Goal Conflict and Ruminative Thinking

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

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Date: 16th December 2020

Overview

This thesis examines the relationship between goal conflict, ruminative thinking, and psychological distress. It is presented in three parts.

Part 1 presents a systematic review of the existing literature on the association between goal conflict and depression in non-clinical adults. Findings from 12 studies were synthesised. The evidence to support the relationship between goal conflict and depression was not consistent, and this association appeared to be relatively weak. The findings provided some clinical implications, albeit limited, as more research on this subject in clinical populations remains needed.

Part 2 presents an empirical paper examining the associations among goal conflict, ruminative thinking, and aspects of psychological distress in a non-clinical adult sample. Participants were asked to complete a set of questionnaires on ruminative thinking, psychological symptoms, and sense of control. They were also asked to rate how conflicting their goals were to one another. The findings suggest that individuals with higher levels of goal conflict ruminate more than those experiencing lower goal conflict, and that ruminative thinking appears to be positively correlated with symptoms of depression, anxiety, and stress. However, the findings did not support that ruminative thinking is a mediator between goal conflict and psychological symptoms. Perceived constraints (a subcomponent of sense of control) also did not moderate the impact of goal conflict on ruminative thinking.

Part 3 is a critical appraisal of the empirical paper. This consists of my reflection on the research process, as well as my personal experience related to the subject of goal conflict while conducting this project.

Impact statement

Goal conflict is a common human experience. At any given moment, each individual is likely to possess multiple goals simultaneously, and these goals may not always be in agreement with one another. Previous research suggests that goal conflict is associated with individuals' psychological well-being. Higher levels of goal conflict have been shown to link to more negative affect and psychological symptoms, such as depression, anxiety, and psychosomatization (Boudreaux & Ozer, 2013). Thus, research on goal conflict is vital in gaining some insight into what contributes to its detrimental effects and what could potentially moderate them.

The current systematic review on the association between goal conflict and depression highlighted the scarcity of existing literature on this particular subject in clinical population, as well as studies with prospective or longitudinal designs that could provide a clearer picture of the causal relationship between goal conflict and depression. This limits the clinical implications that can be utilised to improve treatments for depression. The lack of consistent evidence to support the link between goal conflict and depression also suggests that it is possible that goal conflict at the lower, concrete levels in the goal hierarchy might not have the same level of psychological impact as those conflicts among goals at the higher, more abstract levels. Therefore, future research might benefit from shifting their focus onto higher-level goal conflicts.

The empirical paper of this thesis reflected an attempt to expand the current literature on goal conflict by exploring potential mediating and moderating factors. The study introduced ruminative thinking as a potential mechanism underlying the association between goal conflict and experience of psychological distress, and sense of control as a potential moderator between goal conflict and ruminative thinking.

However, the findings did not support these hypothesised mediating and moderating effects. A similar study could be conducted with clinical samples for comparison in the future so as to verify if there are any differences in how goal conflict is linked to psychological symptoms for those suffering from clinically diagnosed conditions. Future research may also explore other potential underlying mechanisms in order to gain a better understanding of the psychological impact of goal conflict, and this may lead to new ideas for future clinical interventions.

Given the lack of statistically significant findings in the current review and empirical study, it is unlikely that the present findings would be submitted or accepted for publication. However, this thesis will be made available through UCL Discovery for those researchers who are interested in the subject. The concept of goal conflict can also be applied in other domains apart from clinical psychology, as a way to increase awareness of competing goals and finding ways to resolve the disagreement to maximise the attainability of multiple goals. Therefore, this concept would be introduced into my future work in the public policy domain.

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Part 1: Literature Review

A systematic review of the relationship between goal conflict and depression

Abstract

Aims

Research has shown that goal conflict is associated with psychological distress. This systematic review aimed to examine the existing literature on the relationship between goal conflict and depressive symptoms, as this information may be helpful in improving clinical interventions for depression.

Method

Three databases— PsycINFO, PubMed, and Web of Science—were utilised for this systematic search in November 2019. Studies that met the eligibility criteria were subsequently assessed for its quality, and the findings from these studies were qualitatively synthesised.

Results

Twelve studies were selected for the final synthesis, and they all had non-clinical samples. Overall, the quality of most studies appeared to be fair regarding their internal validity. Findings from both cross-sectional and longitudinal studies did not consistently support the link between goal conflict and symptoms of depression, and this association might be relatively weak at best.

Conclusions

The current evidence in supporting the association between goal conflict and depressive symptoms is insufficient. The results from this review might not be conclusive, as there were various limitations that affected the generalizability of the findings. Future research may benefit from longitudinal design and the inclusion of clinical population, along with goal conflicts at different levels.

1. Introduction

1.1 Depression

Depression is a mental health condition that affects more than 264 million individuals globally (World Health Organization, 2019). According to the guideline by the National Institute for Health and Care Excellence (NICE, 2009), the primary characteristics of depression are depressed mood and loss of pleasure in most activities. Several clinical diagnoses fall under the same category of depressive disorders in the widely used Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition, DSM-5), but the classic condition that exemplifies the disorders within this classification is major depressive disorder (American Psychiatric Association, 2013). The DSM-5 diagnostic criteria for major depressive disorder are presented below.

Table 1

DSM-5 diagnostic criteria for major depressive disorder

Criteria	
A.	Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. Note: Do not include symptoms that are clearly attributable to another medical condition. 1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) or observation by others (e.g., appears tearful) (Note: In children and adolescents, can be irritable mood.) 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation). 3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. (Note: In children, consider failure to make expected weight gain.) 4. Insomnia or hypersomnia nearly every day.

5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
6. Fatigue or loss of energy nearly every day.
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiological effects of a substance or to another medical condition.

D. The occurrence of the major depressive episode is not better explained by schizoaffective disorder, schizophrenia, schizophreniform disorder, delusional disorder, or other specified and unspecified schizophrenia spectrum and other psychotic disorders.

E. There has never been a manic episode or a hypomanic episode.
Note: This exclusion does not apply if all of the manic-like or hypomanic-like episodes are substance-induced or are attributable to the physiological effects of another medical condition.

Notes:
- Criteria A-C represent a major depressive episode.
- Responses to a significant loss (e.g., bereavement, financial ruin, losses from a natural disaster, a serious medical illness or disability) may include the feelings of intense sadness, rumination about the loss, insomnia, poor appetite, and weight loss noted in Criterion A, which may resemble a depressive episode. Although such symptoms may be understandable or considered appropriate to the loss, the presence of a major depressive episode in addition to the normal response to a significant loss should also be carefully considered. This decision inevitably requires the exercise of clinical judgment based on the individual's history and the cultural norms for the expression of distress in the context of loss.

Depression is a relatively common psychological disorder. It has been estimated that depression has a lifetime prevalence rate of at least 10% (Levinson, 2006), and it often begins in adolescence or early adulthood (US Department of

Health and Human Services, 2015). Approximately 40% of individuals suffering from depression experience their first episode by the time they are 20 years old (Eaton, Shao, Nesdadt, Lee, Bienvenu, & Zandi, 2008). Although it is possible to have a single episode of depression, the usual course tends to be recurrent, and some symptoms may continue to persist between episodes (NICE, 2009).

There appears to be a gender difference in terms of who suffers from depression. Females are more inclined to experience depression than males (Piccinelli & Wilkinson, 2000). However, this pattern is not found in children and young adolescents, as prepubescent girls and boys do not differ in their likelihood of developing depression (US Department of Health and Human Services, 2015). Some researchers even found that boys are more likely to experience depression than girls until early adolescence (Piccinelli & Wilkinson, 2000). However, from mid-puberty through adulthood, it appears that more female than male individuals suffer from depression, and this gender difference becomes more pronounced as the level of severity increases (Piccinelli & Wilkinson, 2000).

1.1.1 Detrimental effects of depression

Depression is theorized to have some adaptive purpose of conserving one's energy after a perceived loss of one's vital investment or resources, such as relationships (Beck & Bredemeier, 2016). Nonetheless, depression is a diagnosable psychological disorder that is linked to various adverse consequences. An affected person may show poorer functioning in various domains in life, such as academia, work, and interpersonal relationships (Ibrahim, Kelly, Adams, & Glazebrook, 2013; World Health Organization, 2019). Depression is also related to substantial morbidity (Sullivan, Neale, & Kendler, 2000), and is currently a leading cause of disability globally (World Health Organization, 2019). It may co-occur and worsen other

serious medical conditions, such as cancer, cardiovascular disease, and diabetes (US Department of Health and Human Services, 2015). Furthermore, depression is associated with mortality, and is found to be the most common psychological disorder amongst those who commit suicide (Hawton, Comabella, Haw, & Saunders, 2013).

1.1.2 Factors related to the development and maintenance of depression

There are various factors that play a role in depression. Some of these are more biological, such as genetic and neurochemical risks, whereas others are more external, such as early childhood experience, negative life events, and difficult relationships (US Department of Health and Human Services, 2015). Recently, in their attempt to incorporate research findings on depression from various fields, Beck and Bredemeier (2016) propose a new, unified model of depression. According to their model, the sequence of depression starts with individuals' genetic risks, protective factors, and possibly childhood trauma. These factors, either alone or in combination, then result in negative cognitive biases and stress reactivity, which are likely reflected in the structural and functional changes in their brain. Over time, this can lead individuals to develop the negative cognitive triad (negative beliefs about the self, world, and future). These beliefs, in turn, play a detrimental role by affecting how individuals interpret their negative or stressful life experiences. When individuals perceive that their investment in a vital resource, such as a group identity or relationship, is lost, this may trigger what Beck and Bredemeier (2016) called "the depression programme." Essentially, their negative thoughts activate consistent emotional and behavioural responses, such as feeling sad and guilty, as well as becoming inactive and socially withdrawn. Furthermore, their immune and autonomic nervous system are also affected, leading to an increase in "sickness

behaviours," such as losing their appetite and ability to feel pleasure. According to Beck and Bredemeier (2016), this programme has an overarching function, which is to promote energy conservation in the face of perceived loss. When this depression programme is activated for an extended period, it can lead to depressogenic beliefs being reinforced or consolidated. In addition, some structures in the brain may undergo neural atrophy, elevating the risk of depression in the future (Beck & Bredemeier, 2016).

Recommended treatments for depression focus on these various aspects of depression. According to the NICE guideline (2009), individuals who suffer from moderate-to-severe depression should receive antidepressants as well as a high-intensity psychological intervention, either Cognitive Behaviour Therapy (CBT) or Interpersonal Therapy (IPT). Antidepressants are believed to alleviate depression by increasing levels of neurotransmitters related to mood, specifically serotonin and noradrenaline, in the brain (National Health Service, 2018). CBT for depression aims to increase individuals' activity levels, as well as to help them identify, evaluate, and respond to their negative thoughts and underlying dysfunctional beliefs about themselves, their worlds, and their future more adaptively (Beck, 2011). IPT, on the other hand, addresses the social dysfunction aspect of depression, and its intervention involves activating mechanisms for interpersonal changes, such as increasing social support and reducing interpersonal stress (Lipsitz & Markowitz, 2013).

As illustrated above, the focuses of treatments for depression reflect the factors considered to be related to the condition itself. Hence, identifying critical factors that contribute to the development and maintenance of depression may lead to additional interventions that are potentially helpful to individuals suffering from this psychological difficulty.

1.2 Goal conflict

Goal conflict may be another factor that is crucially pertinent to depression. Goal conflict is present when different goals interfere with one another, and the pursuit of one goal reduces the likelihood of accomplishing another (Kelly et al., 2015). Conflicts between goals may arise because one does not have enough resources, such as time, to invest in all one's goals, or alternatively, some goals may be inherently conflicting because the necessary strategies to achieve them are simply not compatible (Segerstrom & Nes, 2006). By definition, goal conflict lowers the chances that individuals would be able to attain all their goals, and this may, in turn, negatively affect those individuals. When individuals do not make sufficient progress towards their goals as expected or when their goal pursuits are interrupted, they may experience negative feelings, such as doubts (Carver & Scheier, 1990). By contrast, individuals feel more positive and satisfied with their lives when perceiving goal progress (Klug & Maier, 2015).

A hierarchical categorisation of conflicts amongst goals has been proposed, as not all conflicts are equal. Integrating information from the existing literature, Kelly and colleagues (2015) suggest that levels of goal conflicts are influenced by the types of goals that are in disagreement. A few core goals reflecting fundamental human needs, such as feeling accepted by others, are presumed to be present at the highest level of this goal hierarchy (Kelly et al., 2015). Self-discrepancy represents conflict between high-level goals, and this involves a lack of consistency between different aspects or perceptions of oneself, such as actual self, ideal self, and ought self (Kelly et al., 2015). By contrast, when conflict amongst goals is absent, as a person's self-determined goals lead to the fulfilment of their fundamental, intrinsic needs, such as intimacy and growth, then this represents the state of self-concordance

(Kelly et al., 2015). Higher-level goals are more abstract than concrete, lower-level goals, which, if achieved, may lead to the attainment of higher-level goals (Kelly et al., 2015). According to Kelly and colleagues (2015), there is also a mid-level conflict between goals, which is characterised by ambivalence, as one believes that one may feel unhappy if one achieves a certain goal. It should be noted that in this review, goal conflict refers to the incompatibility of pursuits of low-level goals.

1.2.1 Existing research on goal conflict and psychological well-being

Generally, existing research suggests that goal conflict is associated with poor psychological well-being. Individuals who report more goal conflict tend to experience more symptoms reflecting psychological distress, such as depression, anxiety, as well as somatisation, and they also tend to have more visits to health centre (Boudreaux & Ozer, 2013; Emmons & King, 1988). Moreover, in a recent meta-analysis by Gray and colleagues (2017), goal conflict has been found to show a stronger relationship with psychological distress outcomes than with positive ones. However, the authors did not differentiate the types of goal conflicts under review, and some goal conflict measures were supposedly designed to assess individuals' intrapsychic conflict that could only be inferred from the individuals' responses, as opposed to self-reported measures used in other studies. Some researchers have previously attempted to explore the differential outcomes of different types of goal discrepancy. For instance, Higgins (1987) found that the discrepancy between one's actual and ideal selves was linked to depressive symptoms, whereas the discrepancy between one's actual and ought selves was related to anxiety symptoms. However, this distinction is not supported by the recent findings from a meta-analysis by Mason and colleagues (2019). It could also be argued that the discrepancy between one's actual self and one's ideal or ought selves reflects the lack of goal attainment

rather than goal conflict, which might arguably be better represented by the discrepancy between ideal and ought selves, but has not been empirically studied. Nonetheless, in their review, Kelly and colleagues (2015) found that the detrimental effect on psychological well-being of goal conflict appears across all levels of the goal conflict hierarchy, and the strength of the relationships between psychological distress and goal conflict at various levels can vary across studies.

1.3 Current review: goal conflict and depression

Given how goal conflict is related to psychological distress, it may be important to examine its relationship with specific psychological disorders individually so as to gain a better understanding, which can potentially lead to better therapeutic interventions for those difficulties. To my knowledge, no systematic review that specifically examines the association between goal conflict and symptoms of depression has been conducted. Therefore, this present review aims to systematically examine the existing literature on the relationship between the two. The following questions will be addressed:

1. Is there evidence for a cross-sectional relationship between goal conflict and depressive symptoms?
2. Is there evidence for a longitudinal relationship between goal conflict and depressive symptoms?
3. If the relationship between goal conflict and depressive symptoms exists, does it remain significant after controlling for other variables?

2. Methods

2.1 Search strategy

It was decided that search terms should capture the following three concepts: (1) goal, (2) conflict, and (3) depressive symptoms. Search terms were derived by identifying keywords and synonyms from the existing literature on goals and goal conflicts, especially from the recent review on goal conflict and well-being by Kelly and colleagues (2015). As for search terms related to depressive symptoms, it was decided that terms that were clinically relevant and typically used in diagnostic manual, such as the DSM-5 (American Psychiatric Association, 2013), would be used. Some of the finalised search terms were truncated to allow for variations in keyword terms, as illustrated in Table 2.

Table 2

Finalised search terms

Concept	Selected search terms
Goal	goal* pursuit* plan* striving*
Conflict	conflict* interference ambivalence discrepanc*
Depression	depress* mood dysphori* dysthymi*

The search terms in the same conceptual category were combined using OR, and all three concepts were joined by AND. Specifically, the following search strategy was utilised:

(goal terms) AND (conflict terms) AND (depression terms)

Three databases were utilised in searching for articles for this review, and these were PsycINFO, PubMed, and Web of Science. Search limits were selected slightly differently on these databases as filters varied across databases, but these

limits were consistent with the eligibility criteria. Table 2 details the exact filters utilised across these databases. An additional hand-search was conducted by reviewing the studies included in Kelly and colleagues' (2015) as well as Gray and colleagues' (2017) recent reviews on goal conflict and well-being.

Table 3

Search limits utilised in the three databases

Database	Search limits
PsycINFO	English (language), peer-reviewed journal, human, empirical study
PubMed	English (language), peer-reviewed journal, human
Web of Science	English (language), article, psychology (research area)

2.2 Study Eligibility

This review included studies that met the following criteria, regardless of whether the relation between goal conflict and depressive symptoms was their primary research question: (1) the authors assessed individuals' experience of goal conflict, (2) conflict had to occur between goals that were personally relevant and meaningful to the individuals, or pertinent to their important life domains, (3) conflict had to reflect the incompatibility of different goals, not limited to ambivalence (when an individual has a desire to achieve and not to achieve a goal simultaneously), (4) conflict under investigation must be rated explicitly, rather than being derived through a mathematical formula that describes the presence or level of conflict among goals, (5) the individuals' depressive symptoms were measured, preferably by, but not limited to, standardised depression measures, (6) the quantitative associations between goal conflict and depressive mood were reported,

(7) the study was an empirical paper published in a peer-reviewed journal, and (8) the study was reported in English.

There was also an additional criterion for studies that examined individuals' self-discrepancy, or a gap amongst an individual's actual, ideal, and ought selves (Kelly, Mensell, & Wood, 2015). Specifically, only studies that investigated the ideal versus ought selves would be included, whilst those assessing the discrepancy between the actual and the remaining two types of selves would be excluded, as the latter would arguably denote unattained goals rather than goal conflict. For this review, no criterion was specified regarding the type of samples, such as clinical or non-clinical, or date of publication, as the researcher designed the search to be relatively inclusive.

