



# Rumination selectively mediates the association between actual-ideal (but not actual-ought) self-discrepancy and anxious and depressive symptoms

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## ABSTRACT

Actual-ideal and actual-ought self-discrepancies have been theorised to be independently associated with depressive and anxious symptoms respectively. This study tested this prediction and extended it to consider whether rumination mediates these relationships. One hundred and thirty-eight students (48 males, 90 females) listed four adjectives describing how they would ideally hope to be and four adjectives describing how they ought to be. Participants then rated how distant they perceived themselves to be from each of their ideal and ought selves, as well as the importance of each ideal and ought self. Finally, participants self-reported levels of negative rumination, anxious and depressive symptoms. Actual-ideal self-discrepancy was independently associated with both anxious and depressive symptoms, whereas actual-ought self-discrepancy was independently associated with anxious symptoms only. Rumination mediated the independent relationships between actual-ideal self-discrepancy and anxious and depressive symptoms. Actual-ought self-discrepancy retained an independent association with anxious symptoms that was not mediated through rumination. Anxious and depressive symptoms both have independent associations with actual-ideal self-discrepancies, whereas anxious symptoms are uniquely associated with actual-ought self-discrepancies. We reveal further evidence for rumination as a cognitive-motivational transdiagnostic process linking self-regulatory difficulties with anxious and depressive symptoms.

## 1. Introduction

Theorists have suggested that anxiety and depression share some cognitive, affective and behavioural features but have other features that are distinct (e.g., Clark, Watson, & Mineka, 1994; Mineka, Watson, & Clark, 1998). The tripartite model of anxiety and depression (Clark et al., 1994) suggests that these conditions share a common core of negative affect, with depression being distinguished by low positive affect and anxiety by autonomic hyperarousal. While these emotional states typically co-occur, the literature indicates that certain features differentiate anxiety and depression. Distinguishing the self-regulatory processes that have common versus distinct associations with anxiety and depression will further inform our understanding of the nature of these emotional symptoms. To date though, relatively little research has examined which *self-regulatory* processes have common and distinct relationships with anxiety and depression (but see Dickson & MacLeod, 2004a, 2004b, Winch, Moberly, & Dickson, 2015).

Self-regulation theorists posit that aversive affective states result

from an individual's inability to regulate their perceived current state with respect to their desired states (Carver, 2006; Carver & Scheier, 1998; Dickson & Moberly, 2013; Dickson, Moberly, O'Dea, & Field, 2016; Higgins, 1987, 1997). Higgins' (1997) regulatory focus theory (RFT) proposes that two basic components are involved in representations of future states used for self-regulation: the valence of the anticipated goal outcome (positive vs. negative) and the orientation of the goal (promotion vs. prevention). Specifically, *promotion-focused* self-regulation is sensitive to the presence or absence of *positive* outcomes (e.g., successfully achieving a good grade in an exam vs. failing to achieve a good grade in an exam) and is accompanied by emotions ranging from elation to dejection. Thus, the absence or non-attainment of a positive outcome is thought to give rise to emotions such as dejection, sadness, disappointment. On the other hand, *prevention-focused* self-regulation is sensitive to the absence or presence of *negative* outcomes (e.g., successfully avoiding a painful procedure vs. failing to avoid a painful procedure) and is accompanied by emotions ranging from relief to anxious agitation. Thus, the presence or proximity of a

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negative outcome is thought to give rise to emotions such as fear and anxiety. Consistent with prominent early two-system models of motivation (e.g., Gray, 1982) and extensions of these ideas to personal goals (e.g., Dickson & MacLeod, 2004a, 2004b; Elliot, Sheldon, & Church, 1997), promotion focus is approach-oriented and thought to be activated by an appetitive motivational system. Whereas, a prevention focus is superficially approach-oriented but is primarily motivated by an underlying avoidance tendency (e.g., *pass my final year exam so I don't feel a failure*; Winch et al., 2015). In this study, we test whether anxious and depressive symptoms are characterized by self-discrepancies with respect to the prevention and promotion system respectively, and whether these relationships are mediated by ruminative thinking.

