediately reinforcing itself, for example with quitting smoking. The review concluded that although values-based interventions are receiving increasing empirical support (Plumb et al., 2009), it is not yet clear how much they contribute or add to BA's effectiveness because studies have not directly compared value-driven BA with standard BA. For example, in a single-case design (N = 4), (Gaynor & Harris, 2008) included a values-based component to BA in which their nonclinical participants identified what their values were and then created a list of value-consistent activities. The study found a reduction in depressive symptoms, but made no conclusions regarding the addition of value-clarification. Similarly, (Houghton, Curran, & Saxon, 2008) looked at a values-driven group BA programme and found it to be an effective treatment for depression, but as it was uncontrolled one cannot draw specific conclusions about the values component.

Values-based committed action has also been investigated within a nonclinical population in which goal-setting training was compared to values-plus-goal-setting training and a waitlist control condition on academic performance (Chase et al., 2013). Values-plus-goals training significantly improved academic performance in

undergraduate students, whereas goal-setting alone had no effect. Values provide an underlying motivational system for achieving goals (Michalak, Klappheck, & Kosfelder, 2004; Sheldon & Elliot, 1999).

1.3.4.3 Summary. Although there has been relatively little research examining the unique contribution of values or values-based committed action, what has been shown is it can provide motivation for adaptive acceptance of distress, persevering with difficult goals, and it can reduce symptoms of depression, including rumination. Given that rumination interferes with goal-driven behaviour (Nolen-Hoeksema et al., 2008), this focus on valued-living may help individuals to disengage from ruminative thinking on blocked goals and focus on value-consistent action. This warrants further investigation.

1.4 The Current Study

This chapter has reviewed the evidence-base for interventions that target rumination. It has also examined valued-based interventions, with and without a goal-setting component, as part of ACT and self-affirmation theory. The research tentatively suggests that value-affirmation may be an effective intervention for reducing rumination, but value-affirmation research within this area, and clinical psychology more broadly, is in its infancy and further research is required.

The current study aimed to test whether value-affirmation reduces rumination over time. This follows on from (Koole et al., 1999) but addresses the limitations described previously and contributes to the literature in some novel ways: controlling

for positive affect statistically; testing the impact of values on rumination immediately and two weeks later; using a validated measure of rumination; and trialling a value-affirmation plus goal-setting condition. Three interventions will be compared on changes in rumination over time: value-affirmation (VA), value-affirmation plus goal-setting (VA+GS), and a non-affirmation control condition (NAC). It is hoped that this study will provide further evidence of self-affirmation effects and meet a need regarding how to address rumination.

This study used a well-validated value-affirmation procedure (D. A. K. Sherman et al., 2000), although modifications were made to the intervention. Modifications included: (i) providing a definition of a value so as to cue the participant into life qualities that are most intrinsically meaningful to them; (ii) increasing the range of values from which the participant could determine their core values (Harris, 2008); and (iii) the importance of each value was established using a card sort task rather than ranking values. Both the value-affirmation and the value-affirmation plus goal setting procedures, including the list of values, were taken from an ACT self-help book (Harris, 2011), as it aimed to be clinically relevant but remain suitable for a nonclinical population. The overall reason for the modifications to the procedure was to increase its clinical applicability. Value-affirmation has not yet been applied clinically and ACT literature provides some useful changes to increase its applicability to clinical problems such as rumination: the broad range of values from which to choose aimed to increase the likelihood of individuals finding a personally meaningful value to affirm; the list of values were personal attributes, such as ‘trust’ or ‘independence’, rather than the more restricted use of life domains, such as ‘family’, to encourage personally-meaningful self-reflection rather than only

reflecting on social belonging or socially imposed values (Schimel et al., 2004; Sherman, 2013; Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013); and previous value-affirmation tasks have involved ranking values in order of importance, but a more clinically-applied reflective task is to provide brief psychoeducation regarding values and then utilising a card-sort task in which values are sorted into piles of 'very important to me', 'quite important to me' or 'not important to me'.

An RCT design with a nonclinical student sample was utilized. The rationale for recruiting a nonclinical sample was twofold. Firstly, rumination in nonclinical samples is common and continuous with clinical samples as it predicts later depression (Nolen-Hoeksema et al., 2008). This suggests that interventions for alleviating rumination in nonclinical samples are important. Secondly, value-affirmation procedures have not yet been applied to clinical problems so would benefit from piloting in a nonclinical sample before trialling in clinical samples.

Based on self-affirmation theory and previous findings (Koole et al., 1999), the following hypotheses were formed:

Immediately following the intervention:

(i) Participants in the VA and VA+GS conditions will report lower state rumination than the NAC group. This may be mediated by an increase in positive affect.

Two weeks after the intervention:

(ii) VA and VA+GS groups will report lower state rumination than the NAC group;

(iii) The VA+GS group will report lower state rumination than VA alone.

The effects in (ii) and (iii) will not be mediated by positive affect.

2. Method

2.1 Design

A randomised-controlled mixed design was utilised: see Figure 2.1 for diagrammatic overview. The between-subjects independent variable was intervention condition: participants were randomised to either (i) value-affirmation (VA) (ii) value-affirmation plus goal-setting (VA+GS), and (iii) the non-affirmation control (NAC) condition. The within-subjects dependent variable was state rumination, which was measured at three time points: baseline (Time 1: T1), immediately following the intervention (Time 2: T2) and at two-week follow-up (Time 3: T3). A state measure of positive affect was also administered at the three time points in order to control for any covarying effects of this on value-affirmation. Trait measures of depression, anxiety, stress, self-esteem and rumination were gathered at T1 to ensure group equivalence at baseline.

2.2 Participants

A nonclinical opportunity sample was recruited, which consisted of undergraduate and postgraduate students, friends and family members. A total of 171 participants were initially recruited and 159 completed the study, an attrition rate of 7.0%. At baseline, there were N = 57 participants in each condition. Researchers were blind to group allocation. At the first appointment, mean age was 25.58 years (SD = 8.08, range = 17-60) and there were 132 females (77.2%). Further demographic information is presented in Tables 3.1 and 3.2 within the results section.

2.2.1 Power analysis. An a priori power analysis was conducted to determine the required sample size. Cohen's d (effect size) was calculated using the group means and pooled standard deviation. No studies have investigated the effect of value-affirmation on rumination over time, nor looked at value-affirmation compared with value-affirmation plus goal setting. Therefore three studies with similar methodology or dependent variables were chosen. Firstly, power calculations using the Koole et al. (1999) study yielded effect sizes between d = 0.5-0.8 when comparing differences in rumination for a value-affirmation intervention versus different control conditions: when compared to non-affirmation, the effect size was d = 0.75. As this was a cross-sectional study, power was also calculated based on two longitudinal studies that utilized similar interventions but looked at different dependent variables. A longitudinal value-affirmation study looking at the effect of a self-affirmation task on state anxiety over two weeks (Morgan & Atkin, 2016) yielded an effect size of d = 1.11. In addition, power based on a goal-setting intervention with a two-week follow-up was calculated (Meevissen, Peters, & Alberts, 2011). Their study yielded an effect size of d = 0.67 for the effects of a five-minute imagery-based goal-setting task on increased optimism measured over two weeks, compared with control.

Based on these studies, a conservative medium effect size of d = 0.6 was chosen. Power analysis for a between-subjects analysis of variance with alpha level of 0.05 and power of d = 0.8 (Cohen, 1992) indicated a group size of N = 52 (total T3 sample N = 156). We predicted an attrition rate of approximately 10%, based on previous studies (Creswell et al., 2007; Düring & Jessop, 2015; Lindsay & Creswell, 2014). To minimise attrition: (a) the demands and time required were explained to

participants before they signed up, (b) it was checked that participants were available two weeks after the appointment to complete the online part of the study, and (c) we attempted to recruit an additional 10% of the 156 participants required, so our target sample size at T1, and the total that was used for randomisation, was 171.

2.3 Recruitment

This study was one of two studies investigating VA, VA+GS and NAC. All participants thus completed two additional questionnaires to those listed here. Recruitment was divided equally between two researchers. The only inclusion criteria were that all participants were above the age of 16 and had an adequate level of English to understand the information sheet and therefore be able to consent to the study. Participants were recruited either via the RHUL undergraduate psychology credit system (N = 71) or through advertisement of a prize draw to win one of five £20 Amazon vouchers (N = 100).

Participants from the RHUL undergraduate psychology credit system were given three course credits for taking part in the first appointment and one course credit for completing the follow-up. The participation scheme website provided a summary of the first part of the study and time slots to sign up for. The summary gave a brief description of the procedure and explained that it was a two-part study. It was made clear that there were no right or wrong answers when completing the tasks and that their work would not be marked. They were told that once they had completed the first part, they would be emailed a password to be able to sign up for the second part of the study.

For the individuals who were recruited through advertisement of a prize draw, the study was advertised via posters displayed around the RHUL university campus and each researcher advertised via a Facebook post. These adverts encouraged people who were interested in taking part in the study to email the researchers to express interest. They were then contacted via email to introduce the study and, if they still wanted to take part, arrange the two appointment dates two weeks apart. Informed consent was obtained from all participants at the start of their first appointment.

All participants were allocated a participant number, which was used to anonymise their data. A password-protected electronic file containing participant names and their participant numbers was stored on the researcher's computer and only accessible to the researchers and supervisors. A separate file contained a list of the participant numbers and the condition that they had been assigned. This was not opened by the researchers until recruitment was completed.

2.4 Measures

Please see Appendix 3 for a copy of all measures used in this thesis.

Demographics. A demographics questionnaire was designed to gather socio-demographic information to ensure group equivalence at baseline. This is because differences in the amount people engage in rumination has been associated with age (Sütterlin, Paap, Babic, Kübler, & Vögele, 2012), gender (Nolen-Hoeksema, Larson, & Grayson, 1999), education level (Gibson, Baker, & Milner, 2016) and depressive symptom levels (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The demographics

questionnaire therefore asked their age, gender and to identify themselves within one of five categories of achieved educational level: no education, GCSE, A level, bachelor degree, and postgraduate degree. They were also asked whether they are currently a student, to identify their ethnic group based on categories recommended by the Office of National Statistics (ONS, 2011), and whether they are currently or have ever experienced a mental health problem. A summary of descriptive statistics is presented in Table 3.1 within the results section (see section 3.2.6).

2.4.1 Trait measures

Response Styles Questionnaire-Ruminative Response Scale (RSQ-RRS; Nolen-Hoeksema & Morrow, 1991): This is a 22-item measure of trait depressive rumination, ranging from 0 (*almost never*) to 3 (*almost always*). It has a possible range of scores from 22-88, with higher scores signifying greater trait rumination. There are many different measures of rumination, based on the many definitions of rumination in the literature (Smith & Alloy, 2009). Papageorgiou & Wells (2004) recommend that studies clearly operationalize their chosen definition. The RSQ-RRS is based on the RST (Nolen-Hoeksema, 1991), a trait rumination definition.

The RSQ-RRS asks participants to consider what they *generally* do in different situations, thus is not time-specific to a particular moment or that day. It has shown moderate to high test-retest stability when administered 2-3 months, six months and one year apart (range: = .47-.80; Just & Alloy, 1997; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Parker, & Larson, 1994) and is a stable measure of someone's tendency to ruminate in longitudinal studies (Nolen-Hoeksema & Davis,

1999; Nolen-Hoeksema, Parker, & Larson, 1994). It has demonstrated good reliability in nonclinical participants (range α = 0.88 to 0.92; Luminet, 2004) and convergent validity (r = 0.62; Nolen-Hoeksema, Morrow, & Fredrickson, 1990) when correlated with participants' responses to a 30-day diary study of rumination. The RSQ-RRS achieved a Cronbach's alpha of 0.93 in the present sample, indicating very good internal consistency.

Depression, Anxiety and Stress Scales (DASS-21; Lovibond & Lovibond, 1995): This is a 21-item nondiagnostic measure of symptoms of depression, anxiety and stress. It is on a 0 (*never*) to 3 (*almost always*) scale, with seven items per subscale, producing three separate scores for each subscale (DASS-21-D for depression, DASS-21-A for anxiety, DASS-21-S for stress). Each subscale has a possible range of scores from 0-21, higher scores indicating higher levels of depression, anxiety and stress. It asks participants to consider whether statements apply to them 'over the last week'. It has good internal reliability in nonclinical samples (α = 0.87-0.94: Antony, Bieling, Cox, Enns, & Swinson, 1998) and good concurrent validity when correlated with other depression and anxiety scales (Antony et al., 1998). The DASS-21 achieved a Cronbach's alpha of 0.89 in the present sample, indicating good internal consistency.

Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965): This is a 10-item measure of global self-worth, on a 4-point scale (*strongly agree* to *strongly disagree*). It has a possible range of scores from 0-30, with higher scores indicating higher self-esteem. It has demonstrated good test-retest reliability in a nonclinical student and community sample (mean r = 0.69; Robins, Hendin, & Trzesniewski, 2001). Test-retest coefficients have been acceptable for both one week (α = 0.82; Byrne, 1983)

and seven month (α = 0.67; Silber & Tippett, 1965) intervals, indicating the scale captures trait constructs that show stability over time. The RSE achieved a Cronbach's alpha of 0.88 in the present sample, indicating good internal consistency.

Valued Living Questionnaire (VLQ; Wilson et al., 2010): This is a two-part measure of valued living. The VLQ lists 10 life domains and asks participants to indicate how important each life domain is to them (1 - *not at all important* to 10 - *extremely important*) and how consistent their behaviour has been with that over the last week (1 - *not at all consistent* to 10 - *completely consistent*). The overall score is worked out by calculating the product of the importance and consistency ratings for each domain and then calculating the mean of these products. The possible range of scores is 1-100, with higher scores indicating higher levels of valued living. It has demonstrated good test-retest reliability in nonclinical participants (α = 0.75) over 1-3 weeks (Wilson et al., 2010). Wilson et al. (2010) reported that high levels of value-incongruent behaviour (i.e., a discrepancy between rated importance and rated consistency on the VLQ), will be correlated with more distress and psychopathology. The VLQ negatively correlates with measures of depression (r = -0.26, $p < .001$) and positively correlates with areas of psychological strengths (range: r = 0.15-0.27, $p < .05$), such as vitality (r = 0.27, $p < .001$), indicating good construct validity.

2.4.2 State measures

Response Styles Questionnaire – State Version (RSQ-S; Ciesla, Reilly, Dickson, Emanuel, & Updegraff, 2012): This is a 12-item modified version of the RSQ-RRS that measures state rumination (Nolen-Hoeksema & Morrow, 1991) by

asking participants to consider how much they have ruminated *today* (α = 0.91; Ciesla et al., 2012) on a 0-3 scale (*not at all* to *all the time*). It has a possible range of scores from 0-36, with higher scores indicating higher levels of rumination. An unpublished doctoral thesis found an adequate level of test-retest reliability of 0.63, over a period of two weeks (Matias, 2015). A previous study reported Cronbach's alpha of 0.91 (Ciesla et al., 2012), suggesting that the questionnaire measures one construct. In the current study, Cronbach's alpha for the RSQ-S at T1 was also 0.91.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988): This is a 20-item scale measuring state affect, on a 1-5 scale (*very slightly or not at all* to *extremely*). It asks participants to consider which emotions or feelings they feel *at the present moment.* It produces two scores ranging 10-50: for each score, higher scores indicate higher levels of positive (PANAS-PA) and negative affect (PANAS-NA). Watson et al. (1988) found that test-retest reliability was adequate over a period of 8-weeks in a nonclinical sample of 600 adults (0.54 for PA; 0.45 for NA). Crawford & Henry (2004) documented good internal consistency using Cronbach's alpha (α = 0.89 and 0.85 for PA and NA respectively). They also reported good concurrent validity when correlating the PANAS with other measures of depression, for example with DASS-depression (PA: r = -0.48; NA: r = -0.60, $p < .01$; Crawford & Henry, 2004). In the present sample, the PANAS-PA was used to assess change in positive affect over time. The PANAS-PA at T1 achieved a Cronbach's alpha of 0.91, indicating good internal consistency.

2.5 Randomisation

Participants were randomised to one of three conditions by generating a randomisation key using an online tool (www.randomization.com). Blindness to condition was maintained by matching participant number to a sealed labelled envelope that was packed by a person independent to the study. These sealed envelopes contained the instructions for the relevant condition (see Appendix 4).

2.6 Interventions

This study used a well-validated self-affirmation procedure (McQueen & Klein, 2006) called value-affirmation, as described by Sherman et al. (2000; study 2). However, modifications were made to the intervention to increase its clinical applicability, based on a clinical values intervention described by (Harris, 2008). These modifications will be described in more detail below but can be summarised as follows: (i) a definition of a value was provided; (ii) the list of values provided was taken from Harris (2008); and (iii) the importance of each value was established using a card sort task rather than ranking values. For full description of each intervention please see Appendix 4.

2.6.1 Value-affirmation condition (VA). Participants first read some information about values taken from clinically applied information within ACT literature (Chase et al., 2013; Harris, 2008, 2011). It described values as "a life direction, an internal compass. They are leading principles that can guide you and motivate you as you move through life." It also stated that "Values are unique to you.

Not everyone has the same values, and this is not a test to see whether you have the "correct" values." Participants were then given a pack of cards with one value and its definition written on each card, for example "self-care: to look after my health and wellbeing, and get my needs met". The pack contained a comprehensive list of 57 possible values, plus two cards saying 'other' with a space to write their own additional value (see Appendix 4). Participants were asked to sort the cards into three groups: 'very important to me', 'quite important to me' and 'not important to me'. This procedure, including the list of values, was taken from an ACT self-help book (Harris, 2011). Next, participants were asked to select their most important value from the pile 'very important to me'. Following Sherman et al., 2000 (study 2), participants were then instructed to write for 10 minutes about their most important value, why it is meaningful to them and to describe a time it made them feel good about themselves. They were given a 10-minute timer on the computer to set at the beginning of writing and stop when they had finished. This provided participants with a guide as to how long they had left and was a way for the researcher to establish that sufficient time had been spent reflecting on their chosen value. After completing the essay, participants were instructed to list the top two reasons why their chosen value is important to them (Sherman et al., 2000).

2.6.2 Value-affirmation plus goal-setting condition (VA+GS). This replicated the VA condition. However, a goal setting task was additionally administered, based on a validated ACT intervention in which individuals are encouraged to take action in line with their valued direction (Harris, 2008).

Participants completed the value-affirmation task and were then informed about values-based goals: “Values can provide a deep motivation that helps us to pursue important goals in life… We would like you to set a short term goal to focus on over the next two weeks. Ideally, you want to set a ‘SMART’ goal. This is what ‘SMART’ means…” Participants were instructed to identify a ‘SMART’ goal that is in line with their chosen value and achievable within the following two weeks. This group was included as we hoped to identify whether committing to value-derived goals enhances the effects of value-affirmation.

2.6.3 Non-affirmation control condition (NAC). Following Sherman et al. (2000)’s validated procedures, the NAC replicated the VA condition, except that participants were instructed to write about a valued domain that is ‘not important’ to them and why it might be meaningful to someone else. This is the standard active control for self-affirmation research (McQueen & Klein, 2006).