3. Results

3.1 Study selection

The search on the three databases yielded 1,263 articles in total (594 from PsycINFO, 292 from PubMed, and 377 from Web of Science). Eighteen more articles were identified from the reference lists of the recent reviews by Kelly and colleagues (2015) and Gray and colleagues (2017). Once the duplicates were removed, there were 909 articles to be screened. The initial step involved examining the titles and abstracts of the articles to decide its pertinence to the subject of this review. During this process, 841 articles were excluded, leaving 68 articles to be read in their entirety to examine if they met the eligibility criteria of this review. After the full-text screening step, 12 articles were deemed suitable for the current review based on the criteria previously listed in the method section. *Figure* 1 shows the PRISMA flowchart summarising the study selection process.

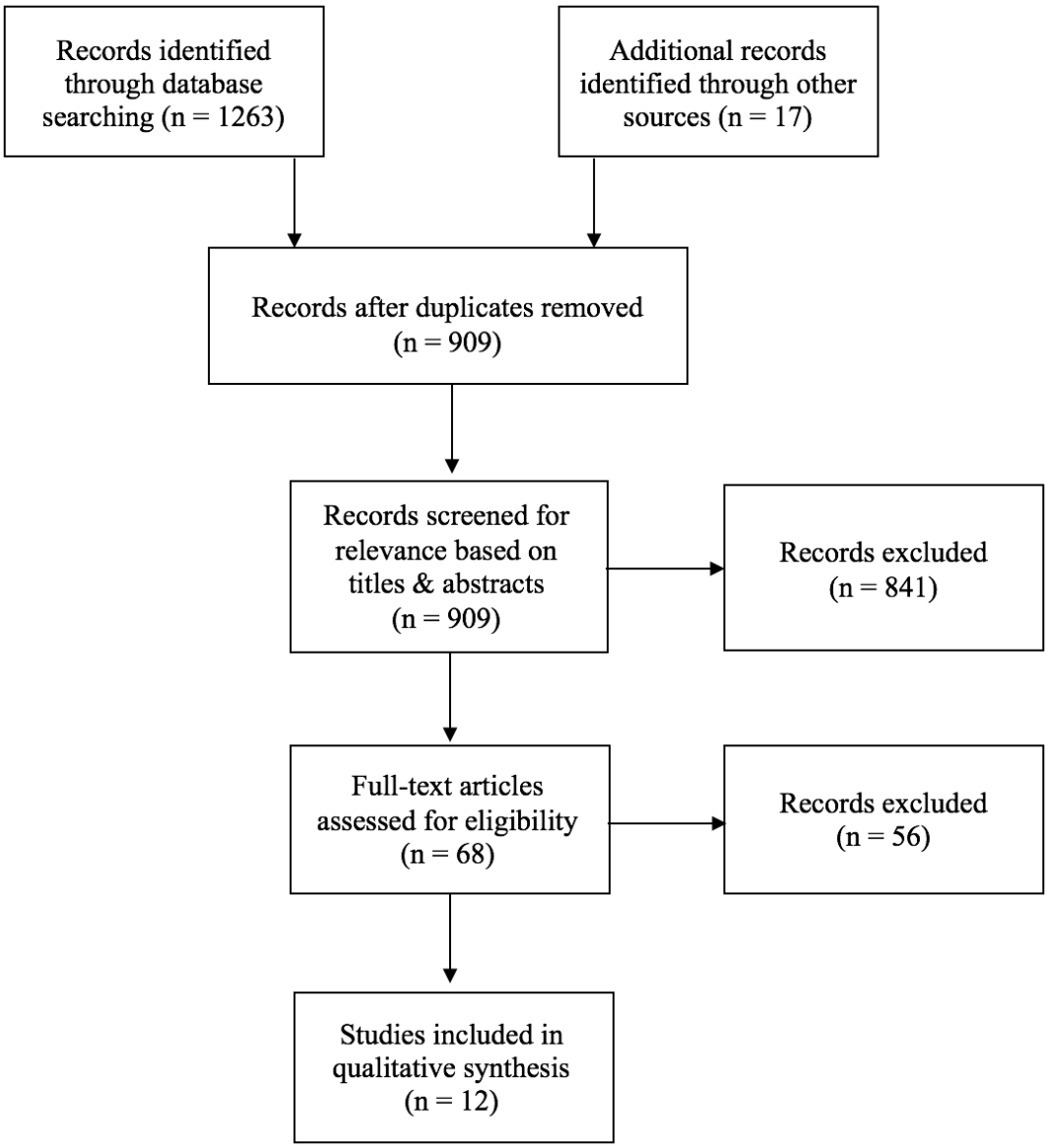

Figure 1. PRISMA diagram detailing the study selection process.

3.2 Quality assessment

To appraise the quality of the selected studies, the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies developed by the National Heart, Lung, and Blood Institute (NHLBI) was employed. The NHLBI assessment tool consists of 14 items focusing on key concepts that determine the internal validity of a study, such as sources of bias, study power, and confounding factors (See Table 4). For each item, the response options were "yes," "no," or "other," the latter of which includes three subcategories: "cannot determine" (CD), "not reported" (NR), and "not applicable" (NA). The tool does not provide a list of factors yielding a numerical score for reviewers to utilise as a summary judgment of quality, as the reviewers are encouraged to consider the various aspects of a study indicated by the items and arrive at their own conclusion regarding the overall quality of a study, whether it is "good," "fair," or "poor" (NHLBI, 2019).

Table 4

Items in the NHLBI Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Item	Question
1	Was the research question or objective in this paper clearly stated?
2	Was the study population clearly specified and defined?
3	Was the participation rate of eligible persons at least 50%?
4	Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?
5	Was a sample size justification, power description, or variance and effect estimates provided?

6	For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
7	Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
8	For exposures that can vary in amount or levels, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?
9	Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
10	Was the exposure(s) assessed more than once over time?
11	Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
12	Were the outcome assessors blinded to the exposure status of participants?
13	Was loss to follow-up after baseline 20% or less?
14	Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?

Table 5

Quality assessment of internal validity of selected studies

Authors	Year	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Boudreaux & Ozer	2013	Y	Y	CD	CD	N	Y	Y
Emmons & King (study 1)	1988	Y	Y	CD	Y	N	Y	Y
Emmons & King (study 2)	1988	Y	Y	CD	Y	N	Y	Y
Grzywacz et al	2007	Y	Y	CD	Y	N	N	N
Karoly et al	2008	Y	Y	Y	Y	N	Y	Y
Karoly & Ruehlman	1996	Y	Y	Y	Y	N	N	N
Kelly, Mansell, & Wood	2011	Y	N	CD	CD	N	N	N
King, Richards, & Stemmerich	1998	Y	Y	CD	Y	N	N	N
Moberly & Dickson	2018	Y	Y	CD	Y	N	Y	Y
Pomaki, Maes, & Doest	2004	Y	Y	CD	Y	N	N	N
Ratelle et al	2005	Y	Y	CD	Y	N	N	N
Segerstrom & Nes	2006	Y	Y	CD	Y	N	Y	Y
Zamarripa, Wampold, & Gregory	2003	Y	Y	CD	Y	N	N	N

Note. Y = yes, N = no, CD = cannot determine, NR = not reported, NA = not applicable.

Table 5 (cont.)

Quality assessment of internal validity of selected studies

Authors	Year	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Overall quality
Boudreaux & Ozer	2013	Y	Y	N	Y	NA	Y	N	Fair
Emmons & King (study 1)	1988	Y	Y	Y	Y	NA	Y	N	Fair
Emmons & King (study 2)	1988	Y	Y	N	N	NA	Y	N	Fair
Grzywacz et al	2007	Y	CD	N	Y	NA	Y	N	Fair
Karoly et al	2008	Y	Y	N	Y	NA	Y	Y	Good
Karoly & Ruehlman	1996	Y	CD	N	Y	NA	NA	N	Fair
Kelly, Mansell, & Wood	2011	Y	Y	N	Y	NA	NA	Y	Poor
King, Richards, & Stemmerich	1998	Y	Y	N	Y	NA	NA	N	Fair
Moberly & Dickson	2018	Y	Y	N	Y	NA	Y	N	Fair
Pomaki, Maes, & Doest	2004	Y	CD	N	Y	NA	NA	N	Fair
Ratelle et al	2005	Y	CD	N	Y	NA	NA	Y	Fair
Segerstrom & Nes	2006	Y	CD	Y	Y	NA	Y	N	Fair
Zamarripa, Wampold, & Gregory	2003	Y	CD	N	Y	NA	NA	N	Fair

Note. Y = yes, N = no, CD = cannot determine, NR = not reported, NA = not applicable.

Overall, the quality of most studies included in the current review appeared to be fair in terms of their internal validity. One study by Karoly and colleagues (2008) was appraised to be of good quality, as it appeared to have a relatively low risk of bias. By contrast, the study by Kelly and colleagues (2011) was deemed to be poor, and this might partly be due to the very brief nature of the publication, which resulted in omissions of details in regards to participants in the study necessary for the quality assessment.

As illustrated in Table 5, certain criteria in the quality assessment appeared to be met by most studies. Specifically, the authors in every study clearly stated the objectives or research questions in their study (item 1), and most provided sufficient details regarding their participants (item 2). Goal conflict was also measured as a continuous variable in all studies (item 8), and almost all studies utilised well-established depression inventories (item 11). It should be noted that, for criterion 11, most studies did not define depression in detail, presumably due to the fact that depression is already a commonly known psychological disorder. The studies were therefore deemed to meet this criterion as long as they employed commonly used depression measures with good validity and reliability.

There were a few criteria in the quality assessment tool that were not generally met. The most noticeable shortcoming was the lack of justification for the sample size in all of the selected studies (item 5). Furthermore, due to the cross-sectional design of many studies, goal conflict was not measured repeatedly (item 10), and most studies only examined the correlational relationship between goal conflict and depressive symptoms without taking potential confounding factors into account (item 14). In addition, the cross-sectional nature of many studies also meant that goal conflict and depressive symptoms were measured at the same time, instead

of measuring goal conflict first (item 6) and having a sufficient interval before depressive symptoms were assessed (item 7). Thus, it would be impossible to draw a conclusion regarding the causality between goal conflict and depressive symptoms from these studies.

3.3 Study characteristics

3.3.1 Participants

The information extracted from each study is presented in Table 5. Across the studies included in this review, there were 5,233 participants in total, but this number was largely skewed by one study by Pomaki and colleagues (2004), which had 3,088 participants. All studies had non-clinical samples of adult participants, although one study by Ratelle and colleagues (2005) studied college-aged students (i.e., pre-university students), some of whom could potentially be under the age of 18, but the authors reported that the average age of their sample was 18 years old. Out of 13 studies, eight utilised data collected from university students (Boudreaux & Ozer, 2013; Emmons & King, 1988, studies 1 and 2; Kelly, Mansell, & Wood, 2011; King, Richards, & Stemmerich, 1998; Moberly & Dickson, 2018; Segerstrom & Nes, 2006; Zamarripa et al., 2003), and two studies had adults experiencing some pain problems as their samples (Karoly et al., 2008; Karoly & Ruehlman, 1996). The ratios between female and male participants were disproportionate in studies with university samples, i.e., there were many more female participants than male participants, while the other studies had more gender-balanced samples. Eleven studies were conducted in North America (10 in the United States, and one in Canada) and the remaining three studies took place in Europe (two in the United Kingdom, and one in the Netherlands).

Table 6

Characteristics of included studies.

Study	Country	Sample	N	Mean age	Female %	Goal conflict measure	Depression measure	Results	Other relevant notes/ findings
Prospective studies (all self-generated goals)									
Boudreaux & Ozer (2013)	US	Undergrads	180 at T1, 170 at T2	19	72.78%	Global score of total goal conflict (computed by using ratings of goal conflict among 8 self-generated goals)	BSI (5-week follow-up)	Cross-sectional - At T1, correlation between goal conflict & depression r = .15 (p = .06) Longitudinal - T1 goal conflict significantly predicted T2 depression (B = .15, p <.05)	- Goal conflict correlated with anxiety, psychosomatization, negative affect - T1 goal conflict also predicted T2 anxiety & T2 somatization
Emmons & King (1988, study 2)	US	Undergrads	48	N/A	72.92%	SIM (15 goals)	"Depressed" item on the daily mood report (measured daily for 21 days)	- Goal conflict was not significantly correlated with depression (r = .19, *ns)*	- Ambivalence was also measured and it was correlated with depression
Karoly et al (2008)	US	Adults with chronic low back pain	100	26% were in 25-44 age group, 41% in 45-64 group, and 33% in 65-80 group	56%	Conflict ratings between 3 most important current, medium-range goals	CES-D (3 month follow-up)	- Goal conflict and depression were significantly correlated (r = .36, p <.05)	- In Structural Equation Analysis, goal conflict is not directly linked to depression. Pain-induced fear fully mediated the relationship between goal conflict and depression

Table 6 (cont.)

Study	Country	Sample	N	Mean age	Female %	Goal conflict measure	Depression measure	Results	Other relevant notes/ findings
Moberly & Dickson (2018)	UK	Undergrads	210 at T1, 194 at T2	20	80.48%	10x10 Matrices (10 personal goals)	BDI-II (1-month follow-up)	Cross-sectional - At T1, goal conflict was significantly correlated with depression (r = .28) - At T1, multiple regression analysis showed that goal conflict uniquely predicted depression, when goal ambivalence and goal facilitation were controlled for - At T2, goal conflict was significantly correlated with depression (r = .18) Longitudinal - When T1 depression was controlled for, goal conflict, goal facilitation, and ambivalence jointly failed to explain significant additional variance in T2 depression - Goal conflict (as well as goal facilitation, and ambivalence) did not predict change in depressive symptom independently (or interactively)	- Cross-sectionally, ambivalence was also significantly correlated with depression at T1 and T2 - Higher levels of T1 goal conflict were associated with reductions in T2 anxiety for people with lower goal ambivalence, but not for those with higher goal ambivalence

Table 6 (cont.)

Cross-sectional studies (self-generated goals)											
Emmons & King (1988, study 1)	US	Undergrads	40	N/A	70%	SIM (15 goals)	HSCL	-	Goal conflict was significantly correlated with depression (r = .34)	-	Ambivalence was also correlated with depression (r = .44)
Kelly, Mansell, & Wood (2011)	UK	University students	120	19.84	81.67%	SIM (10 goals)	DASS-21	-	Goal conflict did not significantly correlate with depression	-	Ambivalence also did not significantly correlate with depression (although it was "approaching significance")
								-	Depression was most elevated when ambivalence was high and conflict was low		
King, Richards, & Stemmerich (1998)	US	Psychology students	80	21.09	77.5%	10x10 Matrices (everyday goals)	BDI (short form)	-	Conflict and depression were not significantly correlated (r = .10)	-	Goal conflict was not found to be associated with life satisfaction, self-esteem, subjective well-being composite either
Segerstrom & Nes (2006, Study 2)	US	Psychology undergrads	77	20	83.10%	SIM, two raters assess levels of inherent & resource conflict among goals generated by each participant	BDI	-	There was a small association between resource conflict and depression, but this was not statistically significant	-	Inherent and resource conflict was correlated with optimism levels

Table 6 (cont.)

Study	Country	Sample	N	Mean age	Female %	Goal conflict measure	Depression measure	Results	Other relevant notes/ findings
Cross-sectional studies (goals in specified domains)									
Grzywacz et al (2007)	US	Immigrant Latinos	200	33	49.50%	Work-family conflict measure (adapted from Netemeyer, Boles, & McMurrian (1996)	CES-D	- Work-family conflict was correlated with depression (r = .20, p <.05) for both women and men	- Work-family conflict was also associated with anxiety (r = .33, p <.001) for both women and men
Karoly & Ruehlman (1996)	US	Adults in management positions	227 (3 groups: no pain, non-persistent pain, chronic pain)	40	44.05%	Conflict between 2 most important work goals & 1 important non-work goal	CES-D	- Goal conflict (work vs. nonwork goals) was correlated with depression (r = .21, p <.01) - Goal conflict between the two work goals wasn't significantly correlated with depression (r = .09)	- The correlation between goal conflict (work goals) and goal conflict (work vs. nonwork goals) was r = .30, p <.01
Pomaki et al. (2004)	Netherlands	Healthcare employees	3088	39.37	67.80%	Goal conflict scale from Goal Systems Assessment Battery (GSAB), work-related goals	SCL-90	Correlation - Goal conflict and depression was correlated (r = .22, p <.001) Hierarchical multiple regression - Goal conflict (block 2) predicted depression (B = .11, p <.001)	- Goal conflict was positively correlated with depersonalisation , emotional exhaustion, somatic complaints, and negatively with goal efficacy and control

Table 6 (cont.)

Study	Country	Sample	N	Mean age	Female %	Goal conflict measure	Depression measure	Results	Other relevant notes/ findings
Ratelle et al. (2005)	Canada	College (CEGEP) students	658	18	44.22%	School-Leisure Conflict Scale	HSCL	- School-leisure conflict was correlated with depression (r = .14, p <.001)	- In structural equation analysis, the final model did not have a direct path between goal conflict and depression (the model included several other variables, e.g., academic consequences, academic/leisure motivation)
Zamarripa et al. (2003)	US	Grad & undergrad students	205	24.6	70.24%	Conflict between work and family scale on the Gender Role Conflict Scale (GRCS)	SCL-90	Correlation - Work-family conflict was correlated with depression (r = .27 for women, r = .40 for men) Regression - Work-family conflict predicted depression in both women (B = .19) and men (B = .23)	- Work-family conflict was correlated with anxiety in both women and men - Regression analysis also showed that work-family conflict also predicted anxiety in both women and men

Note. SIM = Striving Instrumentality Matrix, BSI = Brief Symptom Inventory, CES-D = Centre for Epidemiologic Studies Depression Scale, BDI = Beck Depression Inventory, HSCL = Hopkins Symptom Checklist

3.3.2 Study design

Out of 13 studies, eight studies employed a cross-sectional design (Emmons & King, 1998, study 1; Grzywacz et al., 2007; Karoly & Ruehlman, 1996; Kelly et al., 2011; King et al., 1998; Pomaki et al., 2004; Ratelle et al., 2005; Zamarripa et al., 2003). The other five studies collected data longitudinally, with the follow-up intervals between 3 weeks to 3 months (Boudreaux & Ozer, 2013; Emmons & King, 1998, study 2; Karoly et al., 2008; Moberly & Dickson, 2018; Segerstrom & Nes, 2006). However, despite having six time points of data collection across an academic semester, Segerstrom and Nes (2006) analysed data regarding goal conflict and depressive symptoms, i.e., they calculated cross-sectional correlation coefficients at each time point and reported a "representative correlation by taking the median of the first five waves" (Segerstrom & Nes, 2006, p. 685). The findings from their study were therefore treated as cross-sectional rather than longitudinal. As a result, the current review only had longitudinal data from four studies.