Higgins' RFT was an extension of his earlier self-discrepancy theory (SDT; Higgins, 1987), which suggested that people are motivated by hopes and aspirations (*ideals*) as distinct from duties and obligations (*oughts*; Higgins, 1997). Whereas ideal selves represent the presence of positive outcomes, ought selves represent the *absence of negative* outcomes (e.g., *get a promotion, so as not to disappoint my partner*). According to SDT, depressive symptoms arise due to *actual-ideal* (AI) discrepancies between the perceived actual self and the ideal self, whereas anxious symptoms arise due to *actual-ought* (AO) discrepancies between the perceived actual self and the ought self (Higgins, 1987). Self-regulation with respect to the ideal self corresponds to a promotion orientation. In this approach-oriented mode, the person tries to minimise AI self-discrepancies that represent the *absence of positive* outcomes. By contrast, self-regulation with respect to the ought self corresponds to a prevention orientation. In this avoidance-oriented mode, the person strives toward duties and obligations, but the primary role these serve is to protect the person from unwanted outcomes. This motivational distinction explains why, according to SDT, AI self-discrepancies are associated with depressive symptoms whereas AO self-discrepancies are associated with anxious-agitation symptoms (e.g., Higgins, 1987, 1997).

Studies have tested SDT's prediction that AI and AO self-discrepancies are distinctly related to depressive and anxious symptoms respectively. Roney, Higgins, and Shah (1995) found that framing a goal in terms of positive gains (i.e., promotion focus) was associated with greater change in dejection than in anxious-agitated emotions among undergraduates, whereas the reverse was true when framing a goal in terms of negative losses (i.e., prevention focus). Scott and O'Hara (1993) found that clinically depressed students reported larger AI self-discrepancies than non-depressed students, whereas clinically anxious (or mixed anxious-depressive) students reported larger AO self-discrepancies than non-anxious participants. Nevertheless, some studies (e.g., Ozgul, Heubeck, Ward, & Wilkinson, 2003) have failed to find relationships between specific self-discrepancies and anxious and depressive affect. Boldero, Moretti, Bell, and Francis (2005) have argued that this may be because researchers have not appropriately investigated the affective correlates of one type of self-discrepancy when the other type of self-discrepancy is partialled out. Our first aim was to test whether depressive and anxious symptoms are independently and uniquely predicted by actual-ideal self-discrepancy and actual-ought self-discrepancy respectively.

Although some studies have found that self-discrepancies on promotion goals are more strongly associated with depressive symptoms for people higher in trait rumination (Jones, Papadakis, Orr, & Strauman, 2013) it is also possible that ruminative states *mediate* the relationship between specific self-discrepancies and depressive and anxious symptoms. Given that rumination is instigated by insufficient progress on personal goals (Martin & Tesser, 1996; Moberly & Watkins, 2010; Roberts, Watkins, & Wills, 2013), which are manifested abstractly as ideal and ought selves, large AI and AO self-discrepancies might be predicted to generate rumination. Goals that are pursued for avoidance motives are particularly strongly associated with rumination (Moberly & Dickson, 2016), suggesting that AO self-discrepancies may

contribute to rumination independently of AI self-discrepancies. To our knowledge, however, no study has tested this. Furthermore, given that rumination is related to a range of mood disorder psychopathology including anxiety (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), the second aim of our study was to test whether the association between distinct self-discrepancies and depressive and anxious symptoms would be mediated by rumination.

Despite its plausibility, few studies have considered rumination as a mediator of the unique associations between self-discrepancies and anxious and depressive symptoms. Roelofs et al. (2007) found good fit for a model in which trait rumination mediated the relationship between individual self-discrepancies, beliefs about rumination and depressive symptoms. Hong, Triyon, and Ong (2013) found that AI and AO self-discrepancies were each positively associated with brooding (a particularly negative self-evaluative form of rumination), but found no evidence that brooding mediated the interaction between self-discrepancies and neuroticism in predicting anxious and depressive symptoms. Caselli et al. (2014) found that state brooding mediated the effects of an actual-ideal self-discrepancy induction (compared with neutral self-focus) on negative mood. Another experimental study by Jones et al. (2013) found that rumination exacerbated the negative affect associated with goal failure, particularly for promotion goals. However, no study has yet examined whether rumination mediates the independent relationships between distinct AI and AO self-discrepancies and depressive and anxious symptoms respectively.