During the development of this condition, it was queried whether this control condition would be sufficiently different from VA. (Cohen et al., 2000) suggested that students are likely to turn any writing exercise into a reflective self-affirming one, and some studies (Creswell et al., 2005; Liu & Steele, 1986) found no difference between groups, despite finding significant effects of the self-affirmation manipulation. However, most studies in self-affirmation literature utilize this control condition and have shown significant differences between groups (McQueen & Klein, 2006). It was considered appropriate as it is well-matched to the experimental condition and allows for comparison with other studies.

2.6.4 Post-task manipulation checks. Participants completed a series of manipulation check questions following the VA/VA+GS/NAC intervention, which was adapted from Sherman et al. (2000) to test whether participants wrote about a personally meaningful value. The manipulation check consisted of four statements that participants ranked using a 0-5 scale, 'strongly disagree' to 'strongly agree':

i. 'This value or personal characteristic has influenced my life'
ii. 'In general, I try to live up to this value'
iii. 'This value is an important part of who I am'
iv. 'I care about this value'

A score was obtained from this manipulation check by using the sum of all answers, with a possible range of scores of 0-20. Higher scores indicated greater endorsement of the value they had written about. A significant difference was predicted between the two value-affirmation conditions and NAC, which would be calculated using a one-way ANOVA.

The VA+GS condition received an additional manipulation check at T3 in which they were asked, *"If you were asked to set a goal at the previous appointment, did you complete it?"* The response options were "*Yes", "No",* or *"Was not asked to set a goal"*.

2.6.5 Pilot. The VA and NAC conditions and the manipulation check were each piloted on five individuals using an opportunity sample. This ensured that the written instructions were clearly and unambiguously presented. No modifications to the instructions were required following this pilot. The manipulation check was also visually examined and confirmed that VA participants were strongly endorsing their

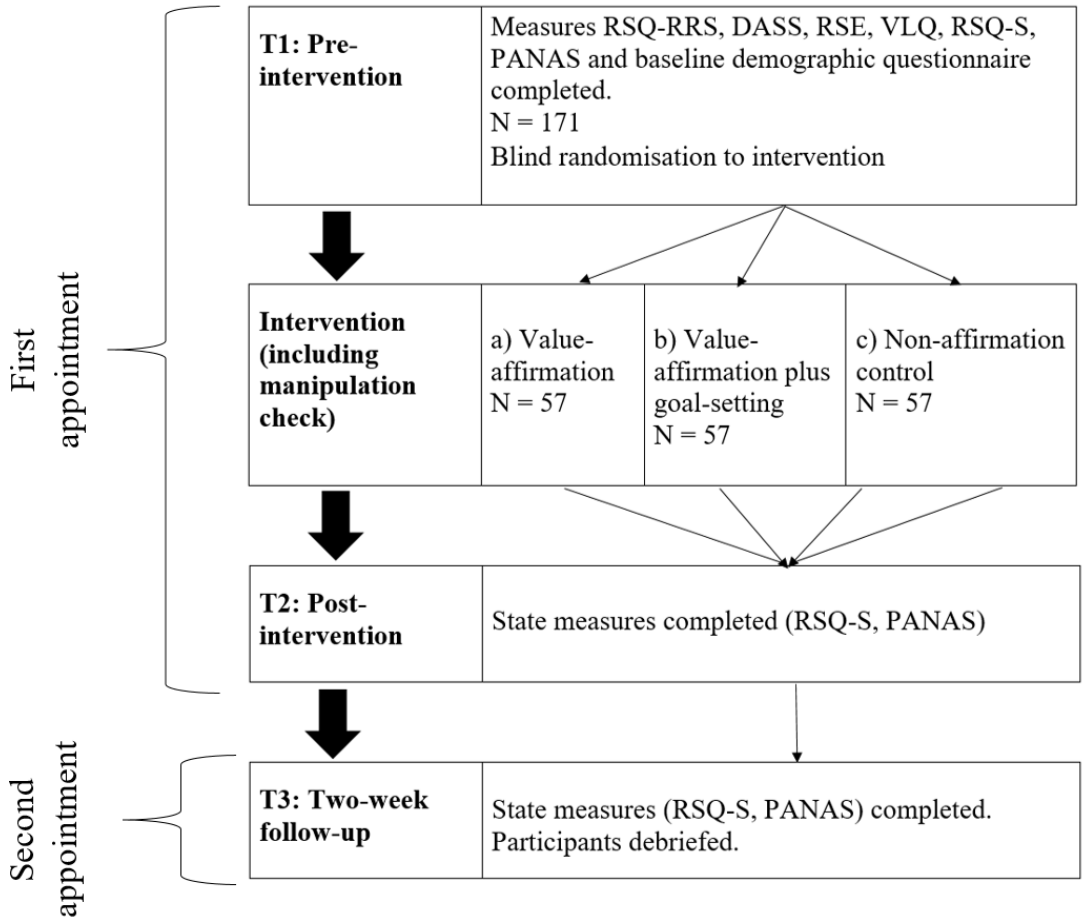
chosen value and NAC participants differed from VA in that they did not strongly endorse their chosen value.

2.7 Procedure

This study took part over a two-week period (see Figure 2.1). As an overview, participants completed baseline measures (T1: all measures previously described), after which they completed one of the three interventions. Immediately post-intervention (T2), participants completed state measures again. Two weeks later (T3), state measures were repeated. At baseline, participants met with a researcher either at an RHUL office or a suitable location within the local community. Participants read an information sheet (see Appendix 2): This explained what the study would involve, the estimated timeline for their involvement, that their participation was voluntary and that they could withdraw at any time without consequence. They were given an opportunity to ask questions and provided written informed consent (see Appendix 2). Participants were shown how to access online questionnaires using a laptop and they were presented with other necessary materials on the desk in front of them. They were asked to complete the first set of baseline questionnaires, using the laptop provided. They were informed that, once they had completed these, they should open the first of two envelopes and that the instructions therein would guide them through the remainder of the study. They were informed that they could come out of the room if they had a question; the researcher then left the experiment room and remained out of the room throughout testing.

Using a computer provided in the room, participants completed a brief demographic questionnaire (see Table 3.1 in results section) and all other measures via a web link. All questions used forced responses to minimise missing data. After completing baseline questionnaires, participants opened an envelope which contained one of three possible intervention instructions (see Appendix 4). After completion of VA, VA+GS or NAC, participants completed the manipulation check, followed by the T2 state measures. Three days prior to participants' two-week follow-up (i.e., T3 measures), they received an email reminder about their online follow-up appointment. Two weeks after T1 (at T3), participants received an email with their participant number and were asked to complete the online web link containing T3 measures that day. At the end of the survey participants were shown a debrief form (see Appendix 2) and were asked if they would like to receive a telephone call for a further debrief. No participants requested a debrief telephone call.

Figure 2.1: Overview of Research Procedure



Note. RSQ-RRS: Response Styles Questionnaire – Ruminative Response Scale; DASS: Depression, Anxiety and Stress Scale; RSE: Rosenberg Self-Esteem Scale; RSQ-S: Response Style Questionnaire – State Version; PANAS: Positive and Negative Affect Schedule; VLQ: Valued Living Questionnaire.

2.8 Data Analysis

The data were managed and analysed using the Statistical Package for Social Sciences (SPSS, version 21). All data were checked for univariate outliers and data assumptions for each procedure were tested prior to analysis. Randomisation was checked by looking for any significant differences between groups, by calculating a one-way analysis of variance (ANOVA) for each baseline variable. For any variables that were found to be significantly different between groups and significantly related to rumination, they would be covaried for in the main analysis. To examine the study hypotheses, a mixed 3 (Condition: VA, VA+GS, NAC) X 3 (Time: T1, T2, T3) repeated measures analysis of variance (ANCOVA) was conducted to establish whether there was any statistically significant changes in state rumination (RSQ-S) from baseline to post-intervention and at two-week follow-up within any of the three treatment groups. It was anticipated that group differences would then be decomposed using post hoc comparisons.

Exploratory analysis was also conducted. To examine whether there was a significant difference between individuals who had completed their goal in VA+GS condition and those who had not completed their goal, a one-way ANCOVA (Between-subjects factor: goal completers vs. goal noncompleters; within-subjects factor: T3 state rumination) was conducted, controlling for T1 state rumination. To examine whether the interventions affected positive affect, a one-way ANOVA was also calculated with change scores between T2 and T1 positive affect as the dependent variable and condition (VA, VA+GS, NAC) as the between-subjects factor.

2.9 Ethical Consideration

The study was reviewed and approved by the Royal Holloway University of London (RHUL) Research Ethics Committee (ref: ProjectID: 64; see Appendix 1). It was not expected that the procedure would have any negative consequences for participants. However, reflecting on whether you are suffering from certain symptoms of mental health difficulties, or reflecting on values, could be potentially distressing for people. Therefore participants were provided with information in the debrief form (Appendix 2) regarding where to receive further emotional support and were offered a telephone call to debrief at the end of the follow-up study.

3. Results

3.1 Overview

This chapter starts with a description of preliminary statistical procedures that were used for data preparation, including procedures for missing values, outliers and testing of normality for all variables of interest. Transformations were applied when parametric assumptions were violated. Preliminary statistical analyses were calculated to assess whether groups were equivalent at baseline on sociodemographic information and baseline measures. Baseline measures were also compared between participants who completed the study and those that dropped out before follow-up. This ensured there was no selective attrition, meaning a certain characteristic associated with dropout such as those reporting higher levels of stress. The main analyses are then presented, with associated descriptive statistics. Finally, exploratory analyses of goal attainment and positive affect are reported.

The data were managed and analysed using the Statistical Package for Social Sciences (SPSS, version 21). Percentages are reported to one decimal place and all other values are reported to two decimal places. Statistical significance applied a conventional alpha level of $p < .05$.

3.2 Preliminary Statistics

3.2.1 Missing data. Questionnaires were completed online and used forced responses to minimise missing data. However, due to an administration error four participants did not complete the VLQ at baseline (T1). For the analyses involving this questionnaire, participant data for these cases were excluded using listwise

deletion, where all data for that participant is excluded from any analysis if any single value is missing. Although this method affects statistical power, it does not affect the standard errors in an analysis. There were 18 participants (six from each condition) who did not report on how long it took them to complete the affirmation essay. In comparing time taken across groups, these participants were excluded.

3.2.2 Attrition rate. Loss of participants over the course of a study has the potential to introduce bias (Marcellus, 2004). Twelve participants did not complete the follow-up for this study: three from VA, five from VA+GS and four from NAC. This suggests there was no evidence of systematic attrition as an effect of group allocation. Using independent-samples t-tests with the whole sample, no significant differences were shown between those that completed the study and those that dropped out in terms of baseline variables. Listwise deletion was again applied for any analyses involving T3 variables.

3.2.4 Outliers. Outliers may be considered either a legitimate extreme value or an error in measurement, in data entry or data recording (Field, 2009; Millar & Hamilton, 1999). Therefore the following strict criteria were applied: data points that were three standard deviations above or below the variable mean were considered univariate outliers (Zijlstra, Ark, & Sijtsma, 2007). All sociodemographic and study variables were investigated for outliers. Outliers were identified based on the sample from each condition at each time point. Variables were initially investigated visually using box plots and then calculated based on means and standard deviations. Each

outlier was checked to establish whether it could have been a measurement error or whether it represented a legitimate extreme value. A list of outliers and any action taken is described below.

Analyses were computed to check whether participants in each condition had correctly followed the affirmation instructions. This was done using the manipulation check items taken at T2 (see section 2.6.4): higher scores on this measure indicated greater endorsement of the value they had written about. Seven outliers were identified: these were in the VA and VA+GS conditions and suggested that participants had not written about a value that was important to them. The essays belonging to these participants were examined to check whether this was indeed the case. All seven participants (four in VA, three in VA+GS) had completed the task appropriately by writing about a value that was important to them. This indicated that they had correctly completed the affirmation task, but incorrectly completed the Likert scale. Therefore their data were retained.

Outliers were also identified for age. Age was examined by group and four outliers were identified, all significantly higher than their group means. A between-groups comparison of age was calculated with and without these outliers: results and conclusion are reported within 'Descriptive Statistics'. An outlier was also identified in the time taken on the essays. One participant took significantly less time than others, but because they were in the NAC condition it was felt unnecessary to exclude them from the analysis.

One participant was identified as having extreme low scores on all measures taken at T3. On visually examining their T3 data, this participant had answered '1' for

every question on every questionnaire, suggestive of nonengagement with the survey. It was decided to exclude this participant's T3 data, therefore at T3 N = 158.

3.2.5 Distribution of variables. The use of parametric tests relies on the assumptions that measures use interval data (requirement met), observations are independent (requirement met), that variances between groups were homogenous and that the data is normally distributed (Field, 2009; Judd & McClelland, 1995). Mauchly's Test of Sphericity and Levene's Test for Equality of Variance were used to assess homogeneity of variance for repeated measures ANOVAs and t-tests respectively. Where these tests were found to be significant equal variance could not be assumed and so the relevant statistics were reported, for example the Huynh-Feldt statistic for ANOVAs.

Normality of variance was initially examined by creating histograms with normal curves. All measures were examined separately by condition. Following this process, each of the study variables were formally assessed with regard to skew and kurtosis by calculating z-scores (Tabachnick & Fidell, 2006). Normality was accepted if $Z < 3.29$ ($p > .001$); a significant score on skew or kurtosis ($Z > 3.29$, $p < .001$) indicated nonnormal distributions. For positively skewed variables, a square root or an inverse reciprocal transformation was applied and normality was reassessed. There were no negatively skewed variables. For comparison purposes, variables that were repeated-measured were transformed at all three time points for all three conditions. Variables that required a square root transformation were time taken on essay writing and DASS-21 depression, anxiety and stress subscales. Age and the RSQ-S required

an inverse reciprocal transformation. For skew and kurtosis scores for all variables pre- and post-transformation please see Appendix 5.

The RSQ-S required an inverse reciprocal transformation because it was positively skewed. An issue that can sometimes occur in nonclinical populations is that of floor effects (i.e., individuals scoring zero on baseline measures). This is because the scope for discerning meaningful change over time can be lost (Lim et al., 2015) if large numbers of participants exhibit the lowest score. On further examining this variable, although the range in state rumination at T1 was 0–27 in this sample (from a possible range of 0-36), 36 participants (21.1%) scored zero. This is suggestive of a floor effect at baseline as 15% is commonly used as a threshold for defining ceiling and floor effects (McHorney & Tarlov, 1995).

3.2.6 Descriptive statistics and baseline variables. A summary of sociodemographic characteristics (Table 3.1) and baseline variables (Table 3.2) of the whole sample and each condition is provided below. The sample was made up of mostly females (77.2%), the majority were 'white' ethnicity (74.9%), and majority students (48.5% undergraduates, 25.1% postgraduates). The mean age range was 25.58 (SD = 8.08), although there was a large range from 17-60. Just under one third of the sample had experienced a mental health problem (28.7%) and approximately half of these had ongoing mental health problems (16.4%).

A series of separate one-way ANOVAs and chi-squared tests were calculated to check that the randomisation process had resulted in the desired equivalence across conditions on all socio-demographics and baseline measures (see Table 3.1 and 3.2). Age differed significantly between groups ($F_{(2,\ 168)} = 4.10$, $p = .018$) but all other

baseline variables were not significantly different between groups. Post-hoc comparison of age using Fisher's protected independent t-tests revealed that individuals in VA were significantly younger in age than NAC ($t_{(112)} = -2.57$, $p = .01$) but no significant differences were shown between VA and VA+GS ($t_{(112)} = -1.46$, $p = .15$) or between VA+GS and NAC ($t_{(112)} = -1.43$, $p = .16$). This difference between conditions remained significant when the four outliers on age were removed ($F_{(2, 164)} = 3.98$, $p = .02$) therefore outliers were retained.

As age was found to be significantly different between conditions, Pearson's correlations were calculated to assess whether age had a significant relationship with trait rumination or state rumination at any of the three time points. This is because differences in the amount people engage in rumination have been associated with age previously (Sütterlin et al., 2012) and may therefore impact on the main analysis given there were differences between conditions. These analyses revealed that age was significantly negatively correlated with trait rumination ($r = -.38$, $p < .001$) and state rumination at most time points across conditions (range: $r = -.09$ to $-.41$). As age was unequally distributed between conditions and also significantly associated with state rumination, it was covaried for in the main analysis.

Table 3.1

Total Sample and Between-group Comparisons for Sociodemographic Variables

Sociodemographic Variables (% within group)		VA N = 57	VA+GS N = 57	NAC N = 57	Total Sample N = 171	Test Statistic
Gender	Female	40 (70.2%)	49 (86.0%)	43 (75.4%)	132 (77.2%)	$\chi^2_{(4)} = 6.17$, $p = .19$
	Male	17 (29.8%)	8 (24.0%)	13 (22.8%)	38 (22.2%)	
	Other	0 (0%)	0 (0%)	1 (1.8%)	1 (0.6%)	
Age (years)	Mean (SD)	23.74 (7.11)	25.44 (8.03)	27.56 (8.70)	25.58 (8.08)	$F_{(2, 168)} = 4.10$, $p = .018$*
	Range	17-55	18-60	17-59	17-60	
Ethnicity	White	40 (70.2%)	41 (71.9%)	47 (82.5%)	128 (74.9%)	$\chi^2_{(8)} = 6.23$, $p = .62$
	Mixed	1 (1.8%)	2 (3.5%)	2 (3.5%)	5 (2.9%)	
	Asian	14 (24.6%)	11 (19.3%)	6 (10.5%)	31 (18.1%)	
	Black	2 (3.5%)	2 (3.5%)	2 (3.5%)	6 (3.5%)	
	Other	0 (0%)	1 (1.8%)	0 (0%)	1 (0.6%)	

Sociodemographic Variables		VA	VA+GS	NAC	Total Sample	Test Statistic
(% within group)		N = 57	N = 57	N = 57	N = 171	
Student Status	Undergraduate	34 (59.6%)	28 (49.1%)	21 (36.8%)	83 (48.5%)	$\chi^2_{(4)} = 6.10$, $p = .19$
	Postgraduate	11 (19.3%)	15 (26.3%)	17 (29.8%)	43 (25.1%)	
	Not a student	12 (21.1%)	14 (24.6%)	19 (33.3%)	45 (26.3%)	
Highest Education	No education	0 (0%)	1 (1.8%)	1 (1.8%)	2 (3.5%)	$\chi^2_{(4)} = 6.94$, $p = .54$
	GCSE	2 (3.5%)	0 (0%)	2 (3.5%)	4 (2.3%)	
	A-level	31 (54.4%)	28 (49.1%)	22 (38.6%)	81 (47.4%)	
	Bachelor Degree	9 (15.8%)	15 (26.3%)	15 (26.3%)	39 (22.8%)	
	Post-graduate	15 (26.3%)	13 (22.8%)	17 (29.8%)	45 (26.3%)	
Mental Health	Yes	15 (26.3%)	17 (29.8%)	17 (29.8%)	49 (28.7%)	$\chi^2_{(2)} = .23$, $p = .89$
Diagnosis	No	42 (73.7%)	40 (70.2%)	40 (70.2%)	122 (71.3%)	
Mental Health Ongoing	Yes	7 (12.3%)	10 (17.5%)	11 (19.3%)	28 (16.4%)	$\chi^2_{(2)} = 1.09$, $p = .58$
	No	8 (14.0%)	7 (12.3%)	6 (10.5%)	21 (12.3%)	

Sociodemographic Variables		VA	VA+GS	NAC	Total Sample	Test Statistic
(% within group)		N = 57	N = 57	N = 57	N = 171	
Recruitment Source	Ψ Credit Scheme	31 (54.4%)	23 (40.4%)	17 (29.8%)	71 (41.5%)	$\chi^2_{(4)} = 11.45$, $p = .075$
	Paid Pool	1 (1.8%)	3 (5.3%)	1 (1.8%)	5 (2.9%)	
	DClinPsy	8 (14.0%)	16 (28.1%)	14 (24.6%)	38 (22.2%)	
	Family/Friends	17 (29.8%)	15 (26.3%)	25 (43.9%)	57 (33.3%)	

Note. VA – Value-affirmation; VA+GS – Value-affirmation plus goal-setting; NAC – Non-affirmation control.