3.3.3 Goals and goal conflict measures

The goals examined in the selected studies vary in terms of domains. In all four longitudinal studies and four cross-sectional studies (Boudreaux & Ozer, 2013; Emmons & King, 1988, study 2, Karoly et al., 2008; Segerstrom & Nes, 2006), participants were asked to generate their goals with relatively few restrictions. They might be asked to come up with a certain number of goals that might be most important to them or would be for a certain timeframe (e.g., current or proximal future), but these goals could belong in various domains in life. One study by King and colleagues (1998) instructed the participants to list "everyday goals," but these were still considered relatively vague and could still cover different life domains; therefore, this study was treated as one without specified domains. The other five

studies (all cross-sectional) dictated the life domains that the goals would be about (Grzywacz et al., 2007; Karoly & Ruehlman, 1996; Pomaki et al., 2004; Ratelle et al., 2005; Zamarripa et al., 2003). These goals were specifically related to work, family, school, and leisure.

Regarding measures of goal conflict, seven studies that used non domain-specific goals computed levels of goal conflict by asking participants to subjectively rate the conflict between pairs of goals. The authors would then either sum up the scores or average the scores to derive a goal conflict score for each participant. Only Segerstrom and Nes (2006) used raters to assess the levels of goal conflict among goals listed by the participants. For the studies that focused on conflict between goals within specific domains, only one study by Karoly and Ruehlman (1996) asked participants to provide conflict ratings for each pair of goals. The other four studies used their selected scales to assess conflict between different life domains.

3.3.4 Measure of depressive symptoms

Regarding depressive symptoms, almost all studies utilised well-established self-reported measures for depressive symptoms, such as the BDI, CES-D, DASS-21, SCL-90, and HSCL. Only one study by Emmons & King (1998, study 2) asked participants to rate their "depressed" feelings on one item in their daily mood report.

3.4 Synthesis of results

3.4.1 Cross-sectional association between goal conflict and depressive symptoms

Out of six studies that used self-generated, non-domain-specific goals and that reported cross-sectional association between goal conflict and depressive symptoms, only two reported statistically significant findings for this relationship (Emmons & King, 1998, study 1; Moberly & Dickson, 2018), and the strength of the relationship was found be relatively weak (r_s = .18 – .34). The findings from the other four

studies did not support the association between goal conflict and depressive symptoms (Boudreaux & Ozer, 2013; Kelly et al., 2011; King et al., 1998; Segerstrom & Nes, 2006)

By contrast, the five studies which examined goal conflict between specific domains (e.g., work vs. family goals, work vs. non-work goals, and school vs. leisure goals) yielded different results. The findings from these studies consistently showed that goal conflict was positively related to symptoms of depression (Grzywacz et al., 2007; Karoly & Ruehlman, 1996; Pomaki et al., 2004; Ratelle et al., 2005; Zamarripa et al., 2003). Nonetheless, it should be noted that even when the association between goal conflict and depressive symptoms was invariably found in these studies, the strength of the relationship remained relatively weak in most samples (r_s = .14 – .27), except for a male university student sample in the study by Zamarripa and colleagues (2003) (r = .40). In this sample, work-family conflict and depressive symptoms were found to be moderately correlated. Additionally, Karoly and Ruehlman (1996) also found that when examining conflict between two work goals, this particular kind of goal conflict was not significantly related to symptoms of depression.

3.4.2 Cross-sectional association between goal conflict and depressive symptoms when other factors are taken into consideration

Out of 11 studies that reported cross-sectional relationship between goal conflict and depressive symptoms, only two examined this relationship while taking other variables into account. Using regression analysis, Zamarripa and colleagues (2003) found that higher levels of work-family conflict predicted more depressive symptoms in both female and male university students, even when controlling for gender-related factors such as beliefs about success and restriction of affection towards people of the same-sex or opposite-sex.

The number of variables taken into consideration might affect whether the relationship between goal conflict and depressive symptoms would remain significant. In the study by Pomaki and colleagues (2004) with a large sample of healthcare employees, the findings from their hierarchical multiple regression analyses revealed that conflict among work-related goals predicted depressive symptoms cross-sectionally, after taking into account demographic variables (e.g., age, gender, educational levels, number of work hours) and other work goal-related factors (e.g., beliefs about own efficacy to achieve the goals, social support in goal pursuits, feelings towards the goals). However, goal conflict no longer predicted depressive symptoms when the researchers controlled for other work-related factors, such as work demands, job control, and support from supervisors or colleagues (Pomaki et al., 2004).

3.4.3 Summary of cross-sectional findings

Overall, the findings seem to suggest that there might be some cross-sectional association between goal conflict and depressive symptoms, but this association may be relatively weak and could disappear when controlled for other factors that might be more pertinent to one's emotional well-being. Moreover, this relationship might be influenced by the type of goal conflict under investigation. Specifically, it appears that the association between depressive symptoms and goal conflict is likely to be statistically significant when examining conflicts among goals within specific, important life domains, rather than when assessing conflicts that exist among goals that could be from any areas in life.

3.4.4 Longitudinal association between goal conflict and depressive symptoms

Out of four longitudinal studies, two reported the findings from correlational analyses of goal conflict and depressive symptoms without controlling for other

factors. Karoly and colleagues (2008) found that the initial levels of goal conflict showed a moderate, positive association with the levels of depressive symptoms three months later in a sample of adults with chronic low back pain. Emmons and King (1988, study 2) did not find a significant relationship between initial goal conflict and daily depressed feeling measured consecutively for 21 days. However, as previously noted in the Study Characteristics section (3.3.4), in this study, depressed feeling was assessed using only one item on the daily mood report.

3.4.5 Longitudinal association between goal conflict and depressive symptoms when controlling for other variables

Three longitudinal studies reported the relationship between goal conflict and depressive symptoms while controlling for some variables. Boudreaux and Ozer (2013) conducted a hierarchical regression analysis and found that when initial level of depressive symptoms was controlled for, goal conflict predicted symptoms of depression at the 5-week follow-up in a sample of undergraduate students. However, using multiple regression analysis, Moberly and Dickson (2018) found that, in their sample of undergraduate students, goal conflict did not predict depressive symptoms one month later, when taking into account the initial depressive symptoms, as well as other goal-related variables such as ambivalence and goal facilitation. Using structural equation modelling, Karoly and colleagues (2008) found that goal conflict did not directly predict symptoms of depression in adults with chronic low back pain, as the relationship appeared to be fully mediated by pain-induced fear.

3.4.6 Summary of longitudinal findings

Overall, the findings from longitudinal studies provide insufficient evidence to support that the levels of conflict among goals experienced by individuals would predict subsequent levels of depressive symptoms reported by the individuals. The

results suggest that even though there might be some association between goal conflict and depression over time, this association may easily disappear when other psychological variables are taken into account.

3.4.7 Other relevant findings pertinent to the interpretation of the relationship between goal conflict and depressive symptoms

The findings regarding ambivalence and anxiety were summarised here, as they might later add some nuances to the interpretation of the relationship between goal conflict and depressive symptoms in the discussion section.

As noted earlier that in several studies examining goal conflict and symptoms of depression selected for the current review, ambivalence and anxiety appeared to be included for many analyses. Cross-sectionally, ambivalence seemed to be positively related to depressive symptoms, and the relationship between them might be stronger than that between goal conflict and depressive symptoms (Emmons & King, 1988; King et al., 1998; Moberly & Dickson, 2018). However, the relationship among goal conflict, ambivalence, and depressive symptoms might not be straightforward, as Kelly and colleagues (2011) found an interaction effect of goal conflict and ambivalence on depressive symptoms, i.e., individuals who reported low levels of goal conflict but high levels of ambivalence appeared to experience more depressive symptoms than those who experienced high goal conflict but low ambivalence or those with high goal conflict and high ambivalence.

In regards to the relationship between goal conflict and anxiety symptoms, five out of seven studies revealed findings that support a cross-sectional association between the two (Boudreaux & Ozer, 2013; Emmons & King, 1988, study 1; Grzywacz et al., 2007; Moberly & Dickson, 2018; Zamarripa et al., 2003), while two studies did not find goal conflict to be significantly correlated with anxiety symptoms

cross-sectionally (Emmons & King, 1988, study 2; Kelly et al., 2011). Longitudinally, goal conflict was found to predict anxiety symptoms at the one-month follow-up (Moberly & Dickson, 2018). Even when the initial symptoms of anxiety were taken into account, goal conflict still predicted anxiety symptoms five weeks later (Boudreaux & Ozer, 2013).

4. Discussion

4.1 Summary of evidence

This systematic review was conducted to examine current evidence for the potential relationship between goal conflict and depressive symptoms, both cross-sectionally and longitudinally, in the existing literature. The search yielded 12 articles that met the eligibility criteria, and the internal validity of most of these studies were deemed to be fair. There were more studies that employed the cross-sectional design than those with longitudinal data. Participants in the studies under review were from non-clinical populations, and most studies used data collected from university students. The majority of studies examined conflicts among individuals' self-generated goals that could fall into any life domains, whereas the remaining studies focused on goal conflict within specific domains. Almost all studies utilised well-established self-reported measures to assess individuals' depressive symptoms.

Overall, the findings of studies included in this systematic review did not consistently provide support for a significant relationship between goal conflict and symptoms of depression. Only some studies found this association, both cross-sectionally and longitudinally, to be statistically significant, and the strength of this relationship generally appeared to be relatively weak. In addition, some studies also showed that this association could become non-significant once other factors were

taken into account, suggesting that goal conflict does not explain individuals' experience of depressive symptoms above and beyond other factors that might be more pertinent to this mood condition. Nonetheless, it should be noted that goal conflict was consistently found to be correlated with depressive symptoms, at least cross-sectionally, when conflict took place between goals in the specific important life domains, such as work and family.

Some extra information on ambivalence and anxiety also emerged from this review, and it might be helpful to take them into consideration when investigating the relationship between goal conflict and depressive symptoms. Based on the relatively scarce information currently available, ambivalence, which is believed to reflect discrepancy between goals at the mid-level (Kelly et al., 2015), might have a stronger association with experience of depressive symptoms than goal conflict does. In addition, some findings also suggest that it might be more comprehensive to examine the impact of goal conflict in conjunction with ambivalence on depressive symptoms, as there might be an interaction effect between the two, and this might explain their associations with depressive symptoms better than either one on its own. As for anxiety, some findings from the studies appeared to support its relationship with goal conflict. This corresponds to the existing literature that indicates the link between goal conflict and various kinds of psychological distress, including anxiety (Boudreaux & Ozer, 2013; Gray et al., 2017).

4.2 Clinical implications

The evidence from this systematic review does not establish a strong link between goal conflict and symptoms of depression, at least for non-clinical samples. Nonetheless, exploring individuals' potential conflicting goals at various levels might still be useful in some therapeutic work. Based on the findings from this review,

conflicts among relatively concrete, low-level goals might not be a significant contributor to a person's development or maintenance of depressive symptoms. However, for certain individuals, especially those who are clinically depressed, the impact of goal conflict on their psychological well-being might be different from that on individuals are not depressed, and therefore paying attention to the conflict between their goals might still be clinically useful.

Existing literature suggests that individuals who feel depressed may engage in thinking at the abstract level when it is not beneficial for them. According to Watkins (2011) in his review, research evidence has extensively shown that individuals with major depression generally process information more abstractly than non-depressed individuals, especially when it involves negative information. For instance, if they encounter a setback, they may engage in overgeneralisation and derive at an abstract perception of themselves as worthless individuals (Watkins, 2011). For them, this might signify a failure to attain a high-level goal of being a competent person. When those who feel depressed engage in ruminative thinking, which is relatively abstract and typically involving self-related negative thoughts (Watkins & Moulds, 2005), it may affect their problem-solving abilities (Donaldson & Lam, 2004; Watkins & Baracaia, 2002). Thus, when these individuals experience goal conflicts, they might not be able to think flexibly to find potential concrete steps to resolve their difficulties.

For individuals whose conflicting goals contribute to their experience of depression, they might benefit from exploring their goal hierarchy in an attempt to find potential solutions. At the point of goal setting, clinicians may facilitate clients to explore their goal hierarchy by directing clients' attention to their goals and consciously eliciting these goals from clients (Cooper, 2018). By doing this, clients

might be able to detect conflicting goals and attempt to rearrange the configuration in order to minimise the conflict and increase their chances of obtaining their highest-level goals (Cooper, 2018). Tendency to engage in abstract thinking amongst depressed individuals is not inherently detrimental, as long as these individuals can use the focus on higher-level goals to resolve their goal conflicts. According to Mansell and colleagues (2013), focusing on higher-level goals can help individuals discover different means to obtain the same end, instead of persevering with conflicting lower-level goals. Goal conflicts then can be resolved by either developing alternative lower-level goals to serve the higher-order goals or re-prioritising the lower-level goals (Watkins, 2011). Furthermore, individuals who are distressed by their experience of depression may benefit from learning to flexibly readjust their focus on different goal levels as appropriate. Higher-level goals are considered to be helpful for long-term goal pursuits, while lower-level goals should be the focus when dealing with difficult tasks as concrete thinking may facilitate problem solving and reduce anxiety (Watkins, 2011).

4.3 Limitations

Multiple limitations are present in the current systematic review. First of all, the quality of most studies included in this review was deemed to be merely "fair" regarding its internal validity, with the most noticeable shortcoming being the absence of power calculation to justify the sample size in these studies. This means that some of these studies might have been under-powered, whereas one study might have been affected by its large sample size of over 3,000 participants, which increased its probability of obtaining statistically significant results even though the actual effect might be small. Consequently, the findings from these studies might not reflect the actual strength of the association between goal conflict and depression, or

lack thereof. Using the findings from these studies, the current review therefore yielded conclusions that are not definitive.

Many studies on goal conflict had been excluded from the current review for not meeting the eligibility criteria, and this potentially inadvertently affected the conclusions of findings. For this review, only articles written in English were eligible, and all included studies that were published in peer-reviewed journals. Therefore, the conclusions of the current review might be susceptible to the potential effects of publication bias, as findings that are not statistically significant are generally less likely to be published. Nonetheless, since the relationship between goal conflict and depression was not the main focus of some studies selected for this review, this allowed some non-significant findings of this association to be incorporated into the synthesis.

The eligibility criteria regarding types of goal conflict for this review also restricted the generalizability of the conclusions. Goal conflict as operationalised in the current review reflected conflicts between goals that were relatively concrete, falling within the low level of the goal hierarchy. This therefore excluded studies that examined the relationship between depression and conflicting goals at higher levels. This decision to exclude higher-level goal conflict was partly due to the fact that the articles focusing on ambivalence retrieved from the original search mainly examined very specific kinds of ambivalence, such as ambivalence about pregnancy (Francis, Malbon, Braun-Courville, Lourdes, & Santelli, 2015) and ambivalence over emotional expression, i.e., experience of inner conflict as a person consciously wants to express their emotions but is somehow unable to (Lu, Uysal, & Teo, 2011). Nevertheless, as previously reported in the results section, some of the studies included in the present review also examined ambivalence, and some findings

suggest that association between ambivalence and depression might be stronger than that between ambivalence and goal conflict (Emmons & King, 1988; King et al., 1998; Moberly & Dickson, 2018). Had more studies on ambivalence been included in the current review, more information might have been available for the reviewer to detect any patterns potentially existing among them.

Studies that were designed to examine individuals' experience of depressive symptoms and other types of conflict at the higher levels were also excluded. One research team primarily based in Spain appeared to exclusively focused on what they considered to be "intrapersonal conflict," as the manner in which they assessed the levels of goal conflict experienced by individuals was not done consciously by the individuals themselves. Instead, correlations among individuals' self-generated goals were calculated by using a structured computerised procedure to derive this intrapersonal conflict construct, which the researchers coined "Implicative Dilemmas" (IDs) (Feixas, Montesano, Compañ et al., 2014). Implicative dilemmas are defined as "conflicts in which a desired change implies an unwished change" (Feixas, Montesano, Compañ et al., 2014, p. 4). For instance, a person may want to love herself more (a desired change), but this might be impeded by the underlying need to maintain her self-ideal congruency, which is to remain being protective of others (Feixas, Montesano, Compañ et al., 2014). These goals appeared to be relatively abstract and were thus considered to be within the mid-to-high levels within the goal hierarchy. These studies were excluded because the conflict score was derived by a mathematical analysis postulated by the research team, and therefore it was difficult to determine if these potential incompatibilities among goals were inherently perceived as conflicting by the goal owners. Nonetheless, the findings from their studies in regards to the association between implicative

dilemmas and depressive symptoms corresponded with the conclusions of the current review, as the evidence to support this relationship is inconsistent, although some of the findings might have been affected by the small sample sizes in their studies (Carapeto & Feixas, 2019; Feixas, Montesano, Compañ et al., 2014; Feixas, Montesano, Erazo-Caicedo et al., 2014).

By not including these studies on intrapersonal conflict, the generalizability of the conclusions of the present review was also limited by the lack of data from clinical population. Although no inclusion criterion regarding types of participants was specified for this review, all of the selected studies only consisted of non-clinical samples. Therefore, the conclusions about the association between goal conflict and depression in this review cannot be applied to individuals who are clinically depressed. Interestingly, studies on intrapersonal conflict, which were excluded from the review contained some clinical samples, as they compared individuals with depression to their non-depressed counterparts. The findings from these studies suggest that the presence of implicative dilemmas (i.e., when an individual is present with at least one implicative dilemma) was more likely to be found in clinically depressed individuals than those who were not depressed (Carapeto & Feixas, 2019; Feixas, Montesano, Compañ et al., 2014; Feixas, Montesano, Erazo-Caicedo et al., 2014). Hence, the conclusions regarding the relationship between goal conflict and depression could potentially be different if more data from clinical populations were available.

Lastly, the current review is also limited by the lack of prospective studies on goal conflict and depression. With only a small number of studies with longitudinal data on this subject available, the current existing literature could merely shed some light on the cross-sectional relationship between goal conflict and depressive

symptoms, while the causality between the two cannot be clearly established. Consequently, this does not provide sufficient evidence to support the clinical applications of goal conflict in treatment for depression.

4.4 Implications for future research

Given the limitations previously identified, several recommendations can be made in regards to future research on the subject of goal conflict and depression. Firstly, more prospective or longitudinal studies are much needed on this subject so as to establish a causal relationship between goal conflict and depression. It is important to find more evidence to ascertain that goal conflict leads to an increase in depressive symptoms rather than merely co-occurs or results from depression. The causality between the two needs to be substantiated in order to support clinical interventions for depression that would focus on clients' experience of goal conflicts. As shown in this review, existing literature contains more cross-sectional studies that could not lend their findings to support that goal conflict precedes depression. Therefore, more prospective and longitudinal data on the subject are crucially needed.