To test this, we asked participants to list four ideal-self attributes and four ought-self attributes and rate how distant their perceived actual-self was from each of their ideal-self and ought-self attributes. In addition, participants completed self-report measures of ruminative thinking and anxious and depressive symptoms. Because we conceptualised rumination as a mediator that is contingent on AI and AO self-discrepancies that may fluctuate, we asked people to rate the extent to which they engaged in rumination over the last two weeks.

### 1.1. Hypotheses

Based on self-discrepancy theory (Higgins, 1987), we hypothesized that AI (but not AO) self-discrepancies would be independently associated with depressive symptoms whereas AO (but not AI) self-discrepancies would be independently associated with anxious symptoms. Based on the notion that unattained goals instigate rumination (Martin & Tesser, 1996) and that rumination exacerbates psychological distress (Nolen-Hoeksema et al., 2008), we expected that AI and AO self-discrepancies would each predict unique variance in rumination, and that rumination would at least partially mediate the unique associations between AI and AO self-discrepancies and depressive and anxious symptoms respectively.

## 2. Method

### 2.1. Participants

One hundred and thirty-eight university students (48 male, 90 female) participated. The mean age of participants was 22.4 years ( $SD = 4.6$ , range = 18–49). Our sample size was calculated to achieve power of 0.80 to detect mediation based on small-to-medium sized effects ( $f^2 = 0.07$ ) for (i) the unique relationships between specific self-discrepancies and rumination, and (ii) the unique relationship between rumination and anxious or depressive symptoms (Fritz & MacKinnon, 2007).

### 2.2. Measures

#### 2.2.1. Actual-ideal (AI) and actual-ought (AO) self discrepancy

A modified version of the computerised selves task (Shah & Higgins, 2001) was used to measure AI and AO self-discrepancies. Participants

were asked to generate four adjectives that describe how they ideally hope to be (ideal selves) and four adjectives that describe how they ought to be (ought selves). Participants rate how distant their current self is from each attribute on a 7-point scale from 1 (*not at all far away*) to 7 (*extremely far away*). Scores for each adjective are summed so that total scores range from 4 to 28, with higher scores indicating greater discrepancy between the actual self and the ideal or ought self. In this study, the AI self-discrepancy measure and the AO self-discrepancy measure demonstrated acceptable internal consistency ( $\alpha = 0.74$  and  $0.72$  respectively).

### 2.2.2. Ideal/ought self importance ratings

To check that participants were generating personally important self-attributes, each ideal-self and ought-self attribute was rated for subjective importance using a single item scale from 1 (*not at all*) to 7 (*extremely*).

### 2.2.3. Perseverative thinking questionnaire—modified (PTQ; Ehring et al., 2011)

Rumination was assessed using a modified version of the PTQ, comprising 15 items that capture the tendency to engage in repetitive thinking about negative experiences or problems (e.g., “The same thoughts keep going through my mind again and again”). Importantly, this measure was designed to be symptom-independent and to capture both worry and rumination. Original instructions were modified to ask respondents how often the items described them *over the past two weeks* to assess recent repetitive negative thinking. Each item is scored on a 5-point scale ranging from 0 (*never*) to 4 (*almost always*). Total scores range from 0 to 60, with higher scores indicating more rumination ( $\alpha = 0.95$ ).

### 2.2.4. Patient health questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001)

Depressive symptoms were assessed using the PHQ-9, which measures how frequently over the past two weeks participants experienced each of nine symptoms consistent with DSM-IV (American Psychiatric Association, 2000) criteria for a major depressive episode. Each statement is scored on a 4-point scale from 0 (*not at all*) to 3 (*nearly every day*), and graded in severity. Total scores range from 0 to 27 ( $\alpha = 0.89$ ).