Table 3.2

Between-group Comparisons for Baseline Variables

	Condition			
Study Variables (M, SD)	VA N = 57	VA+GS N = 57	NAC N = 57	Test Statistic
RSQ-RSS	42.35 (11.54)	43.39 (11.23)	40.58 (12.70)	$F_{(2, 168)} = 0.82$, $p = .44$
RSE	18.79 (5.42)	19.54 (4.63)	19.37 (5.09)	$F_{(2,168)} = 0.35$, $p = .71$
DASS-21 Depression*	3.05 (3.00)	3.14 (3.45)	3.25 (3.01)	$F_{(2,168)} = 0.03$, $p = .97$
DASS-21 Anxiety*	3.46 (3.00)	2.93 (2.88)	3.12 (3.17)	$F_{(2,168)} = 0.45$, $p = .64$
DASS-21 Stress*	5.68 (3.05)	5.16 (3.49)	6.00 (3.22)	$F_{(2,168)} = 0.91$, $p = .40$
VLQ	53.96 (12.17) (N=57)	51.39 (14.27) (N=56)	51.32 (15.19) (N=54)	$F_{(2,164)} = 0.66$, $p = .52$
T1 RSQ-S*	6.35 (6.29)	4.96 (6.36)	4.94 (5.70)	$F_{(2, 168)} = 0.71$, $p = .49$
T1 PANAS-PA	25.30 (7.07)	26.32 (7.88)	26.93 (8.43)	$F_{(2,168)} = 0.63$, $p = .53$

Note. VA – Value-affirmation; VA+GS – Value-affirmation plus goal-setting; NAC – Non-affirmation control; RSQ-RRS: Response Styles Questionnaire – Ruminative Response Scale; DASS-21: Depression, Anxiety and Stress Scale; RSE: Rosenberg Self-Esteem Scale; RSQ-S: Response Style Questionnaire – State Version; PANAS: Positive and Negative Affect Schedule; VLQ: Valued Living Questionnaire. Means and standard deviations reported are for untransformed data; *to aid interpretation of the table, means and standard deviations are reported using untransformed data but because statistical assumptions were not met, test statistic is based on transformed data.

3.2.7 Timing of T3 completion. Participants were asked to complete the T3 follow-up survey 14 days after their initial appointment, although a leeway of seven days either side of this was considered acceptable. The range of time between T2 and T3 was 11-25 days, although 66% completed it 14 days later. Three participants completed the questionnaire outside of this seven day window, but as no outliers were identified in their dataset, their data were retained. A one-way ANOVA was calculated to look for any difference between conditions in timing of T3 completion: there was no statistically significant difference ($F_{(2, 156)} = 0.15$, $p = .87$).

3.2.8 Time taken on essay writing. A record was kept of how much of the 10 minutes provided for essay writing was used by each participant. It ranged from one to 10 minutes and the mean for VA, VA+GS and NAC were 8 mins 11.02 secs (SD =

119.90), 8 mins 9.27 secs (SD = 133.73), and 7 mins 36.53 secs (SD = 123.95) respectively. A square root transformation was applied before this information was analysed because it was skewed. There was no significant difference between groups on time taken to complete the essay using a one-way ANOVA ($F_{(2,150)} = 2.04$, $p = .13$). This indicated that participants from different groups spent an equivalent amount of time writing.

3.2.9 Manipulation check. The manipulation check, measured at T2, was analysed to ensure that participants in the value-affirmation conditions (VA and VA+GS) were writing about a value that they endorsed in a more meaningful and personally relevant way than NAC participants. The aim of the manipulation check was to ensure that the VA conditions were significantly more value-affirming than the nonaffirming control condition. Therefore it was predicted that there would be significant differences between VA and NAC, and between VA+GS and NAC, but not between VA and VA+GS. The measure had a possible range of scores of 0-20, with higher scores indicating greater endorsement of the value they had written about. The means and standard deviations for this manipulation check for each condition, after dealing with the outliers previously described, were VA: 18.88 (1.38), VA+GS: 18.39 (1.56) and NAC: 9.84 (3.54). A one-way ANOVA was conducted to compare groups on the manipulation check composite scores: it was statistically significant ($F_{(2,168)} = 261.53$, $p < .001$). Further analysis, using Fisher's protected independent t-tests, revealed the predicted outcome: VA+GS and NAC were significantly different ($t_{(76.99)} = 16.65$, $p < .001$); VA and NAC were significantly different ($t_{(72.51)} = 17.96$, p

< .001) but there was no significant difference between VA and VA+GS ($t_{(110.23)}$ = -1.82, p = .07). This confirms as effectively as is possible that participants in the VA and VA+GS conditions wrote about more personally meaningful values than NAC participants.

Although the essays and goals were not qualitatively analysed, they were visually examined to determine the values that people chose in each condition and the types of goals that they set in the VA+GS group. The list of values chosen is presented in Table 3.3. There was a wide spread of values chosen, but the most commonly chosen within the value-affirmation conditions were love, trust and then open-mindedness; for the non-affirmation condition almost half the participants chose 'power' as their least important value. There was some missing data because participants were given a choice to take their essays away with them. Within the VA+GS group, participants' goals were visually examined to explore whether participants had set goals that were value-driven. Some goals could be considered value-driven (e.g., after writing about gratitude, "at the end of each day, I will think of one thing I am grateful for"), others appeared to be unrelated to their value (e.g., after writing about trust, "do at least one hour of maths revision a day to help me hopefully pass my maths test first time"). For a full list of goals set please see Appendix 6.

At follow-up, VA+GS participants were asked whether they had completed the goal they had set during the intervention. Of the 52 individuals within this group who completed T3, 34 (65.3%) reported that they had completed their goal.

Table 3.3

Frequencies of Values Chosen as the Subject of the Affirmation Essays for each condition

Value Domain (Frequency, %)	VA[a] (N = 57)	VA+GS[a] (N = 57)	NAC[b] (N = 57)
Love	6 (10.53%)	5 (8.77%)	-
Trust	4 (7.02%)	5 (8.77%)	-
Open-mindedness	3 (5.25%)	4 (7.02%)	-
Kindness	2 (3.51%)	4 (7.02%)	-
Honesty	2 (3.51%)	4 (7.02%)	-
Authenticity	4 (7.02%)	1 (1.75%)	-
Contribution	1 (1.75%)	3 (5.25%)	-
Persistence	3 (5.25%)	1 (1.75%)	-
Self-development	2 (3.51%)	2 (3.51%)	-
Independence	2 (3.51%)	2 (3.51%)	-
Gratitude	3 (5.25%)	1 (1.75%)	-
Reciprocity	2 (3.51%)	1 (1.75%)	1 (1.75%)
Forgiveness	3 (5.25%)	-	1 (1.75%)
Freedom	3 (5.25%)	-	-
Compassion	2 (3.51%)	1 (1.75%)	-
Self-control	2 (3.51%)	-	-
Flexibility	-	2 (3.51%)	-

Value Domain (Frequency, %)	VA[a] (N = 57)	VA+GS[a] (N = 57)	NAC[b] (N = 57)
Respect	-	2 (3.51%)	-
Supportiveness	-	2 (3.51%)	-
Humility	-	2 (3.51%)	-
Industry	1 (1.75%)	-	-
Humour	1 (1.75%)	-	-
Friendliness	1 (1.75%)	-	-
Fun	1 (1.75%)	-	-
Acceptance	1 (1.75%)	-	-
Caring	1 (1.75%)	-	-
Courage	1 (1.75%)	-	-
Curiosity	1 (1.75%)	-	-
Equality	1 (1.75%)	-	-
Excitement	-	1 (1.75%)	-
Responsibility	-	1 (1.75%)	-
Self-awareness	-	1 (1.75%)	-
Other: closeness/belonging	-	1 (1.75%)	-
Romance	-	-	1 (1.75%)
Justice	-	-	1 (1.75%)
Mindfulness	-	-	1 (1.75%)
Fitness	-	-	1 (1.75%)

Value Domain (Frequency, %)	VA[a] (N = 57)	VA+GS[a] (N = 57)	NAC[b] (N = 57)
Other: disloyalty	-	-	1 (1.75%)
Beauty	-	-	2 (3.51%)
Sensuality	-	-	3 (5.25%)
Sexuality	-	-	3 (5.25%)
Order	-	-	4 (7.02%)
Conformity	-	-	4 (7.02%)
Adventure	1 (1.75%)	-	5 (8.77%)
Power	-	-	27 (47.37%)
Missing data	2 (3.51%)	9 (15.79%)	1 (1.75%)

[a] Rated as most important value

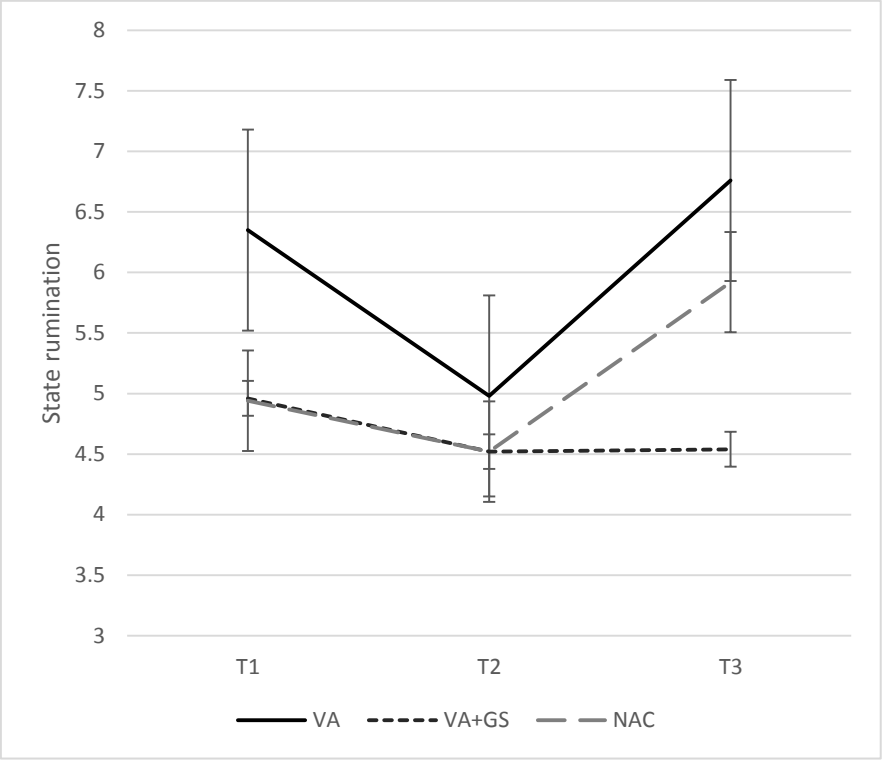
[b] Rated as least important value

3.3 Hypothesis Testing

It was predicted that group allocation would differentially affect state rumination over time. More specifically it was hypothesised that immediately following the intervention participants in the VA and VA+GS conditions will report lower state rumination than the NAC group. Two weeks after the intervention it was predicted that the VA and VA+GS groups would report lower state rumination than the NAC group and the VA+GS group would report lower state rumination than VA alone. It was predicted that these effects would not be mediated by positive affect.

The mean measures of state rumination for each condition over time are presented in Figure 3.1. The graph shows there appeared to be a trend of reduced rumination from T1 to T2 in all three conditions, but particularly VA. For the VA+GS condition this reduction is maintained at T3 whereas for VA and NAC the reduction in rumination goes back to baseline levels at T3.

Figure 3.1: Mean measures of state rumination for each condition over time (vertical lines depict standard error of means)



A mixed 3 (Condition: VA, VA+GS, NAC) X 3 (Time: T1, T2, T3) repeated measures ANCOVA was therefore conducted to examine any changes in state rumination (RSQ-S) from baseline to post-intervention and at two-week follow-up, covarying for age. Mauchly's test of sphericity was significant ($\chi^2_{(2)} = 14.92$, $p = .001$) therefore the Huynh-Feldt correction was used. Results showed that the main effect of Time was not significant ($F_{(1.89,290.59)} = 0.88$, $p = .41$), the main effect of Condition was not significant ($F_{(2,154)} = 1.12$, $p = .33$), and the Time x Condition interaction was also not significant ($F_{(3.77,290.59)} = 1.13$, $p = .34$). Therefore the hypotheses were not supported.

3.4 Exploratory Analyses

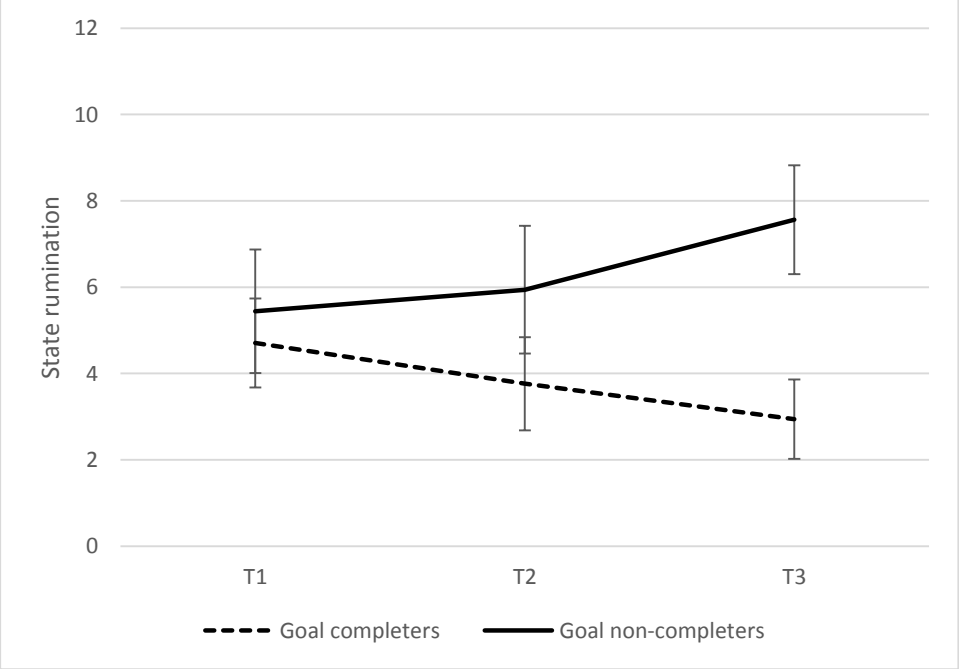
Two sets of exploratory analyses were computed. It was noted that only 65% of participants in the VA+GS condition completed the goals that they set. It is therefore possible that VA+GS did influence a reduction in rumination, but only for this sub-sample of participants. Thus, exploratory analyses were computed to test whether goal completion, rather than just the process of setting a goal, was a mechanism that affected state rumination within the VA+GS condition.

Secondly, although the current study did not find an effect on rumination, it was explored whether value-affirmed participants showed an increase in positive mood between T1 and T2.

3.4.1 Goal attainment. The effect of goal attainment was explored. This was investigated because goal attainment, rather than merely goal-setting, may be necessary to improve valued living and reduce rumination.

To test whether goal completion influenced state rumination at T3, a one-way ANCOVA was computed, comparing T3 state rumination for those who completed their goals (N = 34) versus those who did not (N = 18), controlling for T1 state rumination: results showed a significant difference ($F_{(1, 49)} = 5.72$, $p = .021$). Those who had completed their goal (M = 14.94, SD = 2.90) reported lower state rumination than those who had not (M = 19.56, SD = 8.22): see Figure 3.2. Having found this difference, the main analysis was re-run excluding those individuals that had not completed their goal, while still covarying for age. Mauchly's test of sphericity was significant ($\chi^2_{(2)} = 18.04$, $p < .001$) therefore the Huynh-Feldt correction was used. Results showed that the main effect of Time ($F_{(1.84, 250.13)} = 0.45$, $p = .62$), Condition ($F_{(2, 136)} = 2.77$, $p = .076$) and the interaction effect ($F_{(3.68, 250.13)} = 1.84$, $p = .13$) remained nonsignificant.

Figure 3.2: Mean measures of state rumination over time for VA+GS participants, split by goal completers or noncompleters (vertical lines depict standard error of means)



3.4.2 Positive affect. In this study, it was suggested that value-affirmation may lead to increased positive affect immediately after the VA and VA+GS interventions. Indeed, positive affect (measured by the PANAS-PA) increased post-intervention compared to baseline for the VA and VA+GS conditions: VA increased from 25.30 (SD = 7.07) to 27.32 (SD = 7.46) and VA+GS increased from 26.32 (SD = 7.88) to 27.11 (SD = 7.88). Positive affect then fell again at two-week follow-up: mean PANAS-PA was 24.22 (SD = 8.54) for VA and 22.50 (SD = 7.77) for VA+GS at T3.

As there was no directional hypothesis regarding positive affect at follow-up, only the change between T1 and T2 was further investigated. A one-way ANOVA was calculated with change scores between T2 and T1 positive affect as the dependent variable and condition as the between-subjects factor. This showed a significant difference between conditions ($F_{(2, 168)} = 5.84$, $p = .004$). Paired samples t-tests with alpha level adjusted for family-wise error using a Bonferroni correction ($p = .017$) indicated that there was a significant increase in positive affect in the VA ($t_{(56)} = 3.07$, $p = .003$) and VA+GS ($t_{(56)} = 2.69$, $p = .009$) condition, but no significant change in the NAC condition ($t_{(56)} = 0.07$, $p = .95$). This showed that the value-affirmation interventions lead to an immediate improvement in positive affect but the control condition did not.

4. Discussion

4.1 Overview

CT (Martin & Tesser, 1996) suggests that rumination can be reduced by decreasing actual-ideal self-discrepancy. Value-affirmation theory and research suggest that affirming a core value helps to buffer against psychological threats by maintaining a positive self-view in the face of self-discrepancy (Cohen & Sherman, 2014; Sherman, 2013). Furthermore, clinical applications of values and goals (e.g., ACT) suggest that it is not simply the act of reflecting on a core value, but also devising goals and following through with those goals that has a positive effect on well-being (Harris, 2008; Hayes et al., 2006). These findings led to the hypothesis that value-affirmation, particularly with the addition of a goal-setting component, would reduce rumination over time. However, results did not support this hypothesis. This chapter will review the current findings in the context of existing research and theory, followed by a consideration of their theoretical and clinical implications. The strengths and limitations of the study will be discussed, and implications and suggestions for future research will be considered.

4.2 Main Findings in the Context of Research and Theory

A summary of the literature that led to the study hypotheses is presented before the findings are discussed.