Secondly, it is important that future research on goal conflict include more clinical populations. There is a scarcity of studies examining the impact of goal conflict on levels of depression in those who are clinically depressed, as existing literature appears to rely more heavily on non-clinical samples. Studying mostly non-clinical population may not yield results that are clinically informative, as the manifestation of goal conflict in clinically depressed individuals might be different from that in non-depressed individuals. Therefore, it may be helpful to compare individuals with clinical depression to their non-depressed counterparts so as to

identify any potential differences between the two groups, both qualitatively and quantitatively.

Thirdly, future research may benefit from examining conflicting goals at various goal levels in the hierarchy simultaneously. As indicated by some additional findings in this review, ambivalence may have a stronger association with depression than goal conflict does in some instances (Emmons & King, 1988; King et al., 1998; Moberly & Dickson, 2018), and ambivalence may interact with goal conflict in predicting depressive symptoms (Kelly et al., 2011). This suggests the possibility that incompatible goals at different levels interact with one another in predicting individuals' experience of depression. Therefore, it may be of therapeutic interest to include different levels of goal conflict in a study, if possible, to better understand the potentially complicated interrelationships among these goal conflict levels and depression.

Lastly, it may be possible to identify certain characteristics of goal conflict that are linked to differential psychological difficulties. Some findings in the existing literature indicate that goal conflict is associated with various types of psychological distress (Gray et al., 2017), and some additional findings in this review also partially support the potential relationship between goal conflict and anxiety (Boudreaux & Ozer, 2013; Emmons & King, 1988, study 1; Grzywacz et al., 2007; Moberly & Dickson, 2018; Zamarripa et al., 2003). This suggests the possibility of goal conflict being a transdiagnostic factor of mental health difficulties. It is conceivable that certain characteristics of goal conflict might predict a tendency to experience certain difficulties more than others. For instance, if individuals think that one of their goals might have to be discarded owing to its incompatibility with other goals, they may feel disappointed and sad because that goal is now unattainable. By contrast, if the

conflicting goals are seen as achievable despite their interference with one another, these individuals might be more likely to experience anxiety as attaining all their goals might be seen as difficult and resource-demanding; however, they may be less likely to feel sad or depressed. Thus, future studies may be able to examine these potential differential characteristics of goal conflicts.

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Part 2: Empirical Paper

Goal conflict and ruminative thinking

Abstract

Aims: Previous research suggests that goal conflict is linked with psychological distress. This study aimed to better understand this association by investigating the relationships among individuals' experience of goal conflict, ruminative thinking, and symptoms of psychological distress. It examined the possibility of ruminative thinking as a mediator between goal conflict and depressive symptoms, as well as explored whether sense of control moderated the impact of goal conflict on ruminative thinking.

Method: A nonclinical sample of 61 adults participated in the study. Participants completed a set of questionnaires on their ruminative thinking, psychological distress, and sense of control. During the in-person interview, each participant underwent a goal-related mental simulation task and provided ratings on how their goals conflicted or facilitated one another.

Results: As expected, ruminative thinking was found to be positively correlated with psychological distress, and those who reported more goal conflict also ruminated more than those who experienced less goal conflict. Goal conflict, however, did not appear to be significantly related to depression or sense of control. Ruminative thinking was not found to be a mediator between goal conflict and depression, and sense of control did not moderate the association between goal conflict and ruminative thinking.

Conclusions: The findings in the current study provided some support for the relationship between goal conflict and ruminative thinking and between ruminative thinking and psychological distress, including depression. Underlying mechanisms among these relationships could not be established based on the current findings. Clinical implications were subsequently discussed.

1. Introduction

1.1 Goals and their characteristics

Goals have been widely studied in various fields and have been given various definitions over the years. Generally, a goal refers to a person's perceived desired states (Austen & Vancouver, 1996). A closer examination of various definitions of goal in the existing literature revealed the complex nature of a goal, as it contains cognitive, affective, and behavioural aspects (Street, 2002), as demonstrated by the following definition:

> [A goal is] an image of ideal stored in memory for comparison to an actual state; a representation of the future that influences the present; a desire (pleasure and satisfaction are expected from goal success); a source of motivation; an incentive to action (Cochran & Tesser, 1996, as cited in Street, 2002, p. 95)

Goals can vary in terms of their characteristics. In his review, Cooper (2018) suggested dimensions of goals that he considered to be particularly pertinent for therapeutic practice: importance, challenge, approach vs. avoidance, intrinsic vs. extrinsic, specificity, temporal extension, consciousness, and meta-level of the goals (see Cooper, 2018, for a full review). With these different aspects, goals have justifiably been categorised in various ways in the existing literature. For instance, Kasser and Ryan (1996) broadly classify goals into intrinsic and extrinsic, with the former representing goals that tend to satisfy psychological needs as well as reflect self-actualisation and growth whilst the latter being the means to some other outcomes instead of being an end in itself. Examples of intrinsic goals are self-acceptance and feeling the sense of affiliation with others, whereas extrinsic goals

could include becoming financially successful or gaining social recognition (Kasser & Ryan, 1996).

Goals can also be classified in a hierarchy on the basis of their levels of abstraction (Carver & Scheier, 1998). Higher-level goals are more abstract, guiding and providing information regarding the "why" aspect for the goals at the lower levels (Carver & Scheier, 1998; Alsawy, Mansell, Carey, McEvoy, & Tai, 2014). Lower-level goals, on the other hand, are more concrete and involve specifying "how" the actions will be carried out (Carver & Scheier, 1998; Alsawy et al., 2014). Goals at the highest levels are presumed to reflect what individuals aspire to be (Kelly, Mansell, & Wood, 2015). Higher-level goals, e.g., an ideal self as a conscientious person, determine their sub-goals at the lower levels, e.g., completing assignments on time. In other words, lower-level goals are the means that individuals engage in so as to achieve the ends, or the higher-level goals (Carver & Scheier, 1998).

1.2 Goal conflict and goal facilitation

It is likely that at any point in time, individuals have multiple goals they would like to accomplish, and these goals may facilitate or hinder the pursuit of one another. *Goal conflict* occurs when goals interfere with each other, and pursuing one goal decreases the chances of attaining another goal (Kelly et al., 2015). This may result from the limited resources available for different goal pursuits or because strategies required for obtaining different goals are incompatible with one another (Riediger & Freund, 2004; Segerstrom & Nes, 2006). Segerstrom and Nes (2006) labelled the former as "resource conflict" and the latter as "inherent conflict." A resource conflict may take place when a student wants to make many new friends as possible while aiming to acquire good grades, as the student has only limited time

available to accomplish both goals. An example of high inherent conflict is when a person want to be open to dating while wanting to avoid rejection at all costs (Segerstrom & Nes, 2006), as dating itself directly increases the chances of getting rejected.

By contrast, *goal facilitation* occurs when making progress towards one goal also helps an individual to advance toward another goal, or when certain strategies help attain more than one goal simultaneously (Riediger & Freund, 2004). For instance, doing volunteer work may satisfy a goal of being a good person as well as a goal of expanding one's social circle.

1.3 Goal conflict, goal facilitation, and psychological well-being

Research has shown that goal progress is associated with psychological well-being. Specifically, when individuals perceive themselves as achieving or making progress towards their goals, they experience positive affect, such as feeling cheerful, happy, and satisfied with their lives (Brunstein, 1993; Higgins, Shah, & Friedman, 1997; Klug & Maier, 2015), especially when those goals reflect their personal values and interests (Sheldon & Elliot, 1999). By contrast, when goal pursuit is disrupted, individuals may experience negative emotional reactions (Carver & Scheier, 1990), such as dejection and agitation (Higgins et al., 1997), particularly when these goals are perceived as important to the individual (Moberly & Watkins, 2010).

By definition, goal conflict decreases the likelihood that individuals would be able to accomplish all of their goals, whereas goal facilitation increases such likeliness (Riediger & Freund, 2004). Therefore, it is likely that goal conflict would negatively affect one's psychological well-being, whilst the opposite effect is expected from goal facilitation. However, existing research seems to support mainly the negative impact of goal conflict. Specifically, higher levels of goal conflict have

been found to relate to increased negative affect, less life satisfaction, as well as more symptoms of psychological disorders such as depression, anxiety, somatisation, and the number of visits to health centre (Boudreaux & Ozer, 2013; Emmons & King, 1998; Riediger & Freund, 2004). Furthermore, findings from a meta-analysis indicate that goal conflict shows a stronger association with psychological distress than with positive psychological outcomes (Gray, Ozer, & Rosenthal, 2017). The levels at which goal conflict occurs also matters, as Kelly and colleagues (2015) found in their review that the conflicts between higher-level goals interfere with one's well-being more than goal conflicts at lower levels.

Interestingly, current research findings do not suggest a strong negative association between goal facilitation and psychological distress. Based on its definition, goal facilitation seems to be the opposite of goal conflict, as it potentially increases the likelihood that one can accomplish many goals. Therefore, it is within reason to expect that higher levels of goal facilitation would be related to less psychological distress. However, existing research findings do not support this postulation. In the same studies where goal conflict was found to relate to negative outcomes, e.g., negative affect and psychological symptoms, no such relationship was detected for goal facilitation (Boudreaux & Ozer, 2013, Riediger & Freund, 2004). Instead, the findings suggested that goal facilitation is linked to individuals' commitment to the goal pursuits (Riediger & Freund, 2004) and subjective well-being, such as positive affect and life satisfaction (Boudreaux & Ozer, 2013).

1.4 Ruminative thinking as potential mechanism explaining the relation between goal conflict and psychological distress

It is currently inconclusive whether there is an underlying mechanism that explains the relationship between goal conflict and psychological distress. Ruminative thinking has been proposed as a possible link. Rumination, as defined by Martin and Tesser (1996), is "a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts" (p. 7). According to the Goal Progress Theory of Rumination (Martin, Shrira, & Startup, 2004; Martin & Tesser, 1996), when individuals do not make progress towards their goals sufficiently, they may engage in ruminative thinking, and this is supported by research (Schultheiss, Jones, Davis, & Kley, 2008). Research also suggests that people tend to ruminate more after being prompted to think about unresolved personal goals compared to when they are cued to recall a goal that has already been resolved (Roberts, Watkins, & Wills, 2013).

As goal conflict interferes with individuals' progress to achieve at least some of their goals, it is possible that the presence of goal conflict would increase ruminative thinking. Nonetheless, it should be noted that disruptions of progress on different goals may not lead to the same level of rumination. According to McIntosh (1996), individuals are more prone to ruminating on higher-level rather than lower-level goals. Thus, this suggests that an increase in ruminative thinking may be expected when conflicts between goals occur at the higher levels of the goal hierarchy.

Ruminative thinking is a type of repetitive thinking that has been consistently shown to be unconstructive (Watkins, 2008). Research has shown that among depressed individuals, ruminative thinking renders them more inclined to interpret situations more negatively and reduced their problem-solving skills (Donaldson &

Lam, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Watkins, 2002; Watkins & Baracaia, 2002). Rumination is considered to be a transdiagnostic factor in psychological disorders, such as depression, anxiety, and traits associated with borderline personality disorder (McLaughlin & Nolen-Hoeksema, 2011; Watkins, 2009). Furthermore, rumination has also been found to interfere with psychological interventions (Watkins & Roberts, 2020). For instance, more rumination at the beginning of therapy is related to poorer CBT outcomes for individuals with depression, and post-treatment levels of rumination reported by those who completed mindfulness-based CBT are predictive of subsequent relapse (Watkins & Roberts, 2020).

Amongst various psychological disorders that have been linked with rumination, depression has been studied rather extensively in relation to this thought process. According to the Response Styles Theory (Nolen-Hoeksema, 1991), rumination exacerbates and extends one's experience with depressive symptoms, and individuals would fare better if they engage in distraction when experiencing negative feelings. In a recent 4-year longitudinal study with a large sample of Australian adults, Whisman and colleagues (2020) found a bidirectional, recursive relationship between rumination and depressive symptoms over time, with rumination predicting subsequent depressive symptoms and vice versa. Furthermore, whilst ruminative thinking has been found to be associated with multiple maladaptive thinking styles, such as dysfunctional attitudes and low mastery, researchers have also found rumination to be uniquely linked to depression above and beyond its relationships with other maladaptive thinking styles (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Specifically, rumination appears to mediate the association between depression and dysfunctional attitudes, self-criticism, neuroticism,

neediness, and negative inferential styles, for example (Nolen-Hoeksema et al., 2008).

Given how rumination has been theorised to relate to inadequate goal progress and psychological difficulties, especially depression, it is conceivable that ruminative thinking is a mechanism linking one's experience of goal conflict and symptoms of depression.

1.5 Sense of control as potential moderator between goal conflict and ruminative thinking

It is possible that not every individual may engage in ruminative thinking in response to goal conflicts, as some psychological factors, such as one's sense of control, might influence how likely one is to ruminate when faced with goal conflict. Perceived control can be defined as "the belief that one can determine one's own internal states and behaviour, influence one's environment, and/or bring about desired outcomes" (Wallston, Wallston, Smith, & Dobbins, 1987). Generally, individuals with higher sense of perceived control tend to cope with stressful life events better than those with lower perception of control (Thompson, 2002). For instance, amongst women who experience high stress levels, those who feel more in control tend to feel less depressed (Grote, Beldsoe, Larkin, Lemay, & Brown, 2007). Another study found that high perception of control in patients undergoing artery bypass graft surgery is associated with less symptoms of depression and anxiety (Gallagher & McKinley, 2009). Even amongst children who feel rejected by their mother figures, the effect of their experience of maternal rejection on their depressive symptoms is mediated by their perceived control (Magaro & Weisz, 2006). It has been hypothesised that higher perceived control may lead to better adjustment

because those with better sense of control are more likely to take actions to tackle their problems instead of avoiding them (Thompson, 2002).

Rumination is a rather inactive process when compared to a more active approach such as problem solving. Wanke and Schmid (1996) proposed that sense of control has a moderating effect on recurrent thoughts because individuals who feel in control are more inclined to problem-solve and thus increase the likelihood of discovering a solution (Wanke & Schmid, 1996). Currently, there appears to be a scarcity when it comes to existing literature on perceived control and rumination, and even more so for literature on perceived control and goal conflict. Goals and sense of control are hypothesised to be linked to one another, as perceived control can result from making progress towards goals (Thompson, 2002). It is possible that the perceived control also leads to more goal progress, as individuals with higher sense of control take more actions to solve problems in order to reach their goals. In regards to goal conflict, it is conceivable that individuals who perceive their conflicting goals as being under their control are less likely to ruminate, regardless of how difficult the situations may appear to others. Thus, the potential moderating effect of perceived control on the impact of goal conflict upon ruminative thinking should also be explored further.

1.6 The present study

This study aims to investigate the associations amongst goal conflict, goal facilitation, ruminative thinking, and aspects of psychological well-being, such as depressive symptoms. This study also aims to explore potential mediating and moderating factors among these relationships. This current study intends to address the following research questions:

1.7 Research questions and hypotheses

1. Is there any association between level of ruminative thinking and individuals' psychological distress?
    a. It is predicted that individuals who report high ruminative thinking will report more psychological distress, e.g., more symptoms of depression, anxiety, and stress.
2. Is there any association between goal conflict, goal facilitation, and ruminative thinking?
    a. It is hypothesised that people who report higher levels of goal conflict will also report more ruminative thinking, whilst goal facilitation may not be correlated with ruminative thinking.
3. Is there any relation between goal conflict, goal facilitation, and psychological distress?
    a. Goal conflict is predicted to positively correlate with symptoms of psychological distress, whereas goal facilitation is hypothesised to have no significant association with psychological distress.
4. Does ruminative thinking mediate the effect of goal conflict on depression?
    a. It is hypothesised that ruminative thinking mediates the relation between goal conflict and depression.
5. Does sense of control moderate the relationship between goal conflict and ruminative thinking?
    a. It is hypothesised that individuals' sense of control has a moderating effect on the association between goal conflict and ruminative thinking. Specifically, among individuals who report high levels of

goal conflicts, only those who report low sense of control will engage in more ruminative thinking.

2. Method

2.1 Overall design

The current study employed a non-experimental cross-sectional design. It had two components—an online survey and an in-person interview. Participants were given information regarding the study and provided their informed consent before starting the online survey. Those who completed the online survey were subsequently invited to attend an in-person interview during which participants were asked about their personal goals, including goal conflict and goal facilitation. Participants were also asked to fill out the measures on ruminative thinking, psychological distress, and sense of control. More details can be found under the Procedure section later in this paper.

2.2 Participants

Adults from the age of 18 years with sufficient command of English were eligible to participate in the study. The recruitment was conducted via posters placed at various locations on UCL campus as well as the UCL Psychology Subject Pool website. Two waves of recruitment were arranged so as to ensure that the number of participants would not exceed the researcher's capacity to follow up with the in-person interviews.

In the first wave of recruitment in summer 2017, only participants who completed the online survey and scored in the top and bottom quartiles on the ruminative thinking measure (high ruminators vs. low ruminators) were invited to the in-person interview. Out of 45 participants who were invited, only nine attended.

This high attrition was likely due to a gap between the online and in-person parts of the study, resulting in some participants having graduated and relocating during the interval, and thus they were unable to attend the second part in person. It was also probable that some participants dropped out owing to the lack of incentive to attend the interview, as everyone who completed the online survey were automatically eligible for the cash prizes drawn at the end of the study. Therefore, there was no need to complete both parts to win a prize.

To minimise a similar drop-out issue, the requirement in the second wave of recruitment in winter 2018 was changed. All participants were informed that they were required to complete both online and in-person parts of the study in order to be compensated with £7.50 for their participation. A total sample of those who attended both parts of the study consisted of 61 participants (43 females, 16 males) aged between 18 to 52 years old (average age = 25.61, *SD* = 6.90).

2.3 Measures

2.3.1 Ruminative thinking

The Perseverative Thinking Questionnaire (PTQ; Ehring, Zetsche, Weidacker, Wahl, Schonfeld, & Ehlers, 2011) was employed to measure ruminative thinking. This is a 15-item questionnaire designed to assess repetitive thinking about problems or negative experiences characterized by repetitiveness, intrusiveness, and difficulty to disengage from these thoughts. Participants were asked to give ratings on a 5-point Likert scale, ranging from "0" (never) to "4" (almost always) on each item. Example of items include "the same thoughts keep going through my mind again and again," "I get stuck on certain issues and can't move on," and "I feel driven to continue dwelling on the same issue." The PTQ has been shown to have good internal consistency (α = .94 to .95) and test-retest reliability over the period of

4 weeks (r = .69; p < .001) in both clinical and nonclinical samples (Ehring et al., 2011).