The hypotheses were initially developed from investigation into how to reduce rumination. According to CT (Martin & Tesser, 1996), rumination is triggered by a

discrepancy in goal progress, as shown in experimental and diary-based studies (Lavallee & Campbell, 1995; Roberts et al., 2013). Rumination discontinues when the person's goal is attained or abandoned. However, goal attainment can be difficult because often people set never-ending or unrealistic goals for themselves (Armor & Taylor, 1998). Goal abandonment may also be difficult, particularly if the goal is higher-order, thus closely tied to the individual's self-view and their values.

Within self-affirmation literature, it has been found that value-affirmation buffers against psychological threats by maintaining a positive self-view, broadening the perspective from which people view information and thereby reducing the impact of the threat on self-discrepancy (Cohen & Sherman, 2014; Sherman, 2013). This suggests that value-affirmation may help individuals to cope when they are unable to progress with a particular goal, by focusing and affirming the self in another valued domain. This may protect the self from ruminative processes by viewing the self-threat from a position of a maintained positive self-view. Koole et al. (1999) suggested that people are flexible in dealing with specific threats to their self-view when they have affirmed a core value because their higher-order goal of maintained positive self-view is attained (Carver & Scheier, 1981). One previous study has shown that value-affirmation is able to prevent rumination (Koole et al., 1999), although this effect was mediated by positive affect. This is incongruent with self-affirmation literature more generally (Fein & Spencer, 1997; Lannin, Guyll, Vogel, & Madon, 2013; Schmeichel & Martens, 2005; Sherman et al., 2000; Spencer et al., 2001). Nonetheless, Koole et al. provided initial evidence that value-affirmation may be able to reduce rumination over time.

The psychological benefits of values and value-consistent goals have also been investigated clinically within ACT (Harris, 2008; Hayes et al., 2006). ACT theory suggests that value-clarification allows individuals to become more flexible about their pursuit of a goal. Rather than focusing on the blocked goal that triggered the rumination, individuals identify a higher-order value, which enables them to explore alternative value-consistent lower-order goals that may be more attainable (McCracken & Yang, 2006). Additionally, value-clarification could promote adaptive goal disengagement because the blocked goal may seem less subjectively significant when compared with one's values (Simon et al., 1995). Value-clarification has been shown to reduce rumination (Teismann, Het, et al., 2014). Based on these theoretical and empirical findings, it was hypothesised that a value-affirmation (VA) intervention would reduce rumination over time.

One way of bolstering value-affirmation effects that has been identified in the literature is triggering behavioural change (Cohen & Sherman, 2014). If value-affirmation is able to trigger an immediate positive change in behaviour it could show the individual that behaviour change is possible, and also improve their self-view so they will continue to behave in a way that is congruent with this altered self-view (Sherman & Cohen, 2006). This could further reduce ideal-actual self-discrepancy by seeing oneself acting value-consistently (Cohen & Sherman, 2014). A key component of ACT interventions also incorporates this concept: Individuals are encouraged to use core values to guide their behaviour by setting value-driven goals, with the aim of leading a value-consistent life (Hayes et al., 2013, p. 20). Research has shown that acting value-consistently was more important for well-being than simply identifying

values of importance (Sheldon & Krieger, 2014). Additionally, reducing goal-discrepancy via goal-setting interventions resulted in reduced rumination in a student sample (Sheldon et al., 2002). Therefore it was hypothesised that an additional goal-setting intervention (the VA+GS group) would bolster the effects of value-affirmation on rumination.

More specifically, the current study's first hypothesis was that immediately following a value-affirmation intervention, participants in the VA and VA+GS conditions would report lower state rumination than nonaffirmed controls. It was also predicted, based on Koole et al. (1999), that this effect would be mediated by an increase in positive mood. At two-week follow-up, it was hypothesised that VA and VA+GS groups would report significantly lower state rumination than NAC and that VA+GS would report lower state rumination than VA alone. This effect would not be mediated by positive mood. However, these hypotheses were not supported as there was no statistically significant difference in state rumination between conditions or over time. Mediational effects or specific differences between groups and over time were therefore not examined. However, exploratory analyses revealed that there was a significant increase in positive affect between pre- and post-intervention for the value-affirmation groups that was not found in the control condition. Additionally, exploratory analysis revealed that individuals who had completed their goal in the VA+GS group reported lower state rumination at T3 than noncompleters, after statistically controlling for the effect of T1 state rumination.

There are numerous possible reasons for why the main hypotheses were not supported in this study. The following section will discuss the current findings in light

of the discrepancy with the results found by Koole et al. (1999), before considering other values-based research. The study findings will then be discussed in relation to broader existing theory.

4.2.1 Current findings in the context of existing research. This study was unable to replicate and extend the findings of Koole et al. (1999), who reported that value-affirmation can prevent ruminative thinking. As such, differences in design between Koole et al. and the current study were explored. Two differences may be of particular significance: how rumination was measured and the use of a rumination induction procedure. Following this, other research that looked at values will be considered.

4.2.1.1 A comparison with Koole et al. (1999). In their series of three studies, Koole et al. (1999) measured rumination via the accessibility of goal-related thoughts, using both the recognition of words from a previously administered alleged intelligence test and a lexical decision task. These measures related to the specific blocked goal of being intelligent: Koole et al. induced rumination about a thwarted goal and then measured goal-related thoughts about this particular thwarted goal. This measure may have been more sensitive to identifying group differences than the more general self-report measure utilised in the current study. However, the current study aimed to investigate whether value-affirmation was able to reduce rumination more

generally, over time, to establish whether the intervention may have useful clinical applications.

In addition, Koole et al. (1999) only measured rumination on one occasion, following the self-affirmation task. Consequently, they did not have an initial measure of rumination from which to compare groups at baseline. Likewise, they were only able to examine differences between rumination across groups after self-affirmation, compared to within-subject and between-subject in the current study. The current study was unable to examine the specific between-group effect after self-affirmation because the overall effect was not significant. However, the power analysis was based on Koole et al.'s between-subjects effect. It is possible that the current sample was insufficiently powered to find significant differences longitudinally. For example, the trend observed in the current study was that value-affirmation reduced rumination immediately post-intervention but returned to baseline at two-week follow-up. This was not observed in the statistical analysis because the overall effect was not significant.

The second key difference between the current study and Koole et al. (1999) was that they measured the effect of value-affirmation in response to a rumination induction. Koole et al. used failure feedback on an alleged intelligence test as a rumination induction: a self-identity threat intended to induce rumination because it triggered an actual-ideal self-discrepancy regarding the goal of being intelligent. The current study did not utilise a rumination induction and a difficulty that arose was a floor effect on state rumination at T1. This is a problem because participants with low levels of rumination at pre-intervention can only show relatively small degrees of

improvement after the intervention (Hofmann et al., 2010). The use of a rumination induction is common in nonclinical studies of rumination (Lyubomirsky & Nolen-Hoeksema, 1993; Watkins & Moulds, 2005) to reduce floor effects and to observe the effects of rumination in the present moment. However, the rationale for not using a rumination induction in the current study was that it attempted to explore the longitudinal effect of value-affirmation on real-world, naturally-occurring threats. Rather than establishing the effect of value-affirmation on one manipulated goal discrepancy at one time point, the aim was to establish whether it had a more general effect on the naturally-occurring ruminative process over time. It is possible that the lack of rumination induction, or manipulated blocked goal, decreased the likelihood of finding an effect. Alternatively, affirmations may only be effective at buffering against rumination about a specific threat, rather than being an effective intervention for more general elevated levels of rumination.

A rumination induction has the added benefit of providing a specified goal-discrepancy, whereas the current study had no control over ruminative triggers. This may be problematic because engaging in value-affirmation in the same domain in which the self is threatened can actually intensify defensiveness (Blanton et al., 1997). A sub-sample may have experienced increased rumination, if their chosen value reminded them of any of their ruminative triggers. This would not have been evident when looking at group analyses. Koole et al. (1999) controlled for this by excluding any values related to the manipulated self-threat of intelligence. The current study was not able to measure possible ruminative triggers during the two week period between T2 and T3, so cannot draw any firm conclusions regarding this.

In summary, the current study was unable to replicate the findings of Koole et al. (1999) and this may be the result of differing methodologies. The current study measured rumination using self-report measures, whereas Koole et al. used a proxy measure relating specifically to the induced thwarted goal. It may be that value-affirmation is able to prevent the initiation of rumination in the present moment, specific to a current thwarted goal, but that effects will not be generalised to other thwarted goals or maintained over time. In addition, Koole et al. utilised a rumination induction, thus controlling the specific rumination trigger and reducing the likelihood of floor effects of rumination. This may have impacted on the current study's ability to replicate their findings.

4.2.1.2 Values work within ACT. Values have a central role within the ACT model, but research into the values-based components of the model is fairly limited (Levin et al., 2012). Considering the current findings in the context of previous research into rumination interventions, it may be that the other components of ACT are also necessary for individuals to benefit from the values work.

The overall aim of ACT is to increase psychological flexibility via two broad processes (Hayes et al., 2006): (i) mindfulness and acceptance processes, aiming to change one's relationship to difficult internal and external events; and (ii) commitment to valued action, increasing the extent to which a client's life is guided by core values. Only two known studies have investigated ACT as an intervention for rumination. A single-case design study that looked at ACT for rumination (Harrington, 2008) reported reduced believability of ruminative thoughts and

avoidance of internal experiences after the ACT intervention. An unpublished doctoral thesis also investigated a group ACT intervention for rumination both as a single case study design and as a group intervention (Slevison, 2013) and found reduced rumination at three-month follow-up in both parts of the study. It is not known from these studies what ACT components, or combination of components, led to a decrease in rumination. It has been suggested that mindfulness and acceptance processes 'clear the path' for committing to valued action (Hayes et al., 1999).

Acceptance within ACT is taught as an alternative to rumination and involves learning to experience unwanted private experiences, such as low mood, without attempting to alter them (Hayes et al., 2006). Studies investigating acceptance for rumination have utilised mindfulness (Kohl et al., 2012), which is negatively correlated with rumination (Brown & Ryan, 2003). Research has shown that mindfulness techniques can reduce rumination in clinical samples (Geschwind et al., 2011; Ramel et al., 2004; van Aalderen et al., 2012) as well as nonclinical samples (Deyo et al., 2009; Feldman et al., 2010; Hawley et al., 2013; Hilt & Pollak, 2012; Jain et al., 2007).

Additionally, acceptance has been investigated in combination with values in pain tolerance studies. An acceptance-plus-values intervention had additive benefit to acceptance alone as people had significantly higher pain tolerance if the pain was part of a valued action (Branstetter-Rost et al., 2009; Páez-Blarrina et al., 2008). Acceptance-plus-values has not been investigated within the context of threats to self-view, but the acceptance component may help to alter the relationship with the threat, whereas the values component may act as a motivation to persevere despite the threat.

In conclusion, evidence regarding the effectiveness of ACT components for rumination is limited, but the acceptance component may provide added benefit to values interventions. Future studies may benefit from exploring the combined impact of values and acceptance for reducing rumination, rather than values work alone.

4.2.2 Current findings in the context of existing theory. The broader theoretical literature, on which the study hypotheses were based, will now be considered. Firstly, the study hypotheses were based on the CT account of rumination (Martin & Tesser, 1996): as will be discussed, there is some evidence against this conceptualisation of rumination as a transient, *state-like* phenomenon triggered by actual-ideal self-discrepancy. Secondly, the study hypotheses were based on an extensive literature demonstrating that self-affirmations can generate a range of health and psychological benefits. However, there is much debate regarding the mechanisms by which self-affirmations work. The current study may have found null findings because it did not effectively target these mechanisms. Possible mechanisms of change that will be discussed are the content of the essays, positive affect, behaviour change and self-esteem. These ideas are discussed below.

4.2.2.1 Control theory account of rumination. The study hypotheses were based on the CT account of rumination (Martin & Tesser, 1996), which states that rumination is triggered by actual-ideal self-discrepancy and will be terminated by reducing this discrepancy. In the context of the present findings, there are two

problems with this: the first is that the act of writing about an important value could actually trigger actual-ideal self-discrepancy and thus trigger rumination (especially in those that do not then complete their goals); the second is that there are alternative ways to conceptualise rumination that may explain why value-affirmation was unable to reduce it in this study.

It has been suggested previously that the act of writing about a value could be an emotionally distressing experience, particularly if one is not living value-consistently (Czech et al., 2011). It thus follows that, for some participants, the act of writing about a valued domain may have triggered actual-ideal self-discrepancies and thus initiated rumination rather than reduce it. This may particularly be the case for individuals who did not complete their goal. Within the exploratory analysis of the current study, results were suggestive of an increase in rumination for individuals who had set a values-based goal but had not completed it. Thus, these individuals did not appear to benefit from the value-affirmation plus goal-setting intervention.

Additionally, it has previously been reported that engaging in value-affirmation in the same domain to which the self is threatened can intensify defensiveness (Blanton, Cooper, Skurnik, & Aronson, 1997). In the current study, it is possible that over the two-week follow-up period some individuals were ruminating about their chosen value. These individuals may also not have benefitted from the value-affirmation intervention.

Overall, the current study found that value-affirmation resulted in increased positive affect immediately following the intervention, suggesting it was not emotionally distressing. However, a sub-sample may have experienced adverse

effects that were not evident when looking at group analyses. Gregg et al. (2014) asked participants to write about a value and also describe a time they had lived in line with this value. The authors suggested that this would minimise any short-term stress reaction by triggering thoughts of living value-consistently, rather than inconsistently. These were the instructions used in the current study. Despite this, reflecting on past experiences of being value-consistent could have triggered current thoughts about being value-inconsistent. Future studies may wish to measure valued-living regarding the specific domain written about as a moderator of value-affirmation effects on rumination.

There are also alternative ways to conceptualise rumination that may explain why an effect of value-affirmation was not found in this study. CT (Martin & Tesser, 1996) suggests that rumination can be thought of as a transient, *state-like* phenomenon or situational characteristic that all individuals engage in to varying degrees. An alternative theory is RST (Nolen-Hoeksema, 1991), which suggested that rumination is a habitual, stable and enduring *trait-like tendency* to repetitively focus on one's symptoms of low mood, and on the causes, meanings and consequences of depressive symptoms. RST suggests rumination is an enduring cognitive style or dispositional trait that is resistant to change. The two conceptualisations differ in terms of what triggers rumination and whether it is a state or trait phenomenon; there is evidence for and against both ideas.

Firstly, RST suggests rumination is triggered by negative mood rather than goal-discrepancy. There is evidence that rumination can be triggered by low mood (Lyubomirsky & Nolen-Hoeksema, 1995; Watkins, 2008), but rumination has also

been shown to be triggered by unresolved goals or life events outside of the context of negative mood (Lavallee & Campbell, 1995; Martin & Tesser, 1996; Robinson & Alloy, 2003). Furthermore, there is some evidence that one's propensity to ruminate is a stable individual difference, resistant to change, in line with RST (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema, 2000). It is likely that any brief intervention will not have durable effects if rumination is an enduring cognitive style. For example, in a review of mindfulness interventions for rumination, effect sizes were positively correlated with the number of treatment sessions, suggesting that more exposure to mindfulness practice generally results in better outcomes (Klainin-Yobas et al., 2012). The same may be true for a values intervention: it may take ongoing practice for individuals to benefit from values clarification or goal-setting interventions. However, previous value-affirmation studies have demonstrated long-term effects from only one brief intervention, albeit with different dependent variables (Cohen et al., 2006; Logel & Cohen, 2012; Sherman et al., 2000; Shnabel et al., 2013).

There have been some suggestions that CT and RST theories could be integrated to explain findings regarding rumination. Some people may be more susceptible to experiencing state rumination, based on an underlying and more enduring trait-like disposition. One proposal for how this may work has been put forward: Goal-discrepancy triggering state rumination, as in CT, will become a habitual way of thinking if state rumination repeatedly occurs in a context of negative affect, as in RST (Watkins & Nolen-Hoeksema, 2014). Once the habit has formed, rumination could be activated by contextual cues rather than by goal-discrepancy.

Habits are formed slowly, with experience, and once formed are resistant to change, making habitual rumination difficult to treat. It is therefore possible that if rumination has become a habit and is not always triggered by actual-ideal self-discrepancy, value-affirmation may not be an effective intervention for reducing it, without the addition of other techniques such as mindfulness. However, this theory of rumination as a habit has received relatively little attention and warrants further examination.

Overall, the study hypotheses were based on the CT account of rumination (Martin & Tesser, 1996). There is some evidence against this conceptualisation that may explain why value-affirmation was not an effective intervention for reducing rumination in the current study. Additionally, the notion that writing about a value may actually trigger rumination warrants further investigation.

4.2.2.2 Possible mechanisms of change within value-affirmation. The study hypotheses were based on the extensive literature demonstrating that self-affirmations can generate a range of health and psychological benefits. This section considers how proposed mechanisms of self-affirmation effects may have led to the null findings. There are numerous potential factors; the following discussion will focus on the impact that content of the essays, positive affect, behaviour change and self-esteem may have on self-affirmation effects. It is possible that the experiment may not have tapped into these mechanisms, perhaps because of modifications made to the value-affirmation intervention.

*Content of the essays***.** There is a significant body of literature supporting the notion that a threat to one valued domain can be tolerated by writing an essay

reflecting on competence in another valued domain. However, there is some debate regarding the necessary content of value-affirmation essays. For example, Shnabel et al. (2013) examined the content of the values essays written by middle school students. This revealed that writing about social belonging (i.e., affirming bonds with others in their social network) was key to buffering against identity threat. However, this may only be relevant to this specific minority group threat or this younger sample. An alternative idea to social belonging is a focus on social relationships. Researchers have suggested that most value-affirmation essays focus on social relationships such as friends and family (Crocker et al., 2008) and perhaps this focus, rather than values per se, produces the positive effects of value-affirmation (Cohen & Sherman, 2014). This would suggest that if the current participants did not write about social relationships, the expected results of reduced rumination may not be found.

The current study, as is often the case in self-affirmation literature, did not analyse content of essays. Other than each chosen value, it is unknown what participants specifically wrote about. This study employed a list of 57 values from ACT (Harris, 2008). These values are defined as 'chosen concepts' that represent life directions, and examples of values chosen by participants in our study were 'love', 'honesty', or 'trust'. The rationale for using this set, rather than the traditional set of 10 used within Social Psychology (Allport et al., 1960), was to provide a broader, more extensive and less outdated list, as well as to increase the clinical applicability of the intervention. On the other hand, previous value-affirmation interventions have often employed values lists that represent valued life domains, such as 'spirituality' or 'friendship' (Allport et al., 1960; Wilson et al., 2010). It is possible that the more

diverse list of values chosen within the current study (see Appendix 4) meant that a sub-sample of individuals did not write about social belonging and so did not benefit from the value-affirmation intervention. However, this is only problematic if the effects of value-affirmation are an effect of writing about social belonging, which is a hypothesis requiring further research.

*Positive affect***.** Koole et al. (1999) found that the impact of self-affirmation on reducing rumination was mediated by an implicit measure of positive affect; they found an effect on rumination because value-affirmation increased positive affect. Previous researchers have reported that improving mood will reduce the incidence of rumination (Bahrami, Kasaei, & Zamani, 2012): positive emotions facilitate cognitive reappraisal, enabling individuals to find positive meaning in negative circumstances (Tugade & Fredrickson, 2004). However, it was hypothesised in this study that the effect of positive affect would be short-lived (Watkins & Nolen-Hoeksema, 2014) but the value-affirmation effect would be maintained over time. Koole et al. did not measure the longer term effects of value-affirmation on rumination to see whether the effects went beyond that of immediately improved mood. The current study found an increase in positive affect, but was unable to explore the immediate effect of the intervention on rumination because the overall main effect was not significant. One possible interpretation of the current findings is that value-affirmation does not reduce rumination any more than simply increasing positive affect and thus the effects of value-affirmation on rumination will not be seen longer term.