2.3.2 Goal conflict and goal facilitation

The Strivings Instrumentality Matrix (SIM; adapted from Emmons & King, 1988) was used to assess each participant's conflict and facilitation among their own personal concrete, low-level goals. Participants were asked to rate how much each event from their daily routine conflicted with or facilitated each of the steps towards their goals. The participants provided ratings on a 5-point scale, with 1 meaning "not at all conflicting" (for goal conflict) or "not at all helpful" (for goal facilitation) and 5 meaning "very conflicting" or "very helpful." Each participant's conflict and facilitation scores were subsequently derived by averaging the ratings of conflict and facilitation among their goals.

2.3.3 Psychological distress

The Depression, Anxiety, Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was used to measure participants' experience of psychological distress. DASS-21 is a short-form of the DASS that has 42 items. It consists of three scales to assess depression, anxiety, and stress. Each scale is composed of seven items that require participants to rate on a 4-point Likert scale, ranging from "0" (did not apply to me at all) to "3" (applied to me very much or most of the time). Examples of items include "I was unable to become enthusiastic about anything," "I felt scared without any good reason," and "I found myself getting agitated." Overall, the DASS-21 has satisfactory psychometric properties. Its three scales have good internal consistency (α = .80 to .91**)** in a sample of nonclinical adult Americans (Sinclair, Siefert, Slavin-Mulford, Stein, Renna, & Blais, 2012).

2.3.4 Sense of control

The Midlife Development Inventory (MIDI; Lachman & Weaver, 1998) was utilised to measure individuals' sense of control. The MIDI has 12 items and consists of two subscales: perceived constraints and personal mastery. Participants provided ratings using a 7-point Likert scale, ranging from "1" (strongly disagree) to "7" (strongly agree). Examples of items include "I can do just about anything I really set my mind to do," "There are many things that interfere with what I want to do," and "There is really no way I can solve some of the problems I have." The MIDI subscales have been shown to have adequate internal consistency in adult samples (α = .60 to .86 for perceived constraints; α = .53 to .70 for personal mastery) (Lachman & Weaver, 1998).

2.4 Procedure

As previously stated in the overview, the current study consisted of two parts—an online survey and an in-person interview. At the beginning of the online survey, the information about the study was provided to the participants; these included the study's objectives, procedures, possible discomfort or risks involved, compensation, confidentiality issues, and participants' right to withdraw from the study. Contact information of the researcher and principal investigator was also provided if the participants would like to obtain more information before deciding to take part in the study. Participants were also informed that they could contact the research principal investigator, who is a qualified clinical psychologist, if they experienced distress during the study. Informed consent was then obtained in the subsequent section of the survey, before the participants could proceed to the questionnaire items.

The online questionnaires consisted of the Perseverative Thinking Questionnaire (PTQ), the MIDI Sense of Control (MIDI), and the Depression,

Anxiety, and Stress Scale (DASS-21). Participants were also asked to provide some demographic information, such as age, gender, ethnic background, and level of education; however, they could choose not to disclose these details. At the end of the survey, they were given another opportunity to decide if they would like to submit their responses or withdraw from the study, with an option to request their information to be deleted and not used in the study.

The selected participants in the first wave of recruitment and all participants who completed the online survey in the second wave of recruitment were then invited to the in-person interview. Upon arrival, participants would be reminded about the study and given information about the tasks involved in the second part of the study. Specifically, they were informed that they would be asked to discuss their goals and the steps that might be involved in order to accomplish them. Participants were reminded again about confidentiality as well as their right to withdraw from the study. Approximately half of the participants were then randomly assigned to complete a set of questionnaires, whilst the other half were asked to fill this out at the end of the session. This aimed to counterbalance the potential order effects of the tasks.

The goal-related mental simulation task was then introduced to the participants. Mental simulation is "the imitative representation of some event or series of events" (Taylor, Pham, Rivkin, & Armor, 1998, p. 430), and this can involve using information from past events, fantasising, or constructing hypothetical situations (Taylor et al., 1998). Prospective mental simulation, i.e., when individuals mentally simulate future scenarios, was used as a way to elicit goal-related plans and actions in this study, as it has been proposed to be beneficial to goal attainment because it potentially makes the steps involved clearer and the goals appear more

salient (Taylor et al., 1998). It also helps individuals to identify potential obstacles and problem-solve by trying different solutions flexibly in their mind (Taylor et al., 1998). Therefore, mental simulation task was likely to increase the chances that participants would detect the conflicts amongst their goals.

For the mental simulation task, participants were firstly asked to describe their typical weekdays, and the activities they generally engaged in. Weekends were not included as they might contain activities that were not typically allowed by participants' normal schedules. The main events from their description of their ordinary weekdays were then jotted down to form a list of eight events at the maximum. Prompts were occasionally given to help the participants generate responses or stay on track. The list of events obtained depicted the participants' day-to-day goals or strivings that were concrete enough to be considered lower-level goals in the goal hierarchy.

Participants were then asked to list the goals they would like to achieve within the relatively near future, i.e., within five years' time. They were subsequently instructed to select the most important goal and rate its characteristics. After that, participants were asked to described the steps necessary to obtain their most coveted goal. They were also encouraged to visualise themselves taking these steps in their mind and verbalise these steps. Up to eight concrete steps were extracted from the narrative, and these were considered part of the lower-level goals in the goal hierarchy.

Next, participants were asked to examine the amount of conflict and facilitation between their daily routine and the steps towards their goals using the Strivings Instrumentality Matrix (SIM). Approximately half of the participants were asked to rate the levels of conflict first, whilst the other half were instructed to start

with the levels of facilitation. Those who did not complete the questionnaire battery at the beginning were then asked to fill it out at the end. All participants were then debriefed and allowed space to ask questions about the study. Debrief forms with researchers' contact information were provided for those who would like to keep a copy.

2.5 Statistical power analysis

Fundamental to testing the study hypotheses are bivariate correlations between goal conflict, goal facilitation, ruminative thinking, and psychological distress. Therefore, the sensitivity of the current study was estimated, given the achieved sample size of n = 61 to detect bivariate associations between continuous variables. Based on the computation using the G*Power programme (Faul, Buchner, & Lang, 2009), the study had at least 80% power to detect correlation of r .34, with the risk of type I error held at 5%. This post-hoc sensitivity analysis is presented, rather than a prior power calculation because the study design had to be changed after some recruitment difficulty, as previously mentioned, and the result of the initial power analysis could no longer be used (more information on this issue is available in the Critical Appraisal section of the thesis). The achieved sample size was primarily determined by the available funding that the researcher was allowed to compensate the participants.

2.6 Analyses

All data were analysed using the SPSS (Statistical Package for the Social Sciences) Version 25.0 (IBM, 2017). The PROCESS for SPSS v3.4 (Hayes, 2018) was utilised for the mediation analysis.

Prior to testing the hypotheses previously outlined, the data were screened to examine their distribution. Histograms and tests of normality (e.g., Kolmogorov-

Smirnov and Shapiro-Wilk tests) were computed. The screening results showed that apart from ruminative thinking scores on the PTQ, other data on psychological measures (e.g., clinical symptoms and sense of control) were moderately-to-highly skewed and thus not normally distributed. Similarly for goal-related variables, most data were moderately skewed and not normally distributed, except for goal facilitation, which was found to be normally distributed. Therefore, a non-parametric test (i.e., Spearman correlation) was employed for correlational analyses.

2.7 Ethical approval

The current study was part of a broader project, and amendments to the existing ethical approval was approved by the Ethics Chair of UCL Division of Psychology and Language Sciences (CEHP/2014/519; see Appendix B).

3. Results

3.1 Participant characteristics

Table 1 presents the demographic information of 61 participants who attended both phases of the study. These participants consisted of more female than male individuals (43 and 16, respectively) and were aged between 18 and 52 years (average age = 25.61, *SD = 6.90*). The majority of these participants identified themselves as Asian (57.40%), followed by White (27.90%). The majority of participants had completed at least undergraduate studies (Bachelor's degree = 41%, Master's degree = 21.30%, Doctorate or higher = 4.90%).

As expected, participants' scores on various questionnaires included in the study indicated that this was a nonclinical sample. The average scores on all three scales on the DASS-21 fell within the normal range, as they did not meet the cut-off scores for clinical levels (depression cut off = 10, anxiety = 8, stress = 15).

Specifically, out of the possible maximum score of 42 on each scale, on average participants scored 6.39 (range: 0 – 30, *SD* = 6.50) on the depression scale, 6.16 (range: 0 – 28, *SD* = 6.32) on the anxiety scale, and 10.56 (range: 0 – 26, *SD* = 7.42) on the stress scale.

In regards to ruminative thinking as measured by the PTQ, the average score was equal to 24.77 (*SD* = 10.33; range: 0 – 46) out of the maximum score of 60, with higher scores reflecting more rumination. In terms of their sense of control, their average score on perceived constraints was 24.69 out of 56 (range: 8 – 51, *SD* = 9.88) whilst the average score on personal mastery was 21.69 out of 28 (range: 12 – 28, *SD* = 3.76). These average scores reflected that on average, individuals in the current study appeared to perceived relatively low levels of constraints in their lives and generally believed that they had control over their life situations.

Additionally, the participants in this study generally rated their personal goals to have relatively low conflict with one another, as reflected by the average score on goal conflict of 2.02 out of 5 (*SD* = .79), with the range from 1 (not at all conflicting) to 5 (very conflicting). In terms of goal facilitation, the average of 2.62 out of 5 (*SD* = .74), with the range from 1 (not at all helpful) to 5 (very helpful) indicated that these participants generally perceived their personal goals to be somewhat helpful to achieve other goals.

Table 1

Participant demographics

Characteristic	No. of participants	Percent
Gender		
Female	43	70.5%
Male	18	29.5%
Age group		
18 – 20	13	21.3%
21 – 25	24	39.2%
26 – 30	14	23.0%
31 – 35	6	9.8%
36 – 40	1	1.6%
41 – 45	0	0.0%
46 – 50	2	3.3%
51 – 55	1	1.6%
Ethnicity		
White	17	27.9%
Black (African/Caribbean)	2	3.3%
Asian	35	57.4%
Asian British	1	1.6%
Mixed	2	3.3%
Other	3	4.9%
Not specified	1	1.6%
Education		
Secondary/High school	18	29.5%
Vocational qualification	2	3.3%
Bachelor’s degree	25	41.0%
Master’s degree	13	21.3%
Doctorate or higher	3	4.9%

3.2 Hypothesis testing

3.2.1 Ruminative thinking and psychological distress (Hypothesis 1)

Ruminative thinking was found to be positively correlated with symptoms of depression ($r(59) = .38$, $p = .002$), anxiety ($r(59) = .50$, $p = <.001$), and stress ($r(59) = .53$, $p = <.001$). In regards to sense of control, individuals who ruminated more also reported higher levels of perceived constraints in their lives ($r(59) = .29$, $p = .02$). However, ruminative thinking was not significantly correlated personal mastery ($r(59) = -.12$, $p = .37$).

3.2.2 Relations between goal conflict, goal facilitation, and ruminative thinking (Hypothesis 2)

To examine the relations between goal conflict, goal facilitation, and ruminative thinking, correlation coefficients were computed. The results confirmed the hypothesis that those who experienced more goal conflict concurrently ruminated more ($r(59) = -.28$, $p = .028$), whereas levels of goal facilitation was not significantly correlated with ruminative thinking ($r(59) = .01$, $p = .92$).

3.2.3 *Relations between goal conflict, goal facilitation, and psychological distress (Hypothesis 3)*

Findings from correlational analyses revealed that goal conflict was only marginally correlated with symptoms of stress ($r(59) = .23$, $p = .08$), but was not significantly associated with depression ($r(59) = .20$, $p = .13$) and anxiety ($r(59) = .20$, $p = .13$). There were also no significant relationship between goal conflict and perceived constraints ($r(59) = .09$, $p = .47$) and between goal conflict and personal mastery ($r(59) = .05$, $p = .72$).

In regards to goal facilitation, its relations with the three scales of psychological distress were not statistically significant ($r(59) = -.16$, $p = .23$ for

depression; $r(59) = .06$, $p = .67$ for anxiety; $r(59) = -.08$, $p = .53$ for stress). The findings also indicated that goal facilitation did not significantly correlate with perceive constraints ($r(59) = -.08$, $p = .56$), and nor did it significantly relate to personal mastery ($r(59) = -.04$, $p = .75$).

3.2.4 *Ruminative thinking as a mediator between goal conflict and depression (Hypothesis 4)*

The mediating effect of ruminative thinking was examined using a bootstrap estimation approach with 5,000 resamples (Preacher & Hayes, 2004). A simple mediation analysis was still conducted despite the fact that goal conflict and depressive symptoms were not found to be significantly correlated, as the current practice of mediation analysis does not require that the non-mediation paths be statistically significant in order to compute the indirect effect of the mediator (Hayes, 2018).

The results did not support the hypothesised mediating relationship, as goal conflict did not influence the experience of depressive symptoms indirectly through its effect on ruminative thinking. As illustrated in Figure 1, participants who experienced more goal conflict did not report higher levels of ruminative thinking ($a = 2.89$), but those engaging in more ruminative thinking reported experiencing more depressive symptoms ($b = .18$). The bootstrap confidence interval for the indirect effect ($ab = .53$) based on 5,000 bootstrap samples included zero (-.50 to 1.56), contraindicating any mediating effect of ruminative thinking on the association between goal conflict and depressive symptoms. More goal conflict did not appear to be linked to more depressive symptoms independently of its impact on ruminative thinking either ($c' = 1.94$, $p = .06$).

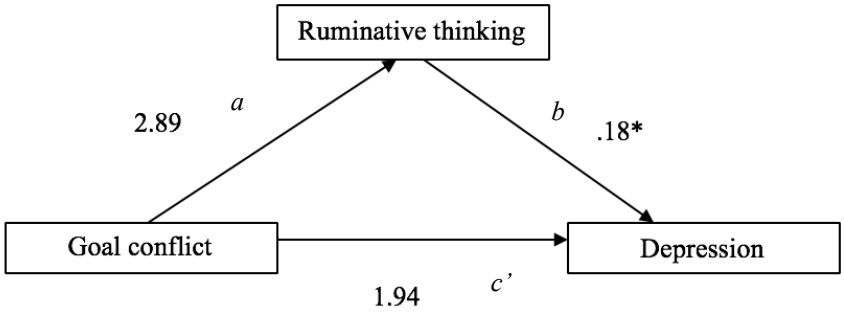

Figure 1a. Mediation analysis examining the relationship between goal conflict and depression as mediated by ruminative thinking.
* $p < .05$.

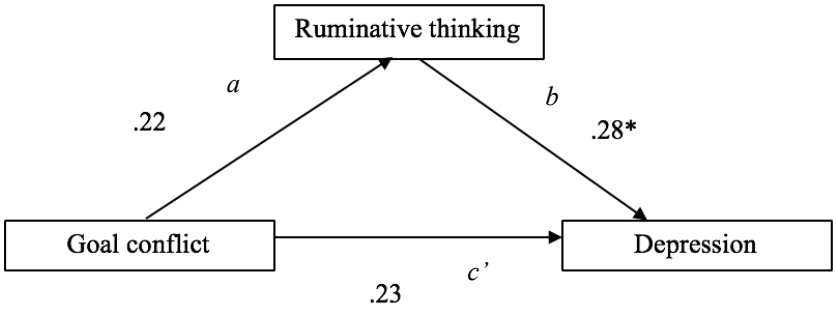

Figure 1b. Standardised regression coefficients for the relationship between goal conflict and depression as mediated by ruminative thinking.
* $p < .05$.

3.2.5 *Sense of control as a moderator between ruminative thinking and psychological distress (Hypothesis 5)*

To test whether individuals' sense of control has a moderating effect on the association between goal conflict and ruminative thinking, a multiple regression analysis was conducted. It should be noted that only perceived constraints scores of the measure on sense of control was selected to be included in the analysis, as the previous correlational analysis indicated that the personal mastery aspect of this measure was not correlated with ruminative thinking.

Prior to conducting a multiple regression analysis, relevant data were screened to identify multivariate outliers by calculating Mahalanobis Distance. One multivariate outlier was detected and subsequently removed, leaving the total sample of 60 individuals for further analysis.

Data on goal conflict, perceived constraints, and an interaction of goal conflict and perceived constraints (i.e., goal conflict x perceived constraints) were further screened, and an issue of multicollinearity was found. Therefore, the data on these scores were centred to make the data suitable for multiple regression analysis. Ruminative thinking was then entered as a dependent variable, while goal conflict, perceived constraints, and their interaction term were entered as independent variables. The findings indicated that perceived constraints did not moderate the association between goal conflict and ruminative thinking. This finding thus does not support the hypothesis that among individuals who experience high levels of goal conflicts, only those with low sense of control would engage in more ruminative thinking.

Table 2

Multiple Regression Analysis Illustrating Relationship between Goal Conflict and Ruminative Thinking as Moderated by Perceived Constraints

Variable	B	95% CI	β	*t*	*p*
(Constant)	24.87	[22.54, 27.19]		21.40	.000
Goal conflict	4.95	[1.66, 8.24]	.36	3.01	.004
Perceived Constraints	.18	[-.06, .42]	.18	1.51	.137
Goal conflict x Perceived Constraints	.30	[-.07, .67]	.19	1.64	.106

4. Discussion

4.1 Summary of findings

The study aimed to examined the relations between goal conflicts, ruminative thinking, and psychological distress. Some analyses yielded expected results while others did not support study hypotheses. These results, nonetheless, contributed new information to the existing literature.

As evidence for relationship between rumination and psychological distress, the current findings indicated that individuals who reported more ruminative thinking also concurrently experienced more symptoms of depression, anxiety, and stress. They also perceived more constraints in their lives and felt less in control of their situations. These findings are in congruence with the exiting literature indicating that ruminative thinking is unconstructive (Watkins, 2008). The findings did not specify the causality between the relations as these data were obtained cross-sectionally. It should be noted that the measure used to assess ruminative thinking in this study, the PTQ, differed from that commonly used in studies on rumination, the ruminative scale of the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Marrow, 1991). Specifically, the PTQ emphasised the repetitive aspect of the ruminative process, whereas the RSQ focused on individuals' ruminative thoughts on depressive symptoms. Thus, the current findings correspond to the existing research on negative repetitive thinking as a transdiagnostic phenomenon that is involved in different emotional difficulties (Arditte, Shaw, & Timpano, 2016; McEvoy, Mahoney, & Moulds, 2010).

As expected (Hypothesis 2), individuals who reported more conflicts between their goals also engaged in more ruminative thinking. This provides some support for the Goal Progress Theory of Rumination (Martin & Tesser, 1996) which proposes

that when individuals perceive insufficient progress towards their goals, they are likely to ruminate. However, with the correlational nature of the analysis, the direction of the relation between goal conflict and rumination cannot be verified by the present findings.

Unexpectedly, the findings revealed that those who experienced more goal conflict did not concurrently report higher levels of depression, anxiety, perceived constraints, and personal mastery. They appeared to experience slightly higher symptoms of stress; however, this relationship was small and only trended towards significance. Although these findings were not in congruence with what the existing literature generally suggests in terms of the relationship between goal conflict and psychological distress, these results corresponded to the review findings showing that the evidence supporting the association between goal conflict and psychological distress is weaker than that of conflict between goals at higher levels (e.g., ambivalence, self-discrepancies) (Kelly et al., 2015). One possible explanation for the lack of significant relationship between goal conflict and the psychological distress measures in the current study might be due to the small sample size, as well as the nonclinical nature of the current sample. There is limited variability within data, as the majority of the scores of psychological distress fell within normal range, and most individuals experienced little goal conflict.

The lack of significant associations between goal conflict and psychological distress measures may be due to the nature of the goal conflict assessed in the present study. The goals under investigation were concrete, low-level goals in the goal hierarchy, and past research has shown that despite conflicts amongst low-level goals are linked to poor well-being, the effect is smaller than conflicts amongst goals at the higher levels (Kelly et al., 2015). Therefore, this may partially explain the non-

significant findings, especially when coupled with the small sample size in the present study.

Another potential alternative explanation is that the relationship between goal conflict and psychological distress may be less straightforward than initially expected. In their study with student sample, Kelly and colleagues (2011) found an interaction effect of goal conflict and ambivalence on depression. Specifically, the findings suggested that individuals who reported less conflict between their goals while feeling ambivalent (i.e., having contradictory feelings towards a goal such that a successful pursuit of a particular goal may result in unhappiness) reported more depressive symptoms concurrently (Kelly, Mansell, & Wood, 2011). The authors suggest that in such a circumstance, ambivalence becomes distressing as it may result from less conscious motivational conflict (Kelly et al., 2011). However, this finding was not replicated by Moberly and Dickson (2018), who did not find such an interaction effect of goal conflict and ambivalence. However, they found that those who reported more goal conflict but low ambivalence would experience a greater decrease of anxiety one month later (Moberly & Dickson, 2018). Thus, to examine the relationship between goal conflict and psychological distress, goal conflict might be better studied alongside ambivalence, rather than in isolation.

Findings from the mediation analysis yielded an unexpected result, as ruminative thinking was not found to mediate the impact of goal conflict on depression. This non-significant finding might partly be due to the current sample size and the non-clinical nature of the sample. Alternatively, there is a possibility that ruminative thinking is more appropriately conceptualised as a covariate, rather than a mediating factor. As stated previously, due to the cross-sectional nature of the current study as well as the significant correlation between goal conflict and ruminative

thinking reported earlier, it could be argued that individuals with higher ruminative thinking may negatively examine their various goals repeatedly, they may be more likely to notice the incompatibility between their goals, regardless of how minor or insignificant these conflicts may appear to others. The more conflicts between their goals are detected, the more difficult their goals appear to the individuals, and these individuals may end up engaging in further ruminative thinking and increasing the likelihood of discovering more conflicts amongst their goals. If goal conflict and ruminative thinking are merely covariates, there might be other variables that potentially explain how they link to depression.

The study's hypothesis regarding sense of control as a moderator between goal conflict and ruminative thinking was not supported by the findings. In the current study, individuals' levels of perceived constraints had no moderating impact on the likelihood of individuals with higher goal conflicts to ruminate. This finding does not support Wanke and Schmid's (1996) proposition that those with less perceived control are more likely to ruminate. The lack of significant result in the current study might partially be explained by the fact that participants in the current study generally reported low perceived constraints, and as a group, they felt in control of their lives. The results might be different in samples that report lower sense of control. Additionally, this non-significant finding might have been affected by the sample size of the current study, as moderation analyses typically require large samples; therefore, this finding should be interpreted with caution.

4.2 Clinical Implications

Based on the current findings, there are some clinical implications that can be suggested. As goal conflict is associated with ruminative thinking, a negative repetitive thinking that has been empirically found to link to various psychological

symptoms (Arditte, Shaw, & Timpano, 2016; McEvoy, Mahoney, & Moulds, 2010), exploration of potential goal conflict may be of benefit in therapeutic work. Some goals may appear evidently contradictory, while others might require an effortful consideration, as some goals, such as meta-goals, may not be clearly outlined in clinical sessions. According to Cooper (2018), meta-level goals refer to goals that are related to goal attainment or its process. For instance, an individual might have a goal of obtaining every goal they ever wish, or not having uncompleted goals. Cooper (2018) further suggests that meta-goals also include goals that are related to the desire for competence, as well as goals that are related to emotions. These meta-goals are crucial in clinical work, as they may contribute to the vicious cycles between goals (Cooper, 2018), and this could be present in the form of goal conflict. For instance, clients who hoard may have a therapy goal of decluttering their living spaces; however, they may have an emotion-related goal of not wanting to feel unhappy that they may not have expressed explicitly. The process of decluttering may lead to their short-term unhappiness from parting from their valued items, potentially making them perceive that they fail to obtain their goal of being happy. The conflict between these goals may then stall the progress towards their therapy goal. Thus, exploring potential goal conflict may be a helpful step that can be incorporated into existing evidence-based interventions such as CBT. For example, when depressed clients struggle to complete a thought record or homework, which could further exacerbate their sense of self-worth, while exploring negative automatic thoughts that might prevent them from fulfilling their tasks, therapists could delve further to see if those thoughts reflect any potentially incompatible goals. This information may be useful in planning treatments properly, increasing the chances that clients can break away from their maintenance cycles.

Furthermore, as suggested by Martin and Tesser (1996), individuals may ruminate when they do not make sufficient levels of progress towards their goals, so the individuals may end up ruminating rather than taking necessary actions to achieve their therapy goals. Thus, identifying conflicts amongst clients' goals may lower the chances that clients will engage in ruminative thinking, which may potentially predispose them to further psychological difficulties. Therefore, in clinical practice, it is of great importance to explore the possibility of goal conflict in order to help clients set or amend therapy goals to reflect what they truly want.

4.3 Limitations and directions for future research

There are several limitations that should be considered in the current study. The participants in the present study were nonclinical sample, and therefore, the current findings may not apply to individuals who experience clinical levels of psychological symptoms, such as depression. Existing literature suggest that clinical and nonclinical samples substantially differ in terms of levels of goal conflict and ruminative thinking they experience. Specifically, when compared to non-depressed individuals, depressed individuals reported higher conflict within their own goals and values (Stangier, Ukrow, Schermelleh-Engel, Grabe, & Lauterbach, 2007).

In terms of ruminative thought, Samtani and colleagues (2018) found that currently depressed and formerly depressed individuals reported more repetitive negative thinking than individuals who had never been depressed, whilst the levels of repetitive thinking in the former two groups did not significantly differ. Nolen-Hoeksema and Morrow (1993) also found that the depressed individuals would experience more depressive feelings when asked to ruminate about their feelings and themselves in comparison to when they were asked to engage in distraction. However, non-depressed individuals did not show any differences in their affect

whether they engaged in ruminative or distracting tasks. Therefore, even though the result from the current study did not support that ruminative thinking mediates the relationship between goal conflict and depressive symptoms, the results might differ in a clinical sample, and thus, it might be of interest for future research to replicate the current study with clinical samples.

Another limitation of the current study is the omission of verifying the types of goals that participants generated. The goals identified in the present study were personally described as the most important goals by the individuals; however, there was no further investigation to determine whether these goals were intrinsically or extrinsically motivated, of if they were pursued out of individuals' own volition or because these individuals felt pressured to fulfil them, and these distinctions could have affected the results. Generally, research has shown that pursuing intrinsic goals are related to better psychological well-being, whereas those who pursue extrinsic goals are more likely to experience lower levels of physical and psychological well-being (Cooper, 2018). Thus, if individuals' conflicting goals are mostly intrinsic they may respond differently than when their goals are mostly extrinsic.

Finally, the present study also did not take individuals' ethnic backgrounds into consideration, as research has suggested that different types of goals also lead to different responses depending on individuals' ethnicities. Oishi and Diener (2009) found that European Americans experienced better subjective well-being upon realising the goals they independently pursued (i.e., pursuing them for enjoyment), whereas Asian Americans reported higher subjective well-being when they attained goals that they pursued to make their parents and friends happy. Thus, individuals from different cultural-ethnic backgrounds may perhaps experience goal conflict

differently depending on the types of goals in question, and this factor should be taken into consideration in future studies.

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Part 3: Critical Appraisal

Introduction

In this section, I will reflect on my experience of conducting this research project in two parts. The first part will focus on my experience of the research process, as well as aspects that did not go as planned and those that could have been done differently. The second part of the critical appraisal will revolve around my personal experience with goal conflict while carrying out this project.

Part I: Reflection on the research process

Prior to this project, my research experience was relatively limited despite the fact that I had already completed a Master's degree before starting DClinPsy. For my past research projects at the undergraduate and Master's levels, I utilised data sets that had been collected by other students in the same laboratories. I did have opportunities to help other students collect data for their projects, but never for my own. Therefore, this was the first time I worked on a project from start to finish, and this presented a good learning opportunity for me.

Planning stage

I quickly learned that there were various decisions to be made in designing a study. I chose this project because it involved ruminative thinking, and my Master's thesis project was focused on depressive rumination. I later realised that rumination as defined in Goal Progress Theory of Rumination (Martin, Shrira, & Startup, m2004; Martin & Tesser, 1996) was much broader and less negative than depressive rumination, which refers to repetitive thinking that focuses on symptoms of distress, as well as their potential causes and consequences (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Selecting a measure for ruminative thinking in the present study consequently involved careful consideration to ensure that the measure would

assess the repetitive nature of the thinking and put less emphasis on the content of the repetitive thoughts. Initially, McIntosh and Martin's (1992) Rumination Inventory was considered, as this employed the same definition of rumination as in the Goal Progress Theory. However, to my knowledge, this inventory had not been commonly used in previous research, as most published studies appeared to utilise other measures of rumination. Attention had also been drawn to the fact that the Rumination Inventory might not assess a unitary construct, and because it only consists of 10 items, this might affect its reliability (Harrington & Blankenship, 2002). Another measure under consideration was the Repetitive Thinking Questionnaire (RTQ) developed by McEvoy and colleagues (2010). This questionnaire was designed to assess negative thinking with an emphasis on the repetition of such thoughts. However, the questionnaire contains 33 items, so this appeared relatively long. I therefore decided not to utilise the RTQ for the current study because its length might lower the likelihood that participants would start and complete the questionnaire (Galesic & Bsnjak, 2009), especially when there were a few other questionnaires besides ruminative thinking to be filled in as well.

The Perseverative Thinking Questionnaire (PTQ; Ehring, Zetsche, Weidacker, Wahl, Schonfeld, & Ehlers, 2011) was subsequently considered as a potential measure for the current study. The measure was developed to assess repetitive thinking as a transdiagnostic process, and thus it does not specify the content of the repetitive thoughts. It is relatively brief, as it contains only 15 items, but it was shown to have high internal consistencies and reliability (Ehring et al., 2011). The instruction of the measure requires respondents to provide ratings based on their experience of repetitive thinking when they think about "negative experiences or problems." This raised an issue as to whether the instructions would

inadvertently trigger extreme negative experiences such as traumas. After a discussion with my supervisor, I emailed the main author, Dr. Ehring, for consultation. He stated in his reply that, to his knowledge, there had not been evidence that the PTQ generated that triggering effect, as it asks respondents to describe the way they think about their negative experiences rather than the negative experiences themselves (T. Ehring, personal communication, April 20, 2017). Moreover, findings from a meta-analysis study show that even though immediate psychological distress can result from participating in research related to traumas, the distress adult participants experience is generally not extreme, and participants typically report positive experience from taking part in trauma-related research (Jaffe, DiLillo, Hoffman, Haikalis, & Dykstra, 2015). Therefore, the PTQ was selected as a measure for the current study.

Selecting a measure of depressive symptoms also involved careful consideration. Several measures to assess depression exist, such as the Beck Depression Inventory-II (BDI-II), the Centre for Epidemiologic Studies Depression Scale (CES-D), the Hospital Anxiety and Depression Scale (HADS), and the Patient Health Questionnaire (PHQ-9). Therefore, the selection process required attentive thinking. Full-length questionnaires were preferred over screening tools, as they would be more comprehensive. Copyright issues were taken into consideration, and some measures were deemed unsuitable as a result. My supervisor then suggested the Depression Anxiety Stress Scales (DASS), as this measure is publicly available and can be used for research without permission (Lovibond, 2018). Moreover, the DASS-21 was deemed appropriate for the present study, as it also assesses other forms of psychological distress, i.e., anxiety and stress, and thus I would be able to examine the relationships between these variables and ruminative thinking as well, as existing

literature suggests that ruminative thinking is a transdiagnostic process pertinent in several psychological disorders (Arditte, Shaw, & Timpano, 2016; McLaughlin & Nolen-Hoeksema, 2011).

Selecting a survey platform suitable for the study also involved painstaking exploration of options and a series of consultation. Up until that point, I had only used SurveyMonkey for online surveys in my clinical work, so my knowledge on the available platforms was rather limited. My supervisor was familiar with Opinio, which would store data on UCL servers and thus ensure that the study would comply to the Data Protection Act 1998. However, Opinio appeared to have limitations when it came to user interface design and within-section customisation. Other options were then explored, and Qualtrics was considered. However, an issue was raised regarding the possibility of data being stored outside of the UK if someone abroad happened to receive the study link and proceeded to fill out the online survey. Email correspondence was initiated with the Qualtrics Support team, and they reassured me that regardless of where the respondents complete the survey, the data for my UCL account would be stored in the EU data centre in Ireland (Qualtrics Support, personal communication, May 15, 2017).

I further sought consultation from the UCL Data Safe Haven team. An issue was raised in regards to the potentially sensitive nature of the data, as I would be collecting information on psychological symptoms. A more secure platform, REDCap, was recommended to me, and I attended the training only to find out that the platform would be very difficult to customise, and it would be unlikely that the staff could provide further individual support. I discussed all these possibilities with my supervisor, and we finally arrived at the decision that we would use Opinio for

the present study, as it provided relatively high security and sufficient flexibility in terms of customisation.

On the one hand, all the decision making during the planning stage could be frustrating at times, as I felt the pressure of time to proceed to the data collection stage. On the other hand, this provided me an opportunity to make my own decisions for my own project, as I had previously only worked with already existing data sets and thus had no input in designing the studies. I learned to appreciate the amount of thoughts that had to be put into every detailed step of the planning process of research.

Recruitment issues

After the data collection period had begun, an issue with recruitment arose, which led to an adjustment of the study procedure. Originally, it was planned that, based on the scores obtained through the online survey, only participants who scored in the lower and upper quartiles on the ruminative thinking questionnaire would be invited for the second stage of the study. This selection would allow a clear comparison between those who rarely ruminated and those who engaged in rumination frequently. Consequently, in the first wave of recruitment, 45 out of 86 individuals who completed the online survey were later invited for the in-person interview. However, only nine participants actually attended. This high attrition rate was likely to result from a three-month gap between the two phases, and the lack of incentive for individuals to complete both parts, as anyone who completed the online survey would be eligible for winning one of the five cash prizes. The latter issue had been predicted prior to the start of the recruitment; however, I thought it would be unfair if those individuals whose ruminative thinking scores fell in the middle

quartile were excluded from winning a cash prize merely because their ruminative thinking scores were not extreme enough.

As a result of the high drop-out rate, the study had to be adjusted so as to ensure that I would have enough participants for my study. Based on the power analysis prior to the beginning of the study, a sample size of 90 individuals was required. My supervisor and I agreed that for the second wave of recruitment, all participants who completed the online survey would be invited to the in-person interview, and the interval between the online survey and interview was substantially reduced to a minimum of one week. Every participant would be monetarily compensated for their time only when they attended the interview. This adjustment was relatively effective, and most participants later attended the interviews in person. However, since the wait between the online survey and interview was greatly shortened, the original plan of examining relationships between some variables longitudinally was discarded. Furthermore, due to the limited funding, I could only aim for approximately 50 participants. This meant that my sample would be smaller than my original plan, and the findings would have to be interpreted with caution.

Another issue that contributed to the limit of generalizability of the results was the use of convenience sample, who were not representative of the general non-clinical population. Similarly to many studies in psychology, I speculated that my sample would consist of more female than male participants, and many of them might be international students who signed up on the UCL Psychology Subject Pool website to earn some money during their studies here. These speculations were not unwarranted, as the final sample was composed of 43 females and only 16 males, and the majority of them identified themselves as Asians (57.40%), whereas according to the 2011 Census, 80.50% of the population of England and Wales was White-British

(Office for National Statistics, 2011). This meant that the generalizability of the findings from this study was limited, as the present sample did not appear representative of the general population.

The quest for interview rooms

The availability of space for conducting the study subsequently proved to be another issue. As a DClinPsy trainee, I did not belong to any particular research team with its own laboratory space, and this affected my ability to book the participants in for the in-person interviews. This lack of assigned laboratory was vastly different from my research experience at the undergraduate and Master's levels in Canadian universities. From my previous experience, being research students meant that each student would belong to a research team with its own physical laboratory. Finding space for one's own project was relatively easy as long as one coordinated with other students in the same lab. At UCL, I learned that as a postgraduate student, I could only book three study rooms on campus at a time, and any other bookings had to be done by my supervisor. This proved to be more complicated than it should, as there was also waiting time for room booking confirmation from UCL Estates, as well as last-minute rescheduling and cancellations by my participants. In the end, I resorted to asking my classmates to use their room booking quotas to reserve study rooms for my interviews. With their help, there were enough bookings for my study. However, having different study rooms for my interviews meant that there were some external factors that I did not foresee, such as background noises, unlockable doors that resulted in other students' entering the study rooms while the study was in progress, or the difficulty in locating certain study rooms on campus that resulted in participants' tardiness. These unforeseen incidents required me to be able to

problem-solve on the spot and make sure that the interviews go as smoothly as realistically possible.

Too low on the goal hierarchy?