The relationship between value-affirmation, rumination and positive affect warrants further investigation. Sherman and Cohen (2006) argued that a more

appropriate strategy for determining the differential effects of value-affirmation and positive mood on rumination is to separate out the two processes by comparing value-affirmation to a positive mood induction procedure. However, there are a number of difficulties with this approach. Firstly, there is considerable literature that casts doubt on the validity of many mood inductions (Zhang, Yu, & Barrett, 2014). Furthermore, most positive mood induction procedures differ from value-affirmation procedures in important ways, for example by using music or video clips rather than a written task (Mayer, Allen, & Beauregard, 1995). This would make it hard to interpret any between-group effects. Those that are comparable in methodology (e.g., include a writing task) often use methods that tap into values. For example, some methods found in the literature ask participants to write about something that happened to them that made them feel happy (De Dreu, Baas, & Nijstad, 2008; Garland et al., 2010; Mayer et al., 1995; Velten Jr., 1968). Again, this would make it difficult to draw any firm conclusions regarding the presence or absence of differing effects between value-affirmation and positive mood on rumination.

*Behaviour change***.** It has been suggested that for self-affirmation effects to be maintained over time, behaviour change is required. Likewise, an effective intervention for reducing rumination may require positive behavioural change. Both of these ideas will now be discussed.

Reflecting on the literature regarding the longitudinal effects of self-affirmation, Cohen & Sherman (2014) suggested that self-affirmation effects will only be maintained over the longer term if behaviour change is initiated. They suggested that acting more value-consistently (i.e., increasing valued living) would extend the

self-affirmation effect by promoting and maintaining a positive self-view (Sherman & Cohen, 2006). This was part of the rationale for the additional goal-setting component in the current study.

It is unknown from the current study whether the value-affirmation condition triggered any value-consistent behaviour change over the two-week period. Other studies reporting positive behaviour change have measured health outcomes such as weight loss (Logel & Cohen, 2012), taking a diabetes screening test (van Koningsbruggen & Das, 2009), purchasing condoms (Sherman et al., 2000) or reduced alcohol intake (Armitage et al., 2011). It is possible that some positive behaviour change was triggered in the value-affirmation condition but that the study did not capture this.

In the VA+GS condition, the study found that participants who had completed their goal reported significantly less state rumination at T3 than participants who had not completed their goal, even after controlling for T1 state rumination. This provided preliminary evidence that behaviour change in the form of values-based goal completion, rather than only setting a goal, is helpful for reducing rumination. However, splitting the VA+GS participants into two groups for this analysis was selective rather than random sampling: the difference found between these two groups may have been the result of a third unknown variable. For example, the finding that goal-completers reported lower rumination than goal non-completers may be the result of their psychological state or mood, rather than any behavioural engagement. Nonetheless, given the preliminary finding that values-based action appeared to reduce rumination, the literature was investigated to determine how previous value-

affirmation and/or goal-setting interventions have produced value-consistent behaviour change. This may be important given that one third of the VA+GS group did not complete their goal and did not appear to benefit from the intervention.

Two potentially important features have been noted in previous value-affirmation interventions that resulted in positive behaviour change. Firstly, some studies utilised the addition of an implementation intentions intervention, rather than only goal-setting; and secondly, some had multiple interventions over a given time period.

Goal intention (i.e., setting a goal) does not always successfully translate into goal attainment. This was the case in the current study, as more than one third of the VA+GS sample reported having not completed their goal. Implementation intentions may provide an additional benefit to goal-setting. In an implementation intentions intervention, participants design an action plan for behaviour change incorporating when, where and how goal-directed behaviour will occur. They also consider what they will do if specific situations arise, known as if-then planning (Gollwitzer et al., 2013). Focusing on the enactment of goals, through if-then planning, provides a strategy for goal attainment, to ensure behaviour change (Gollwitzer & Sheeran, 2006). A previous study found that this process mediated the positive effects of self-affirmation on behaviour change (Ferrer et al., 2012).

However, findings regarding the utility of combining value-affirmation and implementation intentions have been mixed. Some studies have found that the combination has added benefit over self-affirmation alone (Harris et al., 2014), some have found no difference between self-affirmation and the combination (Armitage et

al., 2011), and one study even found a detrimental effect (Jessop et al., 2013). Reflecting on these conflicting findings, (Dijk & Dijkstra, 2014) suggested that before combining individually-effective interventions it is important to establish what exact mechanism drives the behaviour change process in both techniques. This warrants further investigation. In addition, a comparison of the effects of values-based goal-setting on rumination, with or without implementation intentions, is worth examining.

Another factor noted in some self-affirmation studies that have observed long-term behaviour change is the number of interventions offered. It may be unrealistic to expect sufficient behaviour change after offering a single, brief writing task in a laboratory setting (Dijk & Dijkstra, 2014). Considering this within a clinical context, it is likely that the therapist and client will discuss values and how to move towards valued-living over a number of therapy sessions and throughout treatment, rather than only on one occasion (Hayes, Strosahl, & Wilson, 1999). Various examined self-affirmation reviews have drawn no conclusions regarding whether the number of interventions provided had an impact on outcomes (Cohen & Sherman, 2014; Epton, Harris, Kane, van Koningsbruggen, & Sheeran, 2015; McQueen & Klein, 2006; Sherman & Cohen, 2006). However, looking at self-affirmation studies that have reported behaviour change, some only provided one intervention (Cohen et al., 2006; Logel & Cohen, 2012; Sherman et al., 2000; Shnabel et al., 2013), but others provided multiple opportunities to affirm the self over a period of time (Cohen et al., 2009; Miyake et al., 2010; Sherman, Bunyan, et al., 2009). Taken together, this implies that only one intervention is actually needed to result in behaviour change.

In conclusion, for self-affirmation effects to be maintained over time, behaviour change may be required, because this promotes and maintains a positive self-view (Sherman & Cohen, 2006). However, it is not clear exactly how or when value-affirmation effects result in behaviour change, for example whether goal-setting or implementation intentions are necessary, or whether more than one intervention is required. Further research is required.

Although behaviour change may be important for longer-term self-affirmation effects generally, it is uncertain whether behaviour change is important for reducing rumination specifically. Theoretically, increased valued living could reduce rumination as it would decrease actual-ideal self-discrepancy (Martin & Tesser, 1996; Smith & Alloy, 2009). Within BA and RFCBT, rumination is conceptualized as a form of avoidance, and functional analysis is used to facilitate the reduction of this avoidance and replace it with more helpful approach behaviours. This suggests value-consistent behaviour change is one method for reducing rumination and is a possible reason why value-affirmation did not result in reduced rumination in the current study. However, cognitive interventions, such as metacognitive therapy or concreteness training, have been shown to result in reduced rumination in clinical samples (Watkins et al., 2009; Wells et al., 2012). Further research should consider whether behaviour change is a necessary outcome of interventions aimed at reducing rumination. The trend in the current study suggests that value-affirmation alone is not able to maintain reduced rumination, but value-driven goal completion may be able to.

*Self-esteem***.** Self-esteem has been investigated as a potential moderator of self-affirmation effects as there is some debate regarding whether individuals with lower trait self-esteem benefit more or less from self-affirmation (Steele et al., 1993; Gibbons et al., 1997). For example, in one study the beneficial effects of value-affirmation on self-reported stress were only evident in participants who were high in self-resources, including high self-esteem, self-enhancement and optimism (Creswell et al., 2005). However, Marigold et al. (2007) found that high self-esteem individuals were more likely to self-generate self-affirmations and so benefitted less from a self-affirmation intervention. Similarly, Jaremka et al. (2011) suggested that people with high self-esteem did not feel threatened by a psychological threat to self-integrity so did not benefit from self-affirmation. It is unknown from the current study whether value-affirmation was only effective for individuals with low self-esteem: the study was not sufficiently powered to complete a moderation analysis. Further research with a larger sample, particularly of individuals with low self-esteem, is required.

Other potential mechanisms of change. There are a number of other potential moderators of change that have not been considered here, a thorough examination of which is beyond the scope of this thesis (see Cohen & Sherman, 2014; Howell, 2016; McQueen & Klein, 2006; Sherman, 2013). For example, culture has been suggested as a possible moderator of change because cultures endorsing individualism versus collectivism may experience value-affirmation exercises differently (Sherman & Cohen, 2006). Culture also shapes what people view as threatening to their self-view (Hoshino-Browne et al., 2005). In a meta-analysis of self-affirmation on health behaviour, (Epton et al., 2015) reported self-affirmation was more effective in

changing health behaviour when samples contained a smaller proportion of 'white' participants. The current sample was majority 'white' and thus culture may have impacted results.

Taken together, the mechanisms by which self-affirmations work are debateable (Sherman, 2013). It is possible that the null findings in the current study are due to particular mechanisms of change required for self-affirmation to work, particularly as there were differences within the current value-affirmation intervention compared to some others in the literature. For example, the altered values list may have affected the content of the essays in a way that impacted results. Alternatively, two possible mediators of value-affirmation effects have been discussed. It is possible that value-affirmation results in improvements in positive affect, but does not directly impact on rumination, resulting in an inability to replicate the findings of Koole et al. (1999). Previous authors have also suggested that for value-affirmation effects to have an impact longer term, value-consistent behaviour change must be triggered. Indeed, goal attainment appeared to result in reduced rumination. It is therefore possible that value-affirmation will only impact on rumination over time for those that have made a value-consistent behaviour change. Furthermore, there is a possibility that value-affirmation will reduce rumination for individuals with low self-esteem, but not high self-esteem. In summary, further research is required into the mechanisms by which value-affirmation effects are produced. It is also worth investigating whether value-affirmation is able to reduce rumination for individuals with low self-esteem.

4.2.3 Summary. Firstly, differences in study design between the current study and that of Koole et al. (1999) may explain the null findings. Alternatively, in considering the ACT literature, it is possible that the acceptance component may provide added benefit to a values intervention. The null findings have also been considered in the context of conclusions draw from the broader theoretical literature. The first of these was the conclusion that rumination is a *state-like* phenomenon triggered by actual-ideal self-discrepancy (Martin & Tesser, 1996). There is some evidence to suggest that rumination could be an enduring process that is resistant to change and will be instigated by triggers other than goal-discrepancy, such as low mood (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema, 2000). Furthermore, the study hypotheses were based on self-affirmation theory and there is considerable debate regarding the mechanisms of change required for self-affirmation effects. It is possible that the study did not adequately tap into these mechanisms, perhaps due to differences in value-affirmation and goal-setting interventions compared with other studies. Possible mediators or moderators of value-affirmation include the themes discussed in the essays, positive affect, behaviour change and self-esteem, although this list is not exhaustive.

In conclusion, a number of possible explanations for the null findings have been raised and discussed within the context of the literature. Many of these require further research.

4.3 Theoretical and Clinical Implications

Theoretical and clinical implications of the study results will be considered in relation to nonclinical rumination, self-affirmation theory and values interventions as part of ACT and BA.

4.3.1 Theoretical implications for nonclinical rumination. The current study was not designed to provide evidence for or against the differing theories of rumination. However, results from the study provide support for certain conceptualisations of rumination, particularly its relationship to low mood and psychopathology.

It has been proposed that the frequency of rumination lies on a continuum, with some individuals ruminating more than others, and high levels of rumination characteristic of psychopathology, including depression, anxiety, substance misuse and PTSD (Brozovich et al., 2015; Cowdrey & Park, 2011; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, 2000; Skitch & Abela, 2008). It has also been suggested that rumination in clinical samples differs quantitatively, but not qualitatively, from rumination in nonclinical samples. As such, nonclinical samples have been utilised as analogue samples, particularly to develop a better understanding of rumination without the confounding variables associated with clinical populations. The current study showed that rumination is present within nonclinical populations, particularly within the trait measure of rumination. However, a floor effect was found in the state measure of rumination. This provides evidence for the conceptualisation of rumination as a common process within the general population, but suggests that

nonclinical research investigating the immediate effects of a particular strategy on rumination may benefit from utilising a rumination induction procedure. Previous studies have used the trait measure at follow-up to determine change (Ekkers et al., 2011; Robins, Keng, Ekblad, & Brantley, 2012; Watkins et al., 2009; Watkins et al., 2011), which may be more helpful.

One finding from the current study was that participants in the value-affirmation groups reported improved positive affect immediately following the intervention, but rumination was not reduced. This suggests that rumination and mood are not directly related and that rumination will not be reduced by improving positive mood alone because the induction of positive mood is unlikely to be sustained over time.

4.3.2 Theoretical implications for self-affirmation theory. In the current study, value-affirmation with or without goal-setting was not able to reduce rumination. It may be the case that value-affirmation is not a useful intervention for reducing rumination. This is counter to the previous finding of Koole et al. (1999). It is possible that previous research reporting value-affirmation effects had actually found an effect of something separate to value-affirmation but that had been triggered by the value-affirmation intervention. For example, it may be that writing about social relationships, increasing positive affect, or triggering value-consistent behaviour change, results in the previously reported value-affirmation effects. Alternatively, value-affirmation may only be an effective intervention for individuals with low self-

esteem. Currently, there are no firm conclusions regarding how value-affirmation works or these potential mediating or moderating effects: further research is required.

The literature reports differing results of value-affirmation on positive affect, with some finding it mediates value-affirmation effects (Ferrer et al., 2012; Koole et al., 1999), and others finding no impact on positive affect (Fein & Spencer, 1997; Lannin, Guyll, Vogel, & Madon, 2013; Schmeichel & Martens, 2005; Sherman et al., 2000; Spencer et al., 2001). A previous review concluded that value-affirmation may only affect implicit positive affect (Sherman & Cohen, 2006). However, the current study found an increase in explicitly measured positive affect. This finding adds to the literature regarding possible mechanisms by which value-affirmation works and confirms that future studies investigating value-affirmation should measure positive affect as a possible mediator of effects.

4.3.3 Clinical implications for values-based interventions. ACT is a clinical intervention that has a substantial component focus on using values to reduce problematic psychological processes, and to increase value-consistent action. Research looking at the isolated effect of values and value-driven goals may have some helpful implications for the use of values clinically. However, the current study utilised a nonclinical population and so any clinical implications must be considered tentatively.

The psychological flexibility model within ACT has two broad categories (Hayes et al., 2006): (i) mindfulness and acceptance processes; and (ii) commitment to valued action. Only two studies have investigated whether an ACT intervention

was able to reduce rumination, and both showed promising results (Harrington, 2008; Slevison, 2013). Additionally, research found that participants who received mindfulness training demonstrated reduced levels of rumination (Deyo et al., 2009; Feldman et al., 2010; Hawley et al., 2013). There is relatively little research within ACT literature investigating values-based interventions alone, or in combination with values-based goal-setting. Laboratory-based studies investigating values and committed action would improve our understanding of the mechanisms behind the values components and the interactive and potentially cumulative effects of these components (Levin et al., 2012; Rosen & Davison, 2003). Given that self-affirmation literature suggested that a brief values intervention can be effective for reducing distress, this was a promising area of research (Branstetter-Rost et al., 2009; Creswell et al., 2005; Koole et al., 1999). The current laboratory-based study added to this literature-base.

The findings showed that value-affirmation, adapted to increase its clinical applicability based on ACT (Harris, 2008; Hayes et al., 2006; Levin et al., 2012), was not effective at reducing rumination but resulted in improved immediate positive affect. This was also the case when a values-based goal-setting component was added. Although perhaps counter-intuitive, it is possible that affirming a personally meaningful value results in improved positive mood but this might not correspond with any change in their rumination. It is possible that the additional components of ACT (i.e., mindfulness and acceptance), or the combination of components, are important for reducing rumination. However, values work within ACT is more

thorough and comprehensive than the value-affirmation intervention utilised in this study, so clinical implications are made with caution.

Mindfulness and acceptance allow the individual to notice when they are engaging in rumination, practice willingness to experience it, and redirect attention to value-driven committed action. It may be the case that mindfulness and acceptance are necessary skills to learn in order to increase awareness of the ruminative process and provide an alternative response to negative experiences. This increased awareness and flexibility may reduce the negative consequences associated with rumination, such as low mood, that can interfere with goal-driven behaviours (Nolen-Hoeksema et al., 2008). The values components then provide the context in which acceptance is tolerable (Plumb et al., 2009): they may teach the individual how to reduce actual-ideal self-discrepancy by disengaging from ruminative thinking on blocked goals and focusing on value-consistent action. Future research could investigate whether there is an additive benefit of a values component to acceptance-based interventions or whether acceptance alone is sufficient. Previous studies have investigated this with regards to pain tolerance and found values provided additional benefit (Branstetter-Rost et al., 2009; Páez-Blarrina et al., 2008), but further research is required into the impact of values on psychological distress.

Similarly, some BA interventions provide a values-clarification component. A previous review of BA interventions concluded that although values-based interventions are receiving increasing empirical support (Kanter et al., 2010), it is unclear how much they contribute or add to BA's effectiveness. Future studies could

directly compare value-driven BA with standard BA to determine whether values have an additive benefit.

Furthermore, the current study utilised a very brief value-driven goal-setting intervention that, for one third of the VA+GS sample, did not result in goal attainment. Results suggested that goal attainment was important for reducing rumination: ensuring goal-attainment in a clinical intervention may be useful for improving outcomes. There are a number of potential ways to increase likelihood of a goal-setting intervention resulting in goal attainment. For example, many previous studies provide more than one intervention, and some provide input from a clinician for support with identifying appropriate goals (Coote & MacLeod, 2012). In addition, the implementation intentions intervention discussed previously may provide a strategy for goal attainment (Gollwitzer et al., 2013).

Overall, in ACT, 'value-clarification' and 'committed action' are more detailed and comprehensive therapy components than those used in the current study. Therefore it would not be appropriate to make firm recommendations from the current study about ACT components. However, results indicate that goal attainment may be particularly important and therefore further research should consider how to ensure goal attainment after goal-setting.

The current study utilised a nonclinical population and the majority of research into self-affirmation effects have employed student or general populations (McQueen & Klein, 2006). Therefore, firm conclusions cannot be drawn regarding the effect of value-affirmation with or without goal-setting on rumination within a clinical population, or how a clinical population would respond to the process of

reflecting on their values. It is possible that a clinical population would find the exercise of reflecting on values more difficult practically (e.g., identifying a value) or emotionally (e.g., thinking about a painful memory) than a nonclinical population, but as yet there are no published studies utilising a clinical population so this requires further research.