As the data collection went on, I started to wonder whether the goals under investigation in the current study were too low on the goal hierarchy. Higher-level goals are those that are more abstract, reflecting "why" or underlying reasons to complete the goals at the lower levels, which are more concrete and reflect the "how" aspect of realising the goals (Carver & Scheier, 1998; Alsawy, Mansell, Carey, McEvoy, & Tai, 2014). In my study, the participants were asked about their daily routines and the most coveted goal that they would like to attain within the next five years. Then, they were asked to rate the conflict and facilitation levels between their regular routines and the steps they had to take to achieve their goals. As most participants were students, their daily routines involved basic self-care routines and studying, and their most coveted goals tended to be related to academic achievements. For some individuals, their daily routines appeared to bear very little relevance to their goal attainment process, and they seem confused while filling out the goal conflict/facilitation matrix forms. I started to wonder if participants' reactions would be different if I were to ask them to examine the conflict and facilitation levels between steps necessary to achieve different goals instead. This would conform to the general understandings of goals by layperson's terms, instead of looking at daily routines that are relatively low on the goal hierarchy and are unlikely to be considered "goals" in the real world. However, as the data collection had already been started for some time, I decided not to make any changes; otherwise, the data that had been collected up to that point would be considered unusable.

In retrospect, running a proper pilot study might have helped me identify this issue much sooner, and the methodology could be adjusted accordingly. Alternatively, I could have added an item to assess participants' ambivalence, which is believed to reflect a presence of conflict at a higher level, indicating an approach-avoidance conflict or within-striving conflict (Kelly, Mansell, & Wood, 2015). In existing literature, ambivalence has been measured by a single item taken from the Striving Assessment Scale (SAS; Emmons, 1986), asking the respondents to rate how unhappy they would be if they succeeded in obtaining their specific goal. Adding this one item to assess the levels of ambivalence would have provided more information of goal conflict at the higher level and possible associations with other psychological variables included in the current study. It would have also allowed me to compare the strengths of the relationship between goal conflict and psychological distress and that between ambivalence and psychological distress.

Overall impression of the research process

In retrospect, my experience on this project was an invaluable learning experience. It allowed me to realise how much thought would be involved in decision making and planning all the small steps throughout a study. Unforeseen issues could arise as the study progressed, and subsequent amendments could be frustrating at times. Nevertheless, it provided me with opportunities to learn about research process and employ my problem-solving skills to make sure the study could continue with as little hiccups as realistically possible.

Part II: Reflection on personal goal conflict while conducting this project

Conducting this research project on goal conflict was an interesting experience at a personal level, as it constantly reminded me of my own ambivalence

towards completing the DClinPsy degree. My situation might be rather unique compared to many trainees who had decided to apply to this course because their passion lay in the clinical field. I had always been aware that social psychology would fit my interests better, but clinical psychology was a pragmatic choice for me. The fact that I was funded by the government of my home country also meant that ideally, I would work in the field directly related to my degree after graduation.

As I progressed through the course, my doubts about a career in clinical psychology grew stronger, possibly influenced by my burnout that had not been identified at the time. Research has suggested that ambivalence is likely to occur when individuals pursue goals that are extrinsically motivated (Kelly et al., 2015), and this resonated with me. My sense of ambivalence about DClinPsy continued to heighten, as I knew obtaining this degree meant that it would be extremely likely for me to end up working full-time as a clinical psychologist as a repayment of my scholarship.

Whilst conducting this research project constantly reminded me of my own ambivalence towards the degree, reading the literature on the subject also provided me potential ideas to resolve the issue. Michalak and colleagues (2004) suggested that when conflicting goals compete for resources or the strategies to obtain these goals are mutually exclusive, this kind of conflict can be resolved by finding alternative ways to acquire these goals. However, to resolve goals that are in conflict because the end states are mutually exclusive, it might involve reformulating goals, modifying goal hierarchy, or disengaging from goals that are deemed irreconcilable (Michalak, Heidenreich, & Hoyer, 2004). Goal disengagement has been shown that it can be associated with high subjective well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003), and the thought of terminating my studies did cross my mind

several times over the DClinPsy course. However, this option would lead to further complications with my scholarship, so it was not an optimal solution.

Exploring goals at different levels might facilitate goal reformulation and goal hierarchy modification. Method of Levels (MOL) is conceptualised as a form of Cognitive Behaviour Therapy (CBT) and can be employed transdiagnostically (Mansell, Carey, & Tai, 2013). Part of the work in MOL is to shift one's awareness to higher-level goals that might be pertinent to current problems, as this upward exploration would provide opportunities to consider options for different lower-level means to attain the higher-level goals, potentially leading to a reorganization of one's goals (Mansell et al., 2013). I found this technique to be helpful to a certain degree, as I came to a conclusion that a DClinPsy degree did not have to be tightly linked to my identity. Instead, I could consider myself a psychologist or a behavioural scientist and apply some transferrable skills to my future work. I also learned that for some conflicts that could not be resolved, it might be helpful to acknowledge and accept that these conflicts are part of life that one could live with, rather than something that one needs to persistently try to solve (Michalak et al., 2004).

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Appendices

Appendix A

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (NHLBI)

Criteria	Yes	No	Other (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or levels, did the study examine different levels of the exposure as related to the outcome (e.g., categories of			

exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			
13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

* CD, cannot determine; NA, not applicable; NR, not reported

Quality Rating (Good, Fair, or Poor)

Quality Rating (Good, Fair, or Poor):
Additional Comments (If POOR, please state why):

Guidance for Assessing the Quality of Observational Cohort and Cross-Sectional Studies

The guidance document below is organized by question number from the tool for quality assessment of observational cohort and cross-sectional studies.

Question 1. Research question

Did the authors describe their goal in conducting this research? Is it easy to understand what they were looking to find? This issue is important for any scientific paper of any type. Higher quality scientific research explicitly defines a research question.

Questions 2 and 3. Study population

Did the authors describe the group of people from which the study participants were selected or recruited, using demographics, location, and time period? If you were to conduct this study again, would you know who to recruit, from where, and from what time period? Is the cohort population free of the outcomes of interest at the time they were recruited?

An example would be men over 40 years old with type 2 diabetes who began seeking medical care at Phoenix Good Samaritan Hospital between January 1, 1990 and December 31, 1994. In this example, the population is clearly described as: (1) who (men over 40 years old with type 2 diabetes); (2) where (Phoenix Good Samaritan Hospital); and (3) when (between January 1, 1990 and December 31, 1994). Another example is women ages 34 to 59 years of age in 1980 who were in the nursing profession and had no known coronary disease, stroke, cancer, hypercholesterolemia, or diabetes, and were recruited from the 11 most populous States, with contact information obtained from State nursing boards.

In cohort studies, it is crucial that the population at baseline is free of the outcome of interest. For example, the nurses' population above would be an appropriate group in which to study incident coronary disease. This information is usually found either in descriptions of population recruitment, definitions of variables, or inclusion/exclusion criteria.

You may need to look at prior papers on methods in order to make the assessment for this question. Those papers are usually in the reference list.

If fewer than 50% of eligible persons participated in the study, then there is concern that the study population does not adequately represent the target population. This increases the risk of bias.

Question 4. Groups recruited from the same population and uniform eligibility criteria

Were the inclusion and exclusion criteria developed prior to recruitment or selection of the study population? Were the same underlying criteria used for all of the subjects involved? This issue is related to the description of the study population,

above, and you may find the information for both of these questions in the same section of the paper.

Most cohort studies begin with the selection of the cohort; participants in this cohort are then measured or evaluated to determine their exposure status. However, some cohort studies may recruit or select exposed participants in a different time or place than unexposed participants, especially retrospective cohort studies–which is when data are obtained from the past (retrospectively), but the analysis examines exposures prior to outcomes. For example, one research question could be whether diabetic men with clinical depression are at higher risk for cardiovascular disease than those without clinical depression. So, diabetic men with depression might be selected from a mental health clinic, while diabetic men without depression might be selected from an internal medicine or endocrinology clinic. This study recruits groups from different clinic populations, so this example would get a "no."

However, the women nurses described in the question above were selected based on the same inclusion/exclusion criteria, so that example would get a "yes."

Question 5. Sample size justification

Did the authors present their reasons for selecting or recruiting the number of people included or analyzed? Do they note or discuss the statistical power of the study? This question is about whether or not the study had enough participants to detect an association if one truly existed.

A paragraph in the methods section of the article may explain the sample size needed to detect a hypothesized difference in outcomes. You may also find a discussion of power in the discussion section (such as the study had 85 percent power to detect a 20 percent increase in the rate of an outcome of interest, with a 2-sided alpha of 0.05). Sometimes estimates of variance and/or estimates of effect size are given, instead of sample size calculations. In any of these cases, the answer would be "yes."

However, observational cohort studies often do not report anything about power or sample sizes because the analyses are exploratory in nature. In this case, the answer would be "no." This is not a "fatal flaw." It just may indicate that attention was not paid to whether the study was sufficiently sized to answer a prespecified question– i.e., it may have been an exploratory, hypothesis-generating study.

Question 6. Exposure assessed prior to outcome measurement

This question is important because, in order to determine whether an exposure causes an outcome, the exposure must come before the outcome.

For some prospective cohort studies, the investigator enrolls the cohort and then determines the exposure status of various members of the cohort (large epidemiological studies like Framingham used this approach). However, for other cohort studies, the cohort is selected based on its exposure status, as in the example above of depressed diabetic men (the exposure being depression). Other examples include a cohort identified by its exposure to fluoridated drinking water and then compared to a cohort living in an area without fluoridated water, or a cohort of

military personnel exposed to combat in the Gulf War compared to a cohort of military personnel not deployed in a combat zone.

With either of these types of cohort studies, the cohort is followed forward in time (i.e., prospectively) to assess the outcomes that occurred in the exposed members compared to nonexposed members of the cohort. Therefore, you begin the study in the present by looking at groups that were exposed (or not) to some biological or behavioral factor, intervention, etc., and then you follow them forward in time to examine outcomes. If a cohort study is conducted properly, the answer to this question should be "yes," since the exposure status of members of the cohort was determined at the beginning of the study before the outcomes occurred.

For retrospective cohort studies, the same principal applies. The difference is that, rather than identifying a cohort in the present and following them forward in time, the investigators go back in time (i.e., retrospectively) and select a cohort based on their exposure status in the past and then follow them forward to assess the outcomes that occurred in the exposed and nonexposed cohort members. Because in retrospective cohort studies the exposure and outcomes may have already occurred (it depends on how long they follow the cohort), it is important to make sure that the exposure preceded the outcome.

Sometimes cross-sectional studies are conducted (or cross-sectional analyses of cohort-study data), where the exposures and outcomes are measured during the same timeframe. As a result, cross-sectional analyses provide weaker evidence than regular cohort studies regarding a potential causal relationship between exposures and outcomes. For cross-sectional analyses, the answer to Question 6 should be "no."

Question 7. Sufficient timeframe to see an effect

Did the study allow enough time for a sufficient number of outcomes to occur or be observed, or enough time for an exposure to have a biological effect on an outcome? In the examples given above, if clinical depression has a biological effect on increasing risk for CVD, such an effect may take years. In the other example, if higher dietary sodium increases BP, a short timeframe may be sufficient to assess its association with BP, but a longer timeframe would be needed to examine its association with heart attacks.

The issue of timeframe is important to enable meaningful analysis of the relationships between exposures and outcomes to be conducted. This often requires at least several years, especially when looking at health outcomes, but it depends on the research question and outcomes being examined.

Cross-sectional analyses allow no time to see an effect, since the exposures and outcomes are assessed at the same time, so those would get a "no" response.

Question 8. Different levels of the exposure of interest

If the exposure can be defined as a range (examples: drug dosage, amount of physical activity, amount of sodium consumed), were multiple categories of that exposure assessed? (for example, for drugs: not on the medication, on a low dose, medium dose, high dose; for dietary sodium, higher than average U.S. consumption, lower

than recommended consumption, between the two). Sometimes discrete categories of exposure are not used, but instead exposures are measured as continuous variables (for example, mg/day of dietary sodium or BP values).

In any case, studying different levels of exposure (where possible) enables investigators to assess trends or dose-response relationships between exposures and outcomes–e.g., the higher the exposure, the greater the rate of the health outcome. The presence of trends or dose-response relationships lends credibility to the hypothesis of causality between exposure and outcome.

For some exposures, however, this question may not be applicable (e.g., the exposure may be a dichotomous variable like living in a rural setting versus an urban setting, or vaccinated/not vaccinated with a one-time vaccine). If there are only two possible exposures (yes/no), then this question should be given an "NA," and it should not count negatively towards the quality rating.

Question 9. Exposure measures and assessment

Were the exposure measures defined in detail? Were the tools or methods used to measure exposure accurate and reliable–for example, have they been validated or are they objective? This issue is important as it influences confidence in the reported exposures. When exposures are measured with less accuracy or validity, it is harder to see an association between exposure and outcome even if one exists. Also as important is whether the exposures were assessed in the same manner within groups and between groups; if not, bias may result.

For example, retrospective self-report of dietary salt intake is not as valid and reliable as prospectively using a standardized dietary log plus testing participants' urine for sodium content. Another example is measurement of BP, where there may be quite a difference between usual care, where clinicians measure BP however it is done in their practice setting (which can vary considerably), and use of trained BP assessors using standardized equipment (e.g., the same BP device which has been tested and calibrated) and a standardized protocol (e.g., patient is seated for 5 minutes with feet flat on the floor, BP is taken twice in each arm, and all four measurements are averaged). In each of these cases, the former would get a "no" and the latter a "yes."

Here is a final example that illustrates the point about why it is important to assess exposures consistently across all groups: If people with higher BP (exposed cohort) are seen by their providers more frequently than those without elevated BP (nonexposed group), it also increases the chances of detecting and documenting changes in health outcomes, including CVD-related events. Therefore, it may lead to the conclusion that higher BP leads to more CVD events. This may be true, but it could also be due to the fact that the subjects with higher BP were seen more often; thus, more CVD-related events were detected and documented simply because they had more encounters with the health care system. Thus, it could bias the results and lead to an erroneous conclusion.

Question 10. Repeated exposure assessment

Was the exposure for each person measured more than once during the course of the study period? Multiple measurements with the same result increase our confidence

that the exposure status was correctly classified. Also, multiple measurements enable investigators to look at changes in exposure over time, for example, people who ate high dietary sodium throughout the follow-up period, compared to those who started out high then reduced their intake, compared to those who ate low sodium throughout. Once again, this may not be applicable in all cases. In many older studies, exposure was measured only at baseline. However, multiple exposure measurements do result in a stronger study design.

Question 11. Outcome measures

Were the outcomes defined in detail? Were the tools or methods for measuring outcomes accurate and reliable–for example, have they been validated or are they objective? This issue is important because it influences confidence in the validity of study results. Also important is whether the outcomes were assessed in the same manner within groups and between groups.

An example of an outcome measure that is objective, accurate, and reliable is death–the outcome measured with more accuracy than any other. But even with a measure as objective as death, there can be differences in the accuracy and reliability of how death was assessed by the investigators. Did they base it on an autopsy report, death certificate, death registry, or report from a family member? Another example is a study of whether dietary fat intake is related to blood cholesterol level (cholesterol level being the outcome), and the cholesterol level is measured from fasting blood samples that are all sent to the same laboratory. These examples would get a "yes." An example of a "no" would be self-report by subjects that they had a heart attack, or self-report of how much they weigh (if body weight is the outcome of interest).

Similar to the example in Question 9, results may be biased if one group (e.g., people with high BP) is seen more frequently than another group (people with normal BP) because more frequent encounters with the health care system increases the chances of outcomes being detected and documented.

Question 12. Blinding of outcome assessors

Blinding means that outcome assessors did not know whether the participant was exposed or unexposed. It is also sometimes called "masking." The objective is to look for evidence in the article that the person(s) assessing the outcome(s) for the study (for example, examining medical records to determine the outcomes that occurred in the exposed and comparison groups) is masked to the exposure status of the participant. Sometimes the person measuring the exposure is the same person conducting the outcome assessment. In this case, the outcome assessor would most likely not be blinded to exposure status because they also took measurements of exposures. If so, make a note of that in the comments section.

As you assess this criterion, think about whether it is likely that the person(s) doing the outcome assessment would know (or be able to figure out) the exposure status of the study participants. If the answer is no, then blinding is adequate. An example of adequate blinding of the outcome assessors is to create a separate committee, whose members were not involved in the care of the patient and had no information about the study participants' exposure status. The committee would then be provided with copies of participants' medical records, which had been stripped of any potential

exposure information or personally identifiable information. The committee would then review the records for prespecified outcomes according to the study protocol. If blinding was not possible, which is sometimes the case, mark "NA" and explain the potential for bias.

Question 13. Follow-up rate

Higher overall follow-up rates are always better than lower follow-up rates, even though higher rates are expected in shorter studies, whereas lower overall follow-up rates are often seen in studies of longer duration. Usually, an acceptable overall follow-up rate is considered 80 percent or more of participants whose exposures were measured at baseline. However, this is just a general guideline. For example, a 6-month cohort study examining the relationship between dietary sodium intake and BP level may have over 90 percent followup, but a 20-year cohort study examining effects of sodium intake on stroke may have only a 65 percent followup rate.

Question 14. Statistical analyses

Were key potential confounding variables measured and adjusted for, such as by statistical adjustment for baseline differences? Logistic regression or other regression methods are often used to account for the influence of variables not of interest.

This is a key issue in cohort studies, because statistical analyses need to control for potential confounders, in contrast to an RCT, where the randomization process controls for potential confounders. All key factors that may be associated both with the exposure of interest and the outcome–that are not of interest to the research question–should be controlled for in the analyses.

For example, in a study of the relationship between cardiorespiratory fitness and CVD events (heart attacks and strokes), the study should control for age, BP, blood cholesterol, and body weight, because all of these factors are associated both with low fitness and with CVD events. Well-done cohort studies control for multiple potential confounders.

Some general guidance for determining the overall quality rating of observational cohort and cross-sectional studies

The questions on the form are designed to help you focus on the key concepts for evaluating the internal validity of a study. They are not intended to create a list that you simply tally up to arrive at a summary judgment of quality.

Internal validity for cohort studies is the extent to which the results reported in the study can truly be attributed to the exposure being evaluated and not to flaws in the design or conduct of the study–in other words, the ability of the study to draw associative conclusions about the effects of the exposures being studied on outcomes. Any such flaws can increase the risk of bias.

Critical appraisal involves considering the risk of potential for selection bias, information bias, measurement bias, or confounding (the mixture of exposures that one cannot tease out from each other). Examples of confounding include co-interventions, differences at baseline in patient characteristics, and other issues throughout the questions above. High risk of bias translates to a rating of poor

quality. Low risk of bias translates to a rating of good quality. (Thus, the greater the risk of bias, the lower the quality rating of the study.)

In addition, the more attention in the study design to issues that can help determine whether there is a causal relationship between the exposure and outcome, the higher quality the study. These include exposures occurring prior to outcomes, evaluation of a dose-response gradient, accuracy of measurement of both exposure and outcome, sufficient timeframe to see an effect, and appropriate control for confounding–all concepts reflected in the tool.