However, it is also possible that a clinical population would show a greater effect of value-affirmation. Firstly, a previously described study, looking at the moderating impact of self-esteem on self-affirmation effects, found individuals with low self-esteem benefited more from the intervention (Düring & Jessop, 2015). The authors suggested that these individuals had fewer positive self-resources previously at their disposal. Although this sub-sample of individuals with low self-esteem was nonclinical, it may be more akin to a clinical sample. Secondly, an unpublished doctoral thesis (Cullen, 2014), investigating self-affirmation for two individuals with bulimia nervosa, suggested that starting a psychological intervention with a value-affirmation exercise may facilitate engagement in treatment by focusing on positive existing self-resources within the client, rather than a negative narrative. It would potentially provide an immediate improvement (e.g., in positive affect), develop a positive therapeutic relationship and lay a foundation for more difficult emotional therapeutic work. In the qualitative aspect of their research, they reported that participants found the positive focus of recalling positive memories and recognising achievements helpful. The study provides preliminary evidence that it is an acceptable intervention for clinical populations, but more research, particularly with a larger sample of differing psychopathologies, is required.

4.3.4 Summary. In conclusion, there are a number of theoretical implications of the study findings in relation to rumination and self-affirmation theory. In particular, the current study showed that trait rumination is present within nonclinical populations, but future nonclinical research investigating the immediate effects of a particular strategy on rumination may benefit from utilising a rumination induction procedure. Additionally, the study found that value-affirmation did not reduce rumination. A number of factors might account for this, such as the role of possible mediating or moderating variables, the possible enduring nature of rumination meaning that it may require more intensive values work, and study characteristics, such as lack of power. Furthermore, clinical implications of the study results suggest that, in isolation, reflecting on a core value may not be as useful as additionally attaining value-driven goals. Future studies might usefully investigate whether values add to the efficacy of acceptance and BA interventions and how to ensure goal attainment after goal-setting.

4.4 Strengths of the Study

A considerable strength of the present study is the experimental approach: the study used an RCT design. There was an active control condition so that any findings could not be attributable to other factors (Skerrett, 2013). Participants were randomised to condition in order to manipulate one variable (the condition) while controlling for potentially confounding variables such as age, gender, educational

level and depressive symptom levels (Gibson et al., 2016; Nolen-Hoeksema et al., 1999; Sütterlin et al., 2012; Treynor et al., 2003). Participants and the researchers were blind to the condition that participants had been randomised to.

The study confirmed a previously reported finding that age was significantly negatively correlated with measures of trait and state rumination: older individuals reported lower scores on rumination measures (Sütterlin et al., 2012). This highlighted the importance of controlling for these variables in experimental studies. Other potential confounding variables were self-esteem (Jaremka et al., 2011; Marigold et al., 2007) and trait rumination (Watkins & Nolen-Hoeksema, 2014), which were also controlled for via randomisation and checked via baseline measures, as suggested by McQueen & Klein (2006) in their review of experimental manipulations of self-affirmation. Positive affect was also measured over time so that this could be statistically controlled for (Koole et al., 1999).

Furthermore, the present research used a nonclinical sample, which allowed the study of rumination without confounding variables associated with clinical populations and the use of an active control condition that would not otherwise be ethical in clinical research (Levin et al., 2012). It also attempted to explore the longitudinal effect of value-affirmation on real-world, naturally-occurring threats. This is something that is lacking in nonclinical rumination literature, as most studies use experimentally-orchestrated self-threats (Koole et al., 1999; Nolen-Hoeksema & Morrow, 1993) and measure in-the-moment rumination. Therefore a strength of this study was the attempt to measure naturally-triggered rumination over time in a nonclinical population, rather than relying on a rumination induction. This is because

self-reported measures of rumination have not consistently shown the same pattern of results as experimentally-induced rumination (Nolen-Hoeksema et al., 2008). Additionally, rumination inductions often require following instructions but performing the task in your head, so researchers cannot establish for sure whether participants are following instructions accurately (Papageorgiou & Wells, 2004). However, there are also advantages to inducing rumination, as previously described.

The current study looked at the relationship between value-affirmation and rumination, an area that is currently in its infancy, but has potentially important implications for the interventions used with those prone to rumination. The study brings together the ideas of two theoretically-overlapping areas from social and clinical psychology (value-affirmation within self-affirmation literature and values-clarification and committed action within ACT and some more recent CBT interventions), which have previously been investigated separately. Values within self-affirmation literature has a growing evidence base in academic and health settings (Cohen & Sherman, 2014; McQueen & Klein, 2006). However, values within clinical psychology have rarely been investigated in isolation, despite being a component of some clinical interventions. For example, in their review of BA literature, Kanter et al. (2010) reported that numerous interventions had a values component but none drew conclusions regarding the effectiveness of this aspect of the intervention compared to BA alone. The current study utilised an experimental approach and so was able to take two components, value-affirmation with and without the addition of goal-setting, and explore their relative causal influences on rumination. Specifically,

the study has highlighted the possibility that value-affirmations may not be effective for reducing rumination, even with the addition of the goal-setting component. This component-based approach has been encouraged in the literature to attempt to clarify the active ingredients of clinical interventions such as CBT, ACT and BA (Kanter et al., 2010; Levin et al., 2012).

In bringing together the ideas of two theoretically-overlapping areas, the study modified the value-affirmation manipulation to ensure participants were affirming a personally meaningful intrinsic value, rather than socially imposed values, and aimed to increase the clinical applicability of the intervention, based on a clinical values intervention from ACT (Harris, 2008; Hayes et al., 2006; Levin et al., 2012). The value-affirmation manipulation check demonstrated as effectively as possible that this modified intervention is an appropriate method for affirming a personally-meaningful value. This is important given the novel aspects of the approach, including use of a card sort task, rather than using a value-ranking exercise, and providing a description of values from ACT.

4.5 Limitations of the Study

Of particular relevance in comparing the results of this study with Koole et al. (1999), was the previously described methodological differences: how rumination was measured and the use of a rumination induction procedure. In addition, there are other limitations to the study design, some of which may have influenced the null findings, including the issue of power, floor effects, nonengagement with the intervention, the control condition, and the failure to successfully randomise the heterogeneous sample.

Although the study did not replicate the findings of Koole et al. (1999), there was a possible trend towards the expected results (see Figure 3.1 in section 3.7). The graph indicated that all three conditions showed reduced rumination immediately post-intervention, but only the VA+GS participants continued to show a maintained reduction at two-week follow-up. The level of rumination returned to baseline for the other two conditions. It is possible that the size of the effect is smaller than was originally predicted: a medium effect size of 0.6 had been chosen. There had been no previous study looking at the effect of value-affirmation on rumination over two weeks. Therefore the power analysis was based on Koole et al., which yielded effect sizes between 0.5-0.8, as well as two other studies that had found medium effects over two weeks of a value-affirmation intervention on state anxiety (Morgan & Atkin, 2016), and a goal-setting task on increased optimism (Meevissen et al., 2011). It is possible that with a larger sample, a significant effect of VA+GS on reduced rumination over time, would have been found.

Regarding the self-report measures, there are two issues of note: the choice of measures and a floor effect. Koole et al. (1999) felt that the very act of measuring rumination through self-report measures can interfere with the extent to which people ruminate and so used 'accessibility of goal-related cognitions' as a proxy measure of rumination. Some researchers consider rumination an unconscious involuntary process, whereas self-report questionnaires assume that people can directly access their internal responses and are willing to report them (Smith & Alloy, 2009). It is commonly reported that there are also many factors that can impact on results when relying on self-report measures, such as participant understanding of questions and

rating scales, response bias, or introspective ability (Bernard et al., 2003; Fan et al., 2006; Stone et al., 2000). For example, on inspection of the data in this study, nonengagement and misreading of questions were identified as issues (see section 3.2.4). However, self-report measures are a common approach to measuring rumination, and are less time-consuming for participants and less specific to one experimental psychological threat than the proxy measure used by Koole et al. (1999).

With regard to the specific self-report measures of rumination used in this study, the RSQ-RRS is a well-utilised and well-validated measure that is frequently used in research to assess rumination in the context of low mood (Just & Alloy, 1997; Luminet, 2004; Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1994). However, the state version of this questionnaire (the RSQ-S) has not been subject to validation (Ciesla et al., 2012) and so it cannot be assumed that it was measuring the relevant constructs. In addition, the RSQ-S is adapted from the RSQ-RRS, which looks at rumination in the context of negative mood. Negative mood was not manipulated or measured in this study, which may have impacted on the construct validity of the state measure. In addition, the RSQ-S may not be sensitive to rumination about thwarted personal goals and may restrict this study of rumination to the assumptions of the RST, which suggest that rumination is an enduring pathological thinking style that occurs in the context in the low mood. Previous studies investigating rumination over time have used the RSQ-RRS at multiple time points (Ekkers et al., 2011; Robins et al., 2012; Slevison, 2013; Watkins et al., 2009; Watkins et al., 2011). An alternative option was to use a measure of goal-driven rumination, such as the Scott McIntosh Rumination Inventory (Scott & McIntosh, 1999), but this is less commonly used and

also not well-validated in the literature. This lack of a formally-validated measure of state rumination is an ongoing problem for research in this area, and further research should look to validate the RSQ-S.

Another issue with the state measure was that of a floor effect of state rumination at T1, thus even if value-affirmation was able to reduce rumination, the current study may not have been able to find this effect. Previous studies have utilised student samples, who often report higher levels of rumination than working-age adults (Sütterlin et al., 2012): the current study found that age was significantly negatively correlated with rumination. This suggests that to investigate the effect of an intervention on rumination over time with a nonclinical sample, it may be more appropriate to utilise a 'high-ruminator' nonclinical sample (Chan et al., 2013; Harrington, 2008) or a student-only sample, rather than an inclusive nonclinical sample.

In our study, participants were recruited from different sources, producing a heterogeneous sample. For example, there was a wide range in age and there were psychology students and nonstudents, whereas Koole et al. employed a solely undergraduate student sample. Increased heterogeneity has benefits because often nonclinical studies within psychology focus too narrowly on undergraduate psychology students and so are less generalisable to the wider population. However, the increased heterogeneity within the current sample may have resulted in lower levels of rumination at baseline compared to the sample within Koole's study, given that it is known that older individuals report lower levels of rumination (Sütterlin et al., 2012).

Additionally, randomisation was unsuccessful in the current study, because age was significantly different between groups. It is possible that other variables that had not been measured were also significantly different between groups. This failure to successfully randomise the sample may have impacted on results, particularly regarding differences between treatment groups. For example, knowledge of psychological processes or differing motivations for taking part could impact on awareness of the self-affirmation process, which may reduce its effectiveness (Sherman, Cohen, et al., 2009; Silverman, Logel, & Cohen, 2013). Although speculative, it is possible that having measured rumination at the start of the study, psychology students may become aware of the hypotheses of the study, thus influencing results in some way. These factors are difficult to identify and difficult to tease apart. Some studies have included a question during the debrief stage to establish whether participants have correctly deduced the study hypotheses (Koole et al., 1999).

Future studies utilising a combined student and nonstudent sample may benefit from applying stratified random sampling. Unfortunately, in the current study, randomisation occurred prior to the decision to recruit nonstudent participants in addition to the student sample.

In choosing the control condition for this study, there was some concern regarding whether it would also be self-affirming, thus too similar to the experimental conditions. Firstly, some researchers have suggested that certain measures completed by all participants at T1 could interfere with the self-affirmation process: completing the VLQ has been used as a way of clarifying values in ACT (Hayes et al., 1999;

Plumb et al., 2009; Wilson et al., 2010) and completion of a self-esteem measure has been shown to be self-affirming (Kimble, Kimble, & Croy, 1998; Steele et al., 1993). Concerning the control condition specifically, some studies have used completion of a values scale without a written component as a values intervention (Liu & Steele, 1986; Steele & Liu, 1983; Tesser & Cornell, 1991), which was part of our control condition. It has also been suggested that people will use any self-reflective writing task as an opportunity to self-affirm (Cohen et al., 2000) and so some authors asked participants to write about what they have eaten in the last 48 hours or about their daily routine (Burson, Crocker, & Mischkowski, 2012; Cohen et al., 2000). On the other hand, the control condition benefits from being an active and standardised control condition in experimental manipulations of self-affirmation (McQueen & Klein, 2006). There was a significant difference in the value-affirmation but not the control condition in positive affect immediately following the intervention. There was also a statistically significant difference on the manipulation check between experimental and control groups on endorsement of chosen values, suggesting the conditions were sufficiently different. However, the mean score for the control condition manipulation check was more than zero, showing that some individuals in the control group did at least partially endorse the value they had written about. As these individuals were not identified as outliers they were not excluded from the dataset.

In addition, participants were not forced to spend the same amount of time on the task. Although the overall time taken on the written task was not significantly different between groups, one participant in the NAC condition was found to be an

outlier in time spent on writing the essay. This participant spend significantly less time on the task, but it was decided to retain their data. There was also a range of times taken overall, which may affected resulted as some participants may engaged in the task in a more meaningful way than others.

Finally, there was limited data collected in the current study regarding engagement with the intervention, and what was collected was not examined on an individual basis, other than to check for outliers. It is possible that some individuals did not benefit from the intervention due to nonengagement. In particular, the goal-setting component to the value-affirmation intervention was a novel approach, but adherence to the task of setting a value-driven SMART goal was not measured. It is therefore not known whether individuals followed instructions accurately and set a value-driven SMART goal. Indeed, the value-affirmation manipulation check examined endorsement of their chosen value but did not reliability establish adherence to the task. Nevertheless, previous studies have shown that lack of adherence to a self-affirming task does not actually undermine the effects. Previous authors suggested this was because any self-affirming thought might be sufficient to offset self-view threats (Armitage et al., 2011; Armitage & Rowe, 2011; Harris & Epton, 2009). On the other hand, for goal-setting to be effective, it may require closer adherence to the task instructions, to enable goal completion, and this was not checked in the current study.

4.6 Implications for Future Research

There are several potential areas for further investigation, some of which have been suggested previously. In light of the above findings, important avenues for further research will now be highlighted.

Although identified as a strength of the study, the attempt to measure rumination as triggered by real-world, naturally-occurring threats meant there were floor effects within the rumination measure. As such, future studies may benefit from replicating the study with the addition of a rumination induction such as a failure task, in line with Koole et al. (1999).

Early findings suggest that ACT is an effective intervention for reducing rumination (Harrington, 2008; Slevison, 2013), of which value-clarification and value-driven goal-setting are components. However, acceptance and mindfulness are also components of ACT that have been shown to reduce rumination (Geschwind et al., 2011; Shapiro et al., 2008; van Aalderen et al., 2012). Future research could further utilise dismantling studies to establish whether mindfulness and acceptance-based interventions are sufficient for reducing rumination or whether individuals would additionally benefit from value-clarification and value-driven goal-setting components. Within ACT literature it has been suggested that mindfulness and acceptance 'clear the path' for individuals to benefit from values work. By first altering the way individuals relate to their difficult internal and external events, they are then able to use core values, rather than internal experiences, to guide their life direction (Hayes et al., 2006). However, this is incongruent with self-affirmation literature that has found that value-affirmation alone can reduce stress, rumination,

paranoia, and increase tolerance of pain (Branstetter-Rost et al., 2009; Creswell et al., 2005; Feldner et al., 2003; Kingston & Ellett, 2014; Koole et al., 1999). Therefore this warrants further investigation.

In addition, future research that applies the value-affirmation plus goal-setting component could look to expand on this intervention. In the current study, the goal-setting component was intentionally brief so as to avoid added a confounding variable of providing more time for reflection for these participants. However, future studies may wish to expand on their explanation of goal-setting, provide additional support in setting appropriate goals, or utilise an implementation intentions.

Furthermore, future research could include more thorough manipulation checks for the value-affirmation and goal-setting components to check adherence to each part of the task. One way of assessing adherence within the goal-setting component could be to qualitatively analyse the goals that participants had set for themselves, particularly regarding whether they were SMART and value-driven. Furthermore, future studies may benefit from qualitatively analysing the written essays: this could act as an additional manipulation check for the value-affirmation condition. It may also help to identify whether the control condition is self-affirming, as some authors have suggested (Burson et al., 2012; Cohen et al., 2000) and would add to the relatively sparse literature base on whether the type of value written about or content of essays has an impact on self-affirmation effects (Crocker et al., 2008; Shnabel et al., 2013).

Finally, there were a number of possible mediating or moderating effects of value-affirmation. In particular, it may be beneficial to establish whether self-esteem is a moderator or positive affect is a mediator of value-affirmation effects.

4.7 Conclusions

In conclusion, findings presented in this study did not support the notion that value-affirmation, with or without a goal-setting component, reduces rumination. Value-affirmation was however shown to improve positive affect immediately following the intervention. It was also shown that individuals who had reported goal attainment showed lower levels of state rumination compared to individuals who had not completed their goal.

There are numerous explanations for these findings, including the conceptualisation of rumination as an enduring cognitive style rather than a state, or the possible roles of essay content, positive affect, behaviour change and self-esteem. Alternatively, the study may have been insufficiently powered to find an effect because there appeared to be a potential trend towards the expected results. It is possible that under certain circumstances, such as in a larger sample of individuals with low self-esteem or higher levels of state rumination pre-intervention, reflecting on a core value particularly when combined with attaining value-based goals, may reduce rumination. This warrants further investigation.

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Appendices

Appendix 1: Ethics Review Form & Confirmation of Ethical Approval

Ethics Review Details

You have chosen to submit your project to the REC for review.	
Name:	Carpenter, Rebecca (2014)
Email:	PBVA065@live.rhul.ac.uk
Title of research project or grant:	Values-based self-affirmation as an intervention for reducing nonclinical rumination
Project type:	Royal Holloway postgraduate research project/grant
Department:	Psychology
Academic supervisor:	Andy Macleod
Email address of Academic Supervisor:	A.Macleod@rhul.ac.uk
Funding Body Category:	No external funder
Funding Body:	
Start date:	25/08/2015
End date:	01/10/2017

Research question summary:

Rumination refers to repetitive patterns of negative thinking, which is a maintaining factor for many mental health difficulties and occurs in the general population. This study tests whether reflecting on personally meaningful values (self-affirmation) reduces rumination over time.

Steele's (1988) well-validated self-affirmation theory proposes that the act of affirming a core value reduces the negative effects of threats to one's self-worth. Koole et al. (1999) found that value-affirmation, following task failure, significantly reduced rumination. The current study aims to replicate and extend this work in three key ways.

Firstly, Koole et al. (1999) found that the effect of value-affirmation on rumination was mediated by positive mood. Therefore state mood will be controlled for. Secondly, previous self-affirmation research has found that the intervention can be effective at promoting cognitive change, but not necessarily resulting in the desired behavioural change (e.g. Jessop et al., 2013). However, we know that goal progress and attainment predicts positive wellbeing and reduced rumination (Sheldon, 2002) and additionally, Klappheck et al. (2012) found that people whose goals were values-based suffered less from rumination. The effect of self-affirmation on rumination will therefore be compared to: (a) a standardised non-affirmation control condition and (b) a values plus goals condition to test whether articulating value-consistent goals enhances the effects of self-affirmation.

Thirdly, Koole et al. (1999) only measured the immediate effects of self-affirmation on rumination. Therefore, the short (immediate) and longer term effects (2 weeks later) of self-affirmation on rumination will be measured.

Predictions: Immediately following the intervention, participants in value-affirmation and value-affirmation plus goals will have significantly lower rumination than non-affirmation control participants. At follow-up, value-affirmation participants will have significantly lower rumination than control, with value-affirmation plus goals resulting in the greatest reduction.

Research method summary:

Design: A randomized-controlled mixed design measuring state rumination across time for three intervention conditions.

Sample: Non-clinical student sample of 156.

Setting: RHUL DClinPsy building.

Measures: Response Styles Questionnaire-Ruminative Response Scale (RSQ-RRS; Nolen-Hoeksema & Morrow, 1991); Depression, Anxiety and Stress scales (DASS; Lovibond & Lovibond, 1995); Response Styles Questionnaire – State Version (RSQ-S; Ciesla et al., 2012); Positive and Negative Affect Schedule (PANAS; Watson et al., 1988); Valued Living Questionnaire (VLQ; Wilson et al., 2010).

Procedure: Each participant takes part over a two-week period, with two sessions at the RHUL department.

1. At session one (T1), participants complete a demographic questionnaire (gender, age, ethnicity, student status, mental illness) and all measures (except VLQ).

2. Participants are blindly randomized to one of three interventions.

a) Values affirmation: brief description of values is provided; participants given a pack of cards with one value written on each card; asked to sort the cards into three groups (very important, moderately important and not important to me); instructed to write for 10 minutes about one

of their most important values. A validated values manipulation check (questionnaire) will then be administered (Sherman et al., 2000).
b) Values affirmation plus goal setting: This replicates (a), with an additional brief goal setting task: participants identify two goals in line with their chosen value and achievable within the following two weeks.
c) Values non-affirmation control: This replicates (a), except participants are instructed to write about a value that is 'not important' to them and why this might be meaningful to someone else.
3. All participants complete RSQ-S and PANAS again (T2).
4. Two weeks later (T3), participants return to the RHUL department and complete RSQ-S, PANAS and the VLQ, followed by debriefing.

Risks to participants

Does your research involve any of the below?
Children (under the age of 16),
No

Participants with cognitive or physical impairment that may render them unable to give informed consent,
No

Participants who may be vulnerable for personal, emotional, psychological or other reasons,
No

Participants who may become vulnerable as a result of the conduct of the study (e.g. because it raises sensitive issues) or as a result of what is revealed in the study (e.g. criminal behaviour, or behaviour which is culturally or socially questionable),
No

Participants in unequal power relations (e.g. groups that you teach or work with, in which participants may feel coerced or unable to withdraw),
No

Participants who are likely to suffer negative consequences if identified (e.g. professional censure, exposure to stigma or abuse, damage to professional or social standing),
No

Details,

Design and Data

Does your study include any of the following?

Will it be necessary for participants to take part in the study without their knowledge and/or informed consent at the time?,
No

Is there a risk that participants may be or become identifiable?,
No

Is pain or discomfort likely to result from the study?,
No

Could the study induce psychological stress or anxiety, or cause harm or negative consequences beyond the risks encountered in normal

life?,

No

Does this research require approval from the NHS?,

No

If so what is the NHS Approval number,

Are drugs, placebos or other substances to be administered to the study participants, or will the study involve invasive, intrusive or potentially harmful procedures of any kind?,

No

Will human tissue including blood, saliva, urine, faeces, sperm or eggs be collected or used in the project?,

No

Will the research involve the use of administrative or secure data that requires permission from the appropriate authorities before use?,

No

Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?,

No

Is there a risk that any of the material, data, or outcomes to be used in this study has been derived from ethically-unsound procedures?,

No

Details,

Risks to the Environment / Society

Will the conduct of the research pose risks to the environment, site, society, or artifacts?,

No

Will the research be undertaken on private or government property without permission?,

No

Will geological or sedimentological samples be removed without permission?,

No

Will cultural or archaeological artifacts be removed without permission?,

No

Details,

Risks to Researchers/Institution

Does your research present any of the following risks to researchers or to the institution?

Is there a possibility that the researcher could be placed in a vulnerable situation either emotionally or physically (e.g. by being alone with vulnerable, or potentially aggressive participants, by entering an unsafe environment, or by working in countries in which there is unrest)?,
No

Is the topic of the research sensitive or controversial such that the researcher could be ethically or legally compromised (e.g. as a result of disclosures made during the research)?,
No

Will the research involve the investigation or observation of illegal practices, or the participation in illegal practices?,
No

Could any aspects of the research mean that the University has failed in its duty to care for researchers, participants, or the environment / society?,
No

Is there any reputational risk concerning the source of your funding?,
No

Is there any other ethical issue that may arise during the conduct of this study that could bring the institution into disrepute?,
No

Details,

Declaration
By submitting this form, I declare that the questions above have been answered truthfully and to the best of my knowledge and belief, and that I take full responsibility for these responses. I undertake to observe ethical principles throughout the research project and to report any changes that affect the ethics of the project to the University Research Ethics Committee for review.

Certificate produced for user ID, PBVA065

Date:	20/07/2016 11:07
Signed by:	Carpenter, Rebecca (2014)
Digital Signature:	
Certificate dated:	7/20/2016 11:20:18 AM
Files uploaded:	Information Consent & debrief forms.docx Full-Review-64-2016-02-26-11-22-PBVA065.pdf MB Approval.msg

PI: Andy Macleod

Project title: Values-based self-affirmation as an intervention for reducing nonclinical rumination

REC ProjectID: 64

Your application has been approved by the Research Ethics Committee.

Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk

Appendix 2: Information Sheet, Consent Form and Debrief Form

Information Sheet

'The study of how values relate to our thinking style and thoughts about other people'

Before you decide to take part, it is important for you to fully understand what the study involves and all relevant information. Please take time to read the following sheet carefully.

1. What is the study about?

We are interested in finding out how our values relate to thoughts about ourselves and other people. In this study, values are aspects of life that are important and meaningful to someone. Examples of values include: adventure, respect, freedom, power, humour, etc.

2. What does the study involve?

Taking part in this study will involve two appointments two weeks apart, one at Royal Holloway (or at a suitable location within your local community) and one online. At the first appointment, you will be asked to complete a set of questionnaires about your mood, your thinking style, and your thoughts about others. You will then be asked to complete a short piece of writing that is related to values. The exact piece of writing will be one of three possible ones, decided at random. There are no right or wrong

answers when completing the tasks and your work is not marked. Immediately after completing the task, you will be asked to complete another set of questionnaires about your mood, your thinking style and your thoughts about others. This first appointment will take between 45-60 minutes.

Two-weeks later, at the second appointment, we will ask you to complete the same set of questionnaires again. The second appointment will take around 20 minutes and can be completed online.

3. Who is involved in this study?

The principal investigators for this study are Rebecca Carpenter and Nicole Evans, Trainee Clinical Psychologists. Other investigators are Professor Andy Macleod, Dr Jessica Kingston and Dr Lyn Ellett, lecturers in Clinical Psychology at Royal Holloway University.

6. Do I have to take part?

It is up to you to decide if you would like to take part in the study. You can withdraw at any time without giving a reason. The data you have supplied up to that point can be removed and won't be used in the study.

8. What are the incentives to complete the study?

If you are a first year undergraduate psychology student you earn 4 course credits for your participation in this study. If you are not, you will be entered into the university prize draw to win one of five £20 Amazon vouchers.

9. How will my data be used?

All information that is collected during the course of the research will be kept confidential. The questionnaire scores and task data will be anonymised and stored securely on a database, separate from your personal details. Only the researchers will have access to the information you give during the study. Two different aspects of the research study will be written up and submitted in two separate Doctoral Theses.

12. Who has reviewed the study?

The study has been reviewed by the Royal Holloway University of London Department Research Committee.

13. Who is organizing the funding of the research?

The research is a requirement of Nicole Evans' and Rebecca Carpenter's doctoral training in Clinical Psychology. Their training is funded by Camden and Islington NHS Foundation Trust.

14. How can I get more information?

Please do not hesitate to contact Rebecca Carpenter or Nicole Evans via email (Rebecca.carpenter.2014@live.rhul.ac.uk; Nicole.evans.2014@live.rhul.ac.uk) should you need any further information about the study.

Consent Form

'The study of how values relate to our thinking style and thoughts about other people'

ID number: ……..

You have been asked to participate in a study about how values relate to thoughts about ourselves and other people.

Have you (please circle yes or no):

Read the information sheet about the study?	Yes	No
Had an opportunity to ask questions?	Yes	No
Got satisfactory answers to your questions?	Yes	No
Understood that you're free to withdraw from the study at any time without giving a reason (and without it affecting your care/education if applicable)	Yes	No
Understood that you are free to deny answering any questions that you do not want to?	Yes	No
Do you agree to take part in the study?	Yes	No

Name: _____

Signature: _____

Date: _____

This consent form will be stored separately from the anonymous information you provide.

Debrief Form

Thank you for participating in this study!

'The study of how values relate to our thinking style and thoughts about other people'

This study is being written up as part of two Doctoral theses: one about rumination, which is a particular type of thinking style involving repetitive patterns of negative thinking; the other is about paranoia, which is unfounded thoughts that others intend you harm. Rumination and paranoia are both common and distressing, so we are seeking to understand factors that may help reduce them.

This study is looking at one potential intervention, known as value-affirmation. Value-affirmation involves reflecting on personally meaningful values, and has been shown to lead to self-affirmation. Self-affirmation refers to any event that boosts the perception of the self as being sound, moral, capable and cohesive. Previously, research has found that when people are self-affirmed they respond more adaptively to experiences and information that could threaten their self-concept. Rumination and paranoia are two ways that people might respond to such negative experiences, however, these responses are usually maladaptive and lead to further distress. We are interested in whether self-affirmation might reduce the tendency to respond in these ways.

In this study, there were two experimental conditions: value-affirmation, where you selected and wrote about your most important value; and value-affirmation plus goal setting, where you did the same, but also set two value-consistent goals to achieve in the following two weeks. These conditions were compared to a

standardized control condition, where you were asked to write about a personally unimportant value. The experimenter does not know which treatment group you were in.

We predicted that both value-affirmation conditions would reduce rumination and paranoia over the two-week period. We also thought that value-affirmation with the additional component of setting values-consistent goals would result in further reductions. We measured these changes by asking you to complete questionnaires a different time points. If you are interested in hearing about the results and conclusions of the study, please inform the principal researcher via email (Rebecca.carpenter.2014@live.rhul.ac.uk; Nicole.evans.2014@live.rhul.ac.uk) who will send you a summary once the research is complete.

We do not expect people to feel worse after completing this study, but if you do feel you would like some support to help with difficult emotions, please contact your GP and inform the principal researcher via email. The university also offers a counselling service, and you may also wish to contact the Samaritans:

Royal Holloway Counselling Service

Website: http://www.rhul.ac.uk/ecampus/welfare/counselling/home.aspx

Telephone: 01784 443 128; Email: counselling@rhul.ac.uk; Location: FW171

Samaritans

Website: http://www.samaritans.org

Telephone: 08457 90 90 90 (UK) or 1850 60 90 90 (ROI); Email: jo@samaritans.org

Thank you for your participation in this study. If you have further questions about the study, please contact the principal researchers.

Appendix 3: Questionnaires

Response Styles Questionnaire - Ruminative Responses Subscale

(RSQ-RRS; Nolen-Hoeksema & Morrow, 1991)

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

	1 Almost Never	2 Sometimes	3 Often	4 Almost Always
1. think about how alone you feel	1	2	3	4
2. think "I won't be able to do my job if I don't snap out of this"	1	2	3	4
3. think about your feelings of fatigue and achiness	1	2	3	4
4. think about how hard it is to concentrate	1	2	3	4
5. think "What am I doing to deserve this?"	1	2	3	4
6. think about how passive and unmotivated you feel.	1	2	3	4
7. analyze recent events to try to understand why you are depressed	1	2	3	4

8. think about how you don't seem to feel anything anymore	1	2	3	4
9. think "Why can't I get going?"	1	2	3	4
10. think "Why do I always react this way?"	1	2	3	4
11. go away by yourself and think about why you feel this way	1	2	3	4
12. write down what you are thinking about and analyze it	1	2	3	4
13. think about a recent situation, wishing it had gone better	1	2	3	4
14. think "I won't be able to concentrate if I keep feeling this way."	1	2	3	4
15. think "Why do I have problems other people don't have?"	1	2	3	4
16. think "Why can't I handle things better?"	1	2	3	4
17. think about how sad you feel.	1	2	3	4
18. think about all your shortcomings, failings, faults, mistakes	1	2	3	4

19. think about how you don't feel up to doing anything	1	2	3	4
20. analyze your personality to try to understand why you are depressed	1	2	3	4
21. go someplace alone to think about your feelings	1	2	3	4
22. think about how angry you are with yourself	1	2	3	4

Depression, Anxiety and Stress Scales

(DASS-21; (Lovibond & Lovibond, 1995)

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

	0 Never	1 Sometimes	2 Often	3 Almost Always
1 I found it hard to wind down	0	1	2	3
2 I was aware of dryness of my mouth	0	1	2	3
3 I couldn't seem to experience any positive feeling at all	0	1	2	3
4 I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 I found it difficult to work up the initiative to do things	0	1	2	3
6 I tended to over-react to situations	0	1	2	3
7 I experienced trembling (e.g., in the hands)	0	1	2	3
8 I felt that I was using a lot of nervous energy	0	1	2	3
9 I was worried about situations in which I might panic and make a fool of myself	0	1	2	3

10 I felt that I had nothing to look forward to	0	1	2	3
11 I found myself getting agitated	0	1	2	3
12 I found it difficult to relax	0	1	2	3
13 I felt down-hearted and blue	0	1	2	3
14 I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 I felt I was close to panic	0	1	2	3
16 I was unable to become enthusiastic about anything	0	1	2	3
17 I felt I wasn't worth much as a person	0	1	2	3
18 I felt that I was rather touchy	0	1	2	3
19 I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
20 I felt scared without any good reason	0	1	2	3
21 I felt that life was meaningless	0	1	2	3

Rosenberg Self-Esteem Scale

(RSE; Rosenberg, 1965)

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

	SA	Strongly Agree	A	D	SD Strongly Disagree
On the whole, I am satisfied with myself	SA		A	D	SD
At times, I think I am no good at all	SA		A	D	SD
I feel that I have a number of good qualities	SA		A	D	SD
I am able to do things as well as most other people	SA		A	D	SD
I feel that I do not have much to be proud of	SA		A	D	SD
I certainly feel useless at times	SA		A	D	SD
I feel that I'm a person of worth, at least on an equal plane with others	SA		A	D	SD

I wish I could have more respect for myself	SA	A	D	SD
All in all, I am inclined to feel that I am a failure	SA	A	D	SD
I take a positive attitude toward myself	SA	A	D	SD

Response Styles Questionnaire – State Version

(RSQ-S, (Ciesla et al., 2012)

Using the scale below, please indicate how frequently have you done each of the following **today:**

(0) Not at all; (1) Occasionally; (2) Often; (3) All the time

	0 Not at all	1 Occasionally	2 Often	3 All the time
Thought "Why do I always react this way?"	0	1	2	3
Thought "What am I doing to deserve this?"	0	1	2	3
Thought "Why do I have problems other people don't have?"	0	1	2	3
Thought "Why can't I handle things better?"	0	1	2	3
Analyzed recent events to try to understand your feelings	0	1	2	3
Went away by yourself and thought about why you felt how you did	0	1	2	3
Wrote down what you are thinking and analyzed it	0	1	2	3
Analyzed your personality to try to	0	1	2	3

understand why you are depressed				
Tried to understand yourself by focusing on your depressed feelings	0	1	2	3
Thought about how sad you feel	0	1	2	3
Isolated yourself and thought about the reason you feel sad	0	1	2	3
Thought about all your shortcomings, faults, and mistakes	0	1	2	3

Positive and Negative Affect Schedule

(PANAS; (Watson et al., 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you feel this way right now, that is, at the present moment.**

1 Very Slightly or Not at All	2 A Little	3 Moderately	4 Quite a Bit	5 Extremely

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

Valued Living Questionnaire

(VLQ; (Wilson et al., 2010)

Below are areas of life that are valued by some people. This questionnaire will help clarify your own quality-of-life in each of these areas. One aspect of quality-of-life involves the importance you put on different areas of living. Rate the importance of each area (by circling a number) on a scale of 1-10. A "1" means that area is *not at all important*. A "10" means that area is *very important*. Not everyone will value all of these areas, or value all areas the same. Rate each area according to **your own personal sense of importance**.

Area:	Not at all important								Extremely important
Family (other than marriage or parenting)	1	2	3	4	5	6	7	8	9 10
Marriage/couples/intimate relationships	1	2	3	4	5	6	7	8	9 10
Parenting	1	2	3	4	5	6	7	8	9 10
Friends/social life	1	2	3	4	5	6	7	8	9 10

Work	1	2	3	4	5	6	7	8	9
	10								
Education/training	1	2	3	4	5	6	7	8	9
	10								
Recreation/fun	1	2	3	4	5	6	7	8	9
	10								
Spirituality/meaning &	1	2	3	4	5	6	7	8	9
purpose of life	10								
Citizenship/community life	1	2	3	4	5	6	7	8	9
	10								
Physical self-care (nutrition,	1	2	3	4	5	6	7	8	9
exercise/movement,	10								
rest/sleep)									

In this section, please give a rating of how **consistent** your actions have been with each of your values. Please note that this is **not** asking about your ideal in each area, **nor** what others think of you. Everyone does better in some areas than in others. People also do better at some times than at others. **Please just indicate how you think you have been doing during the past week.** Rate each area (by circling a number) on a scale of 1-10. A "1" means that your actions have been *completely inconsistent with your value*. A "10" means that your actions have been *completely consistent with your value*.

During the past week…

Area:	Not at all Extremely consistent consistent								
Family (other than marriage or parenting)	1 10	2	3	4	5	6	7	8	9
Marriage/couples/intimate relationships	1 10	2	3	4	5	6	7	8	9
Parenting	1 10	2	3	4	5	6	7	8	9
Friends/social life	1 10	2	3	4	5	6	7	8	9
Work	1 10	2	3	4	5	6	7	8	9
Education/training	1 10	2	3	4	5	6	7	8	9
Recreation/fun	1 10	2	3	4	5	6	7	8	9
Spirituality/meaning & purpose of life	1 10	2	3	4	5	6	7	8	9
Citizenship/community life	1 10	2	3	4	5	6	7	8	9

Physical self-care (nutrition, exercise/movement, rest/sleep)	1	2	3	4	5	6	7	8	9
	10								

Appendix 4: Instructions to Participants

Task instructions for value-affirmation condition (VA)

This task is about values. Please read the following information and complete the task. Once you have completed the task, you will be asked to complete some more questionnaires on the computer.

Values are a life direction, an internal compass. They are leading principles that can guide you and motivate you as you move through life.

Values are what matter to you in the big picture, what you want to stand for, and the personal qualities you want to develop.

Values are not the same as goals. Values are directions you keep moving in, whereas goals are what you want to achieve along the way.

Values are unique to you. Not everyone has the same values, and this is not a test to see whether you have the "correct" values.

1. On the table in front of you is a pack of cards listing aspects of life that are valued by some people. Please read each card and sort it into one of three piles:

    Very important to me

    Quite important to me

    Not important to me

If you wish to include a value that you feel is missing, you can do so by writing it on one of the "other" cards in the values pack.

ONCE YOU HAVE DONE THIS, PLEASE TURN OVER FOR THE NEXT TASK

2. Now you have sorted the cards, please discard the values in the 'quite important' and 'not important' pile, so you only have values that are 'very important' left.

Which of these values is the most important to you? Choose the one value that is the most important to you.

3. Please use the lined paper to describe why this value is important and meaningful to you. Think about a time in your life that this was particularly important to you and made you feel good about yourself. Write as much or as little as you wish and don't worry about how well it's written. Just focus on expressing your memory of the event and the feelings that you had at the time.