Generally, when you evaluate a study, you will not see a "fatal flaw," but you will find some risk of bias. By focusing on the concepts underlying the questions in the quality assessment tool, you should ask yourself about the potential for bias in the study you are critically appraising. For any box where you check "no" you should ask, "What is the potential risk of bias resulting from this flaw in study design or execution?" That is, does this factor cause you to doubt the results that are reported in the study or doubt the ability of the study to accurately assess an association between exposure and outcome?

The best approach is to think about the questions in the tool and how each one tells you something about the potential for bias in a study. The more you familiarize yourself with the key concepts, the more comfortable you will be with critical appraisal. Examples of studies rated good, fair, and poor are useful, but each study must be assessed on its own based on the details that are reported and consideration of the concepts for minimizing bias.

Appendix B

Ethical amendment approval request form and amendment approval emails

1	**Project ID Number:** CEHP/2014/519	**Name and e-mail address of Principal Investigator:**
2	**Project Title: Project Title: Looking into the Future: A Resource for Wellbeing?**	
3	**Type of Amendment/s (tick as appropriate)** **√ Research procedure/protocol (including research instruments)** Participant group Sponsorship/collaborators Extension to approval needed (extensions are given for one year) **√ Information Sheets** Consent form/s Other recruitment documents Other Please specify: *	
4	**Justification** (give the reasons why the amendment/s are needed): This amendment is required for a study to be run by a DClinPsy trainee and an MSc student. The study aims to examine the relation between the extent of participants' ruminative thinking and structure of their personal goals, as revealed during the mental simulation task. The current study will utilize the same protocol as previously approved studies (i.e. mental simulation task), but it will also include measures to assess variables that have not been investigated previously (e.g., ruminative thinking, procrastination, and sense of control).	
5	**Details of Amendments** (provide full details of each amendment requested, state where the changes have been made and attach all amended and new documentation) 2-phase study protocol This study involves two phases 1) online questionnaire data collection 2) in-person mental simulation tasks (previously approved) We aim to use the information gathered in phase 1 to select participants to be invited to the second phase of the study. We have not used this procedure before. • Phase 1 ○ Those who agree to participate will be asked to complete a set of questionnaires online. These scales will assess the levels of their ruminative thinking, sense of control, procrastination, and psychological distress. • Phase 2	

	○ Those whose ruminative thinking scores fall into the top 25% and bottom 25% of the respondents will be invited to the second phase which involved an in-person experiment. They will asked to engage in some mental simulation tasks. Monetary compensation • Every participant from phase 1 will be included for a prize draw which includes cash prizes. The information regarding this will be provided in the information sheet as follows: "**Will I be compensated for my participation?** Unfortunately, limited resources mean the research team cannot compensate everyone for participation. However, there will be a draw at the end of the study to randomly select lucky participants who will receive cash prizes, with on prize of £100, two £50 and two £25." Online consent form The study will use a click-through consent process which has been previously approved in relation this programme of research. For this specific project, there is additional: • An information sheet for the study is included with this application. This information sheet will be presented in the first (online) phase of the study. • Questionnaires to assess additional variables (e.g., ruminative thinking, procrastination, sense of control) are attached to this application.
6	**Ethical Considerations** (insert details of any ethical issues raised by the proposed amendment/s; in the case of adding a new researcher, please confirm in writing that you have discussed ethical issues of the project with this researcher and that you have taken them through the risk assessment form for the project, which they have signed) Ruminative Thinking Scale A minor concern was raised within the research team about the potential impact of the Perseverative Thinking Questionnaire (PTQ), as it requires respondents to think about "negative experiences or problems" before completing the questionnaire. The students involved in the project contacted the main author of the questionnaire, Dr. Thomas Ehring, who responded to our query saying that, to his knowledge, there were no reports of adverse experiences in past studies using the PTQ. He also added that, "In particular, the questionnaire does not ask participants to think about their negative experiences, but to describe the way in which they think about it. This is much less triggering than questions about traumatic events." Thus, it was decided that the PTQ would be used for this study. Moreover, the information sheet for this study includes information about follow-up support from the research team for any respondent who is aversely affected by the study. Another concern was raised in regards to participants who may not be invited for a later stage as their scores do not meet the inclusion criteria. In response to this concern, the research team has decided to debrief all participants at the end of their participation. Those who complete phase I only will receive the attached "Debrief Sheet Phase I" by email. Those who complete Phase II will be handed a hard copy of the debrief sheet "Phase II Debrief Sheet" in person and have an opportunity to ask questions.
7	**Other Information** (provide any other information which you believe should be taken into account during ethical review of the proposed changes)
	Declaration (to be signed by the Principal Researcher) • I confirm that the information in this form is accurate to the best of my knowledge and I take full responsibility for it. • I consider that it would be reasonable for the proposed amendments to be implemented.
	Signature: …… …….. Date: ……7th June 2017……

From: King, John
Sent: 08 June 2017 11:31
To: Huddy, Vyv; AcadServ.Ethics
Subject: Amendment to CEHP/2014/519

Dear Vyv,

I'm happy to approve your amendment to your CHEP ethics. Please keep this email as a record of the approval, the documents are attached and UCL REC is copied in.

Best Wishes,

John

Appendix C

Participant information sheet

RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL AND HEALTH PSYCHOLOGY

Please save or print this information sheet if you would like to keep a copy. Alternatively, you could contact the research team to request a copy.

Title of Project: **Individual differences in thinking styles and goal processing**

This study has been approved by the Research Department of Clinical, Educational and Health Psychology Ethics Chair

Project ID Number: CEHP/2014/519

We would like to invite you to participate in this research project. You should only participate if you want to, and choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, please read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or you would like more information.

What is this research about? The purpose of this research is to investigate how thinking styles can affect how individuals attend to and process their goals. We are interested in the impact of individual differences on these processes and their underlying mechanisms.

What will I have to do? This is a two-stage study. The first stage is conducted online, and participants are asked to complete some online questionnaires assessing their thinking styles, mood, and certain beliefs. All participants will later be contacted to take part in the second stage, which involves meeting with the researcher at UCL. The second stage will take place within 2 months following the first stage. Participants will be asked to engage in tasks that involve describing and rating various aspects of their goals.

Are there any risks or possibility of discomfort? The risks involved in participating are minimal. If there are questions that you find distressing or intrusive, you are free to not answer those questions or to withdraw from participating. If you find yourself becoming distressed during the study, you can choose to stop at any time or withdraw from the study altogether. If you feel upset or distressed as a result of participation, please contact the research principal investigator VH, a qualified clinical psychologist, who will be able to provide information for accessing resources or services which you may find helpful.

How will we maintain your privacy and confidentiality? You will be asked to give some demographic information, such as your age, gender, and ethnicity. All information will be stored confidentially and only the researchers involved in the study will have access or process the data. Some of your responses could be audio recorded and transcribed at a later date by the researcher conducting the study. Participation cannot take place without your agreement. All data will be collected and stored in accordance with the Data Protection Act 1998. If you choose to withdraw from the study, you have the option of also requesting that all data be deleted.

When and where will the study take place? The study will take place at a time convenient to you. The online survey should take less than 10 minutes. The in-person experiment should take approximately 40-60 minutes.

Will I be compensated for my participation?
Participant who completes both online and face-to-face interview will be compensated with £7.50 for their participation.

What I have questions about the project? If you have any questions or require more information about this study, please contact the principal investigator using the contact details below:

Researcher: Nathida Siriapaipant, University College London, 1-19 Torrington Place, London WC1E 7HE,
Email: [redacted]

Principal Investigator: Vyv Huddy, University College London, 1-19 Torrington Place, London WC1E 7HB,
Tel: [redacted] Email: [redacted]

If you feel you require any additional support or participation has harmed you in any way, you can contact the principal investigator using the details above for further advice and information.

Appendix D

All the questionnaires utilised in the study

Repetitive Thinking Questionnaire (Ehring et al., 2011)

Instruction: In this questionnaire, you will be asked to describe how you *typically* think about negative experiences or problems. Please read the following statements and rate the extent to which they apply to you when you think about negative experiences or problems.

		Never	Rarely	Some-times	Often	Almost always
1	The same thoughts keep going through my mind again and again.	0	1	2	3	4
2	Thoughts intrude into my mind.	0	1	2	3	4
3	I can't stop dwelling on them.	0	1	2	3	4
4	I think about many problems without solving any of them.	0	1	2	3	4
5	I can't do anything else while thinking about my problems.	0	1	2	3	4
6	My thoughts repeat themselves.	0	1	2	3	4
7	Thoughts come to my mind without me wanting them to.	0	1	2	3	4
8	I get stuck on certain issues.	0	1	2	3	4
9	I keep asking myself questions without finding an answer.	0	1	2	3	4
10	My thoughts prevent me from focusing on other things.	0	1	2	3	4
11	I keep thinking about the same issue all the time.	0	1	2	3	4
12	Thoughts just pop into my mind.	0	1	2	3	4
13	I feel driven to continue dwelling on the same issue.	0	1	2	3	4
14	My thoughts are not much help to me.	0	1	2	3	4
15	My thoughts take up all my attention.	0	1	2	3	4

Depression, Anxiety and Stress Scales (DASS-21)

Instruction: Please read each statement and choose 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.

	Item Statements	Did not apply to me at all	Applied to me to some degree, or some of the time	Applied to me to a considerable degree or a good part of time	Applied to me very much or most of the time
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 overreact 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 downhearted 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

The MIDI Sense of Control Scale (Lachman & Weaver, 1998)

Instruction: For each statement, please check the box corresponding to the answer that best represents your level of agreement with each statement as it applies to you.

		Strongly disagree	Somewhat disagree	Disagree a little	Don't know	Agree a little	Somewhat agree	Strongly agree
1	There is little I can do to change many of the important things in my life.	1	2	3	4	5	6	7
2	I often feel helpless in dealing with the problems of life.	1	2	3	4	5	6	7
3	I can do just about anything I really set my mind to do.	1	2	3	4	5	6	7
4	Other people determine most of what I can and cannot do.	1	2	3	4	5	6	7
5	What happens in my life is often beyond my control.	1	2	3	4	5	6	7
6	When I really want to do something, I usually find a way to succeed at it.	1	2	3	4	5	6	7
7	There are many things that interfere with what I want to do.	1	2	3	4	5	6	7
8	Whether or not I am able to get what I want is in my own hands.	1	2	3	4	5	6	7
9	I have little control over the things that happen to me.	1	2	3	4	5	6	7
10	There is really no way I can solve some of the problems I have.	1	2	3	4	5	6	7
11	Sometimes I feel that I am being pushed around in life.	1	2	3	4	5	6	7
12	What happens to me in the future mostly depends on me.	1	2	3	4	5	6	7

Appendix E

Interview protocol

Introduction

Thank you for your interest in our study looking at individual differences in thinking styles and goal processing. As you have previously read in the information sheet, the purpose of this research is to investigate how thinking styles can affect how individuals attend to and process their goals. We're interested in the impact of individual differences on these processes and their underlying mechanisms

This study should last about 40-60 minutes and will take the form of a semi-structured interview. During the study, you will be asked about a goal you aim to achieve within the next 5 years. Using this goal, you will be asked to construct a narrative, outlining the events that you will complete in order to achieve the goal using a "thinking out loud" protocol, or what we call a "simulation." You will also be asked to rate the main goal and the simulation for their characteristics.

You will also be asked to fill out some questionnaires that you previously completed online.

Please note that due to the nature of the semi-structured interviews, your responses to some of the activities will be recorded and later transcribed. There are no right or wrong answers, and you can have as much time as you need to think about your answers. You will be debriefed when the experiment ends. There are no known risks associated with experiments of this type. All of the data are confidential and you are free to withdraw at any time, without having to give any explanation.

Please ask the experimenter at any point of the experiment if you are uncertain about the task.

[1/2 participants will be asked to fill out the questionnaires here]

Typical weekday

To begin with, I want to know about events that occur in your daily life. I am going to ask you to create a narrative outlining what occurs in your typical weekday. There are no right or wrong answers and we encourage you to be as honest as possible.

From the story that you have just told, these are the 'main events' I have extracted. Are these accurate in representing your typical weekday?

Accuracy of event extraction: Daily Life

Reflecting on the narrative you have just constructed, do these look like the main events which occur in your typical weekday?

1.

2.

3.

4.

5.

6.

7.

8.

Are there any additions or changes that you would like to make?

How accurate are these main events in representing your typical weekday on a scale of 1-10?
(1 = not accurate at all, 5 = reasonably accurate, 10 = completely accurate)

Goal

Now, we want to ask you about any goals that you are currently progressing with, that you aim to complete within the next few weeks up to 5 years. An example of this could be I aim to be fit enough to run a half marathon by the end of 2018.

Pick which goal is most important to you. To do this, imagine you can achieve just one of these goals, which one would it be?

[1st set of goal characteristics ratings]

Goal Characteristics Ratings Sheet

Instruction: The following rating scales should be completed according to the thoughts and feelings you experience when thinking about the goal *now*, in its current state.

1. How well would you say you are progressing towards this goal? Please circle the appropriate number, from 1 (‘not well at all’) to 7 (‘extremely well’):

   1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

2. How would you rate your feelings towards this goal at the moment? Please circle from -3 (‘extremely negative’) to 3 (‘extremely positive’), with 0 indicating a lack of emotional response or an emotionally neutral response:

   -3 ---------- -2 ---------- -1 ---------- 0 ---------- 1 ---------- 2 ---------- 3

3. How achievable would you say this goal is? Please circle from 1 (‘barely achievable’) to 7 (‘very easily achievable’):

   1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

I am now going to ask you to create a narrative (in the same way as earlier!) outlining the steps you take to achieve your main goal. Try to imagine the story as vividly as possible and speak what you are imagining out loud. For the example used earlier of running a marathon, the narrative could begin with "I imagine going to the gym three times a week at Bloomsbury Gym to help build my stamina. After this I would go to Sainsbury's to buy some asparagus and celery to make a healthy dinner with my flatmates."

[Write down events in the next page]

Simulation Ratings Sheet

The following rating scales should be completed according to your personal experience of the simulation you have just undergone.

1. How clearly were you able to envisage the content of the simulation? Please circle from 1 ('extremely unclear; almost no visual detail') to 7 ('extremely clear; everything in high visual detail'):

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

Extremely unclear; almost no visual detail — Extremely clear; everything in high visual detail

2. How would you rate your emotional response to the simulation? Please circle from -3 ('extremely negative') to 3 ('extremely positive'), with 0 being neutral:

-3 ---------- -2 ---------- -1 ---------- 0 ---------- 1 ---------- 2 ---------- 3

Extremely negative — Neutral — Extremely positive

Accuracy of Event Extraction: Goal

From the story that you have just told, these are the 'main events' I have extracted. Are these accurate in representing the steps you will take in order to achieve your goal (_____)?

1.
2.
3.
4.
5.
6.
7.
8.

[Notes: go back to simulation ratings in the previous page]

Are there any additions or changes that you would like to make?

How accurate are these main events in representing the steps towards your goal on a scale of 1-10?
(1 = not accurate at all, 5 = reasonably accurate, 10 = completely accurate)

Are there any other factors that may conflict with these events? If so, please list them below:

1.
2.
3.
4.

[2nd set of goal characteristics ratings]

Goal Characteristics Ratings Sheet

Instruction: The following rating scales should be completed according to the thoughts and feelings you experience when thinking about the goal *now*, in its current state.

1. How well would you say you are progressing towards this goal? Please circle the appropriate number, from 1 (‘not well at all’) to 7 (‘extremely well’):

   1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

2. How would you rate your feelings towards this goal at the moment? Please circle from -3 (‘extremely negative’) to 3 (‘extremely positive’), with 0 indicating a lack of emotional response or an emotionally neutral response:

   -3 ---------- -2 ---------- -1 ---------- 0 ---------- 1 ---------- 2 ---------- 3

3. How achievable would you say this goal is? Please circle from 1 (‘barely achievable’) to 7 (‘very easily achievable’):

   1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

[SIM] → conflict vs. facilitation

The Strivings Instrumentality Matrix

Instruction: In this activity, the amount of conflict and facilitation between your daily routine and your most 'important' goal will be calculated. This will be done by comparing each of the events you simulated against each other. There are no right or wrong answers.

[1/2 will complete questionnaires here]

[Debrief]

Thank you for your participation in our study. The study aims to examine how variation in peoples' thinking style influences the way they consider their goals. The specific thinking style we investigated in the study was rumination, which is when thoughts repetitively come to mind, sometimes in manner that is unwanted. People who score higher on rumination questionnaires are more likely to experience anxiety and depression than those with lower scores. We are interested to know why this is and this was the purpose of the second half of the study.

In the second stage of the study we sought to find out if people who ruminate frequently experience more goal conflicts than those who don't. Goal conflicts occur when ours goals interfere with one another (e.g. such as when we might want to study for an exam but also want to relax with friends). In this situation one goal may impede attaining another and a ruminative thinking style may result from this. Other factors were examined in relation to ruminative thinking and goal processing including perceptions of control and psychological distress.

Appendix F

Goal conflict and goal facilitation record forms

The Strivings Instrumentality Matrix

Instruction: In this activity, the amount of conflict and facilitation between your daily routine and your most 'important' goal will be calculated. This will be done by comparing each of the events you simulated against each other. There are no right or wrong answers.

Goal Conflicts

For each event, please rate how much it conflicts with each of the other events, on a scale of
1 (not at all conflicting) to 5 (very conflicting)

Please try to "**think out loud**" as you decide how much each pair of events conflict.

How much do events conflict with each other?

Towards Goal / Typical Day	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**
Event 1								
Event 2								
Event 3								
Event 4								
Event 5								
Event 6								
Event 7								
Event 8								

Goal Facilitation

For each event, please rate how much it supports each of the other events, on a scale of ***1 (not at all helpful) to 5 (very helpful)***

Please try to "**think out loud**" as you decide how much each pair of events facilitate each other.

How much do events facilitate each other?

Towards Goal / Typical Day	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**
Event 1								
Event 2								
Event 3								
Event 4								
Event 5								
Event 6								
Event 7								
Event 8								

Appendix G

Debrief form

Study: Individual Differences in Thinking Style and Goal Processing

Participant Debrief Sheet

Thank you for your participation in our study. The study aims to examine how variation in peoples' thinking style influences the way they consider their goals. The specific thinking style we investigated in the study was rumination, which is when thoughts repetitively come to mind, sometimes in manner that is unwanted. People who score higher on rumination questionnaires are more likely to experience anxiety and depression than those with lower scores. We are interested to know why this is and this was the purpose of the second half of the study.

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If you have any further questions, please feel free to contact the research team using the contact information below:

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Thank you again for your participation