Please do your best to think and write about this event and your feelings about this value for the next 10 minutes. This is personal to you. There are no right or wrong answers.

Set the timer for 10 minutes. If you complete the task before the 10 minutes is up please 'pause' the timer- please do not close the timer window.

4. Again, think about your most important value. Below your essay, list the top two reasons why this value is important to you.

5. Now you have finished writing, please leave the cards on the table and place these instructions and your lined paper in the envelope.

You can now complete the next set of questionnaires on the computer.

Task instructions for value-affirmation plus goal-setting condition (VA+GS)

This task is about values. Please read the following information and complete the task. Once you have completed the task, you will be asked to complete some more questionnaires on the computer.

Values are a life direction, an internal compass. They are leading principles that can guide you and motivate you as you move through life.

Values are what matter to you in the big picture, what you want to stand for, and the personal qualities you want to develop.

Values are not the same as goals. Values are directions you keep moving in, whereas goals are what you want to achieve along the way.

Values are unique to you. Not everyone has the same values, and this is not a test to see whether you have the "correct" values.

1. On the table in front of you is a pack of cards listing aspects of life that are valued by some people. Please read each card and sort it in to one of three piles:

    Very important to me

    Quite important to me

    Not important to me

If you wish to include a value that you feel is missing, you can do so by writing it on one of the “other” cards in the values pack.

ONCE YOU HAVE DONE THIS, PLEASE TURN OVER FOR THE NEXT TASK

2. Now you have sorted the cards, please discard the values in the 'quite important' and 'not important' pile, so you only have values that are 'very important' left.

Which of these values is the most important to you? Choose the one value that is the most important to you.

3. Please use the lined paper to describe why this value is important and meaningful to you. Think about a time in your life that this was particularly important to you and made you feel good about yourself. Write as much or as little as you wish and don't worry about how well it's written. Just focus on expressing your memory of the event and the feelings that you had at the time.

Please do your best to think and write about this event and your feelings about this value for the next 10 minutes. This is personal to you. There are no right or wrong answers.

Set the timer for 10 minutes. If you complete the task before the 10 minutes is up please 'pause' the timer- please do not close the timer window.

4. Again, think about your most important value. Below your essay, list the top two reasons why this value is important to you.

ONCE YOU HAVE DONE THIS, PLEASE TURN OVER FOR THE NEXT TASK

5. Values can provide a deep motivation that helps us to pursue important goals in life.

What could you do to help live your life in accordance with this value?

We would like you to set a short term goal to focus on over the next two weeks.

Ideally, you want to set a 'SMART' goal. This is what 'SMART' means:

Specific: what exactly will you accomplish?

Meaningful: is this goal in line with your most important value?

Adaptive: is this goal likely to improve your life?

Realistic: can this goal be achieved in your life right now?

Time-framed: can this goal be achieved within the next two weeks?

Please write your goal here:

……

……

……

……

……

Please also write your goal underneath your essay.

Please take this piece of paper home with you as a reminder of the goal you have set today, to be completed in the next two weeks.

6. Now you have finished writing, please leave the cards on the table and place these instructions and your lined paper in the envelope. Please take this piece of paper with your goal written on home with you.

You can now complete the next set of questionnaires on the computer.

Task instructions for non-affirmation control condition (NAC)

This task is about values. Please read the following information and complete the task. Once you have completed the task, you will be asked to complete some more questionnaires on the computer.

Values are a life direction, an internal compass. They are leading principles that can guide you and motivate you as you move through life.

Values are what matter to you in the big picture, what you want to stand for, and the personal qualities you want to develop.

Values are not the same as goals. Values are directions you keep moving in, whereas goals are what you want to achieve along the way.

Values are unique to you. Not everyone has the same values, and this is not a test to see whether you have the "correct" values.

1. On the table in front of you is a pack of cards listing aspects of life that are valued by some people. Please read each card and sort it in to one of three piles:

    Very important to me

    Quite important to me

    Not important to me

If you wish to include a value that you feel is missing, you can do so by writing it on one of the “other” cards in the values pack.

ONCE YOU HAVE DONE THIS, PLEASE TURN OVER FOR THE NEXT TASK

2. Now you have sorted the cards, please discard the values in the 'quite important' and 'very important' pile, so you only have values that are 'not important' left.

Which of these values is the least important to you? Choose the one value that is the least important to you.

3. Although this value is not important to you, please use the lined paper to describe why this value might be important and meaningful to someone else. Describe a time in someone else's life that this may have been particularly important to them and made them feel good about themselves. Write as much or as little as you wish and don't worry about how well it's written.

Please do your best to think and write about why this value might be important to someone else for the next 10 minutes. There are no right or wrong answers.

Set the timer for 10 minutes. If you complete the task before the 10 minutes is up please 'pause' the timer- please do not close the timer window.

4. Again, think about your least important value. Below your essay, list the top two reasons why this value is NOT important to you.

5. Now you have finished writing, please leave the cards on the table and place these instructions and your lined paper in the envelope.

You can now complete the next set of questionnaires on the computer.

List of values used in each condition (R. Harris, 2011)

1. Acceptance: to be open to and accepting of myself, others, life, etc.
2. Adventure: to be adventurous; to actively seek, create, or explore novel or stimulating experiences
3. Assertiveness: to respectfully stand up for my rights and request what I want
4. Authenticity: to be authentic, genuine, and real; to be true to myself
5. Beauty: to appreciate, create, nurture or cultivate beauty in myself, others, the environment etc
6. Caring: to be caring toward myself, others, the environment, etc
7. Challenge: to keep challenging myself to grow, learn, improve
8. Compassion: to act with kindness towards those who are suffering
9. Connection: to engage fully in whatever I'm doing and be fully present with others
10. Contribution: to contribute, help, assist, or to make a positive difference to myself or others
11. Conformity: to be respectful and obedient of rules and obligations
12. Cooperation: to be cooperative and collaborative with others
13. Courage: to be courageous or brave; to persist in the face of fear, threat, or difficulty
14. Creativity: to be creative or innovative
15. Curiosity: to be curious, open-minded, and interested; to explore and discover

16. Encouragement: to encourage and reward behaviour that I value in myself or others
17. Equality: to treat others as equal to myself and vice versa
18. Excitement: to seek, create, and engage in activities that are exciting, stimulating or thrilling
19. Fairness: to be fair to myself or others
20. Fitness: to maintain or improve my fitness to look after my physical and mental health and wellbeing
21. Flexibility: to adjust and adapt readily to changing circumstances
22. Freedom: to live freely; to choose how I live and behave, or help others do likewise
23. Friendliness: to be friendly, companionable, or agreeable toward others
24. Forgiveness: to be forgiving toward myself or others
25. Fun: to be fun loving; to seek, create, and engage in fun-filled activities
26. Generosity: to be generous, sharing and giving, to myself or others
27. Gratitude: to be grateful for and appreciative of myself, others, and life
28. Honesty: to be honest, truthful, and sincere with myself and others
29. Humour: to see and appreciate the humorous side of life
30. Humility: to be humble or modest; to let my achievements speak for themselves
31. Industry: to be industrious, hardworking, and dedicated
32. Independence: to be self-supportive, and choose my own way of doing things

33. Intimacy: to open up, reveal, and share myself, emotionally or physically in my close personal relationships
34. Justice: to uphold justice and fairness
35. Kindness: to be kind, compassionate, considerate, nurturing, or caring toward myself or others
36. Love: to act lovingly or affectionately toward myself or others
37. Mindfulness: to be conscious of, open to, and curious about my here-and-now experience
38. Order: to be orderly and organized
39. Open-mindedness: to think things through, see things from other's points of view, and weigh evidence fairly.
40. Patience: to wait calmly for what I want
41. Persistence: to continue resolutely, despite problems or difficulties.
42. Pleasure: to create and give pleasure to myself or others
43. Power: to strongly influence or wield authority over others, e.g., taking charge, leading, organizing
44. Reciprocity: to build relationships in which there is a fair balance of giving and taking
45. Respect: to be respectful towards myself or others; to be polite, considerate and show positive regard
46. Responsibility: to be responsible and accountable for my actions
47. Romance: to be romantic; to display and express love or strong affection
48. Safety: to secure, protect, or ensure safety of myself or others

49. Self-awareness: to be aware of my own thoughts, feelings and actions
50. Self-care: to look after my health and wellbeing, and get my needs met
51. Self-development: to keep growing, advancing or improving in knowledge, skills, character, or life experience.
52. Self-control: to act in accordance with my own ideals
53. Sensuality: to create, explore and enjoy experiences that stimulate the five senses
54. Sexuality: to explore or express my sexuality
55. Skillfulness: to continually practice and improve my skills and apply myself fully when using them
56. Supportiveness: to be supportive, helpful, encouraging, and available to myself or others
57. Trust: to be trustworthy; to be loyal, faithful, sincere, and reliable
58. Other:

    _____

59. Other:

    _____

Appendix 5: Skew and Kurtosis Z Scores Pre- and Post-transformation

	Variable	Pre-Transformation		Post-transformation	
		Skew (Z)	Kurtosis (Z)	Skew (Z)	Kurtosis (Z)
VA	RSQ-RRS	1.89 (*p*>.001)	-0.82 (*p*>.001)	No transformation required	
	DASS-21-D	5.33 (*p*<.001)	2.09 (*p*>.001)	0.69 (*p*>.001)	0.55 (*p*>.001)
	DASS-21-A	3.01 (*p*>.001)	1.03 (*p*>.001)	-0.95 (*p*>.001)	-1.02 (*p*>.001)
	DASS-21-S	0.84 (*p*>.001)	-1.10 (*p*>.001)	-1.86 (*p*>.001)	0.90 (*p*>.001)
	RSE	0.46 (*p*>.001)	-1.15 (*p*>.001)	No transformation required	
	VLQ	0.91 (*p*>.001)	-0.82 (*p*>.001)	No transformation required	
	T1 RSQ-S	3.97 (*p*<.001)	1.41 (*p*<.001)	0.86 (*p*>.001)	-1.36 (*p*>.001)
	T1 PANAS-PA	-0.80 (*p*>.001)	-1.19 (*p*>.001)	No transformation required	
	T2 RSQ-S	4.79	1.93	1.46	-1.21

		(*p*<.001)	(*p*>.001)	(*p*>.001)	(*p*>.001)
	T2 PANAS-PA	1.84 (*p*>.001)	0.49 (*p*>.001)	No transformation required	
	T2 Manipulation Check	-8.97 (*p*>.001)	3.50 (*p*<.001)	No transformation required	
	T3 RSQ-S	3.69 (*p*<.001)	0.93 (*p*>.001)	0.82 (*p*>.001)	-1.23 (*p*>.001)
	T3 PANAS-PA	0.29 (*p*>.001)	-1.10 (*p*>.001)	No transformation required	
VA+GS	RSQ-RRS	1.29 (*p*>.001)	-0.90 (*p*>.001)	No transformation required	
	DASS-21-D	7.98 (*p*<.001)	3.64 (*p*<.001)	1.94 (*p*>.001)	1.41 (*p*>.001)
	DASS-21-A	4.08 (*p*<.001)	1.67 (*p*>.001)	-0.18 (*p*>.001)	-1.09 (*p*>.001)
	DASS-21-S	5.60 (*p*<.001)	2.72 (*p*>.001)	-0.25 (*p*>.001)	1.76 (*p*>.001)
	RSE	-0.33 (*p*>.001)	-0.57 (*p*>.001)	No transformation required	
	VLQ	0.26 (*p*>.001)	0.79 (*p*>.001)	No transformation required	

	T1 RSQ-S	4.42 (p<.001)	1.40 (p>.001)	1.69 (p>.001)	-1.27 (p>.001)
	T1 PANAS-PA	1.94 (p>.001)	0.59 (p>.001)	No transformation required	
	T2 RSQ-S	5.81 (p<.001)	2.15 (p>.001)	2.82 (p>.001)	2.15 (p>.001)
	T2 PANAS-PA	0.88 (p>.001)	-1.11 (p>.001)	No transformation required	
	T2 Manipulation Check	-9.16 (p>.001)	3.87 (p<.001)	No transformation required	
	T3 RSQ-S	5.85 (p<.001)	2.41 (p>.001)	2.38 (p>.001)	-0.69 (p>.001)
	T3 PANAS-PA	1.46 (p>.001)	-0.78 (p>.001)	No transformation required	
NAC	RSQ-RRS	3.01 (p>.001)	1.25 (p>.001)	No transformation required	
	DASS-21-D	4.21 (p<.001)	1.52 (p>.001)	-0.02 (p>.001)	-0.64 (p>.001)
	DASS-21-A	4.63 (p<.001)	1.99 (p>.001)	0.23 (p>.001)	-0.92 (p>.001)
	DASS-21-S	1.16	-0.57	-2.61	1.38

	(*p*>.001)	(*p*>.001)	(*p*>.001)	(*p*>.001)
RSE	-0.84 (*p*>.001)	-0.58 (*p*>.001)	No transformation required	
VLQ	1.93 (*p*>.001)	-0.84 (*p*>.001)	No transformation required	
T1 RSQ-S	3.76 (*p*<.001)	0.86 (*p*>.001)	1.58 (*p*>.001)	-1.35 (*p*>.001)
T1 PANAS-PA	-0.04 (*p*>.001)	-1.20 (*p*>.001)	No transformation required	
T2 RSQ-S	5.48 (*p*<.001)	2.03 (*p*>.001)	2.49 (*p*>.001)	-0.68 (*p*>.001)
T2 PANAS-PA	0.50 (*p*>.001)	-1.08 (*p*>.001)	No transformation required	
T2 Manipulation Check	1.16 (*p*>.001)	-0.49 (*p*>.001)	No transformation required	
T3 RSQ-S	3.06 (*p*>.001)	0.54 (*p*>.001)	0.54 (*p*>.001)	-1.28 (*p*>.001)
T3 PANAS-PA	0.88 (*p*>.001)	-1.18 (*p*>.001)	No transformation required	

Note. VA – Value-affirmation; VA+GS – Value-affirmation plus goal-setting; NAC – Non-affirmation control; RSQ-RRS: Response Styles Questionnaire – Ruminative

Response Scale; DASS-21: Depression, Anxiety and Stress Scale; RSE – Rosenberg Self-Esteem Scale; T1: Time 1; T2: Time 2; T3: Time 3; RSQ-S: Response Style Questionnaire – State Version; PANAS-PA: Positive and Negative Affect Schedule – Positive Affect; VLQ: Valued Living Questionnaire.

Appendix 6: List of Goals set by Participants in VA+GS Condition

Value (frequency)	Goal
Love (5)	1. Unknown 2. Take time every day to tell someone that I love them and give them a compliment. Every day remember something good I did. 3. To tell my close friends and family that I love them at least once a week out loud or via text 4. To love those I encounter on the street: the homeless, the beggars etc. To stop, to engage with them, to help them, to care for them, to love them. 5. To enable my husband to have a better/longer nights' sleep by going to bed earlier myself thereby not preventing his early night. Aim for 10-10.30 except bridge nights when it would have to be 11.
Trust (5)	1. I will arrange with my partner time for us to spend together (quality time) over the next two weeks. I will also arrange to spend quality time to see friends, meanwhile he will no doubt spend time away from me. 2. Do at least one hour of maths revision a day until Jan 14th to help me hopefully pass my maths test first time. 3. Unknown.

	4. Open up properly to the people that I live with about how I feel and make them understand that equally it is not their fault. 5. To contact two friends via text/call to have a catch up and see how they're doing
Honesty (4)	1. Share my thoughts when I really want to share my feelings or thoughts but feel prohibited for no good reason (by fear of being too straightforward, or the answer I will get) I will just do it, as long as it does not affect others negatively. 2. Always try to be honest to myself. If I don't want to stay with my friends, have a time to be alone. Don't hesitate to tell my friends that I'm tired and want to stay in my room. When I want to stay with my friends, just enjoy time with my friends. 3. To be honest with my boyfriend about how I am feeling when we speak about making plans for the next year. 4. To talk to accommodation on Monday about doing a room swap, as living at X is doing more damage to my mental health than good, and to see if they will let the room swap happen after the Christmas holidays.
Kindness (4)	1. I will only buy organic dairy products over the next two weeks. 2. I will try to help my Dad convert the videos to DVD to save him time over the next week. 3. Becoming volunteer tutor for young refugees in the local area by completing the application form asap.

	4. I will be more tolerant of people I don't know (public!). Be kinder to them and their needs. Take a deep breath when frustrated and smile.
Open-mindedness (4)	1. To have written up notes to begin my next assignment. 2. Not quickly attribute blame to someone when something goes wrong. 3. In the next two weeks I will engage with the American news (read article?) regarding Trump/Clinton election. I am not currently open-minded about this - could do to weigh up some evidence more fairly. 4. Reading up on things that I have deep interest for and developing my knowledge which I can apply to my character and life experiences.
Contribution (3)	1. To start looking into voluntary charity work over the next fortnight, specifically those which only require a few hours a week. 2. Unknown. 3. Unknown.
Flexibility (2)	1. Get a job 2. I will be flexible in coming up with a plan for moving house, taking all the information into account. The plan will be agreed on in the next two weeks
Freedom (2)	1. To immerse myself in books, education and learning without

	being distracted or restricted by social obligations. 2. To try something new that I haven't done before, so that I can find and express who I truly am.
Humility (2)	1. Unknown. 2. When I receive my grade for my next assignment which should be in the next two weeks, I will not boast about my result if I do well and only tell my friends/peers if they ask.
Independence (2)	1. Spend time with my 6 year old little brother 2. Unknown.
Respect (2)	1. To try and understand people's opinions which aren't the same as mine so that I can see their point of view more clearly 2. To be respectful towards myself and others. To help other people who are in need if it is achievable for me and give others and myself positive feedback
Self-development (2)	1. To focus on my degree by studying and catching up 2. To research cultural things to do with Madrid and make a plan for our trip
Supportiveness (2)	1. Support my ex boyfriend and help him achieve his mental and physical goals whilst being friendly. 2. I wish to spend more quality time with my family, without distractions that are trivial (phones, social media). They need to feel that I am always there even if I'm away at university
Authenticity (1)	1. Feel happier about myself as a person. Notice specific

	behaviours, such as judgement of others, and make a concerted effort to change them (behaviours which are not in line with who I am)
Compassion (1)	1. Speak to a homeless person to understand their history and background. This will help me to understand what other people go through
Excitement (1)	1. Unknown
Gratitude (1)	1. At the end of each day, think of one thing I am grateful for.
Other: closeness/belonging (1)	1. I will arrange to meet with my close friends in London and do a Christmas night together
Persistence (1)	1. To try and not get so worked up about events in my life I cannot change. To pinpoint when they are affecting me and to try and not let them worry me or make me anxious.
Reciprocity (1)	1. To encourage and allow others to help me, I do not need to keep all my worries to myself and panic when I have supportive people around me
Responsibility (1)	1. To show my children I am responsible for the way I act by admitting when I don't act in line with one of my important values e.g., patience, kindness
Self-awareness (1)	1. Within the next two weeks, I would like to have done my best with mu coursework essay, been preparing further for my lab

	report and enjoyed my weekend away without feeling over run or anxious. I want to make time for myself, as well as my family, friends, and work. I would like to make progress instead of dwelling on previous weeks.
Unknown (9)	