### 2.2.5. Generalized anxiety disorder-7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006)

Anxious symptoms were assessed using the GAD-7, which measures how often they have experienced each of seven anxious symptoms over the past two weeks. Each item is scored on a 4-point scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Total scores range from 0 to 21 ( $\alpha = 0.88$ ).

## 2.3. Procedure

The study had university ethical approval. All participants provided informed consent before completing the self-report questionnaires online in the order presented above.

## 3. Results

### 3.1. Analysis plan

Data screening revealed no outliers ( $z$ -scores  $< \pm 3$ ) and approximately normally distributed variables with the distribution of Mahalanobis distances indicating multivariate normality. After examining bivariate correlations, we conducted path analyses using maximum likelihood estimation in MPlus version 8 (Muthén & Muthén, 2017). First, we tested whether AI and AO self-discrepancies independently predicted depressive and anxious symptoms respectively. AI and AO self-discrepancy were included as simultaneous predictors,

**Table 1**

Descriptive statistics and Pearson's correlation coefficients among study variables ( $N = 138$ ).

	AO	PHQ-9	GAD-7	PTQ	<i>M</i> ( <i>SD</i> )
1. AI	0.43**	0.36**	0.32**	0.38**	3.57 (1.29)
2. AO	–	0.29**	0.30**	0.23**	3.33 (1.24)
3. PHQ-9		–	0.71**	0.61**	10.14 (6.61)
4. GAD-7			–	0.63**	7.63 (5.39)
5. PTQ				–	31.96 (13.45)

Note. AI = Actual-Ideal Self-Discrepancy; AO = Actual-Ought Self-Discrepancy; PHQ-9 = Patient Health Questionnaire – 9; GAD-7 = Generalized Anxiety Disorder – 7; PTQ = Perseverative Thinking Questionnaire (modified).

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

with anxious and depressive symptoms as parallel outcomes with correlated residuals. We then tested whether rumination significantly mediated the relationships between each form of self-discrepancy and depressive and anxious symptoms by including rumination as a mediator in the previous model. Our models were just-identified and our focus was not on model fit but on the path coefficients and whether rumination significantly mediated the relationship between each type of self-discrepancy and each form of psychological distress. Significance of indirect effects was tested using bias-corrected bootstrapped standard errors (10,000 samples) and noting whether the 95% confidence interval for each indirect effect included zero.

### 3.2. Descriptive statistics and correlations

Descriptive statistics and Pearson correlations for the study variables are reported in Table 1. Ideal ( $M = 5.4$ ,  $SD = 1.6$ ) and ought ( $M = 5.4$ ,  $SD = 1.6$ ) selves were rated as similarly important, with most ratings at the higher end of the scale. Importance of self-discrepancy was not significantly associated with any variable although the importance of ideal and ought selves was positively correlated,  $r = 0.58$ ,  $p < .001$ . AI and AO self-discrepancies were positively correlated with rumination, depressive and anxious symptoms, which were strongly intercorrelated. Age and gender did not correlate significantly with any other variables (all  $ps > .13$ ) and are not considered further.<sup>1</sup>

### 3.3. Testing the unique relationships between different types of self-discrepancy and anxious and depressive symptoms

We report the standardized path coefficients for the first model in Fig. 1. AI and AO self-discrepancies jointly explained 15.2% of the variance in depressive symptoms, and 12.5% of the variance in anxious symptoms,  $ps < 0.001$ . As hypothesized, AO self-discrepancy was significantly and independently associated with anxious but not depressive symptoms. Unexpectedly, AI self-discrepancy was significantly and independently associated with *both* depressive and anxious symptoms.

### 3.4. Testing rumination as a mediator of the relationship between self-discrepancy and psychological symptoms

We report the standardized coefficients for the mediational path model in Fig. 2. AI and AO self-discrepancy jointly predicted 15.1% of

<sup>1</sup> We conducted three exploratory hierarchical multiple regression analyses to test whether the two interactions between actual/ideal self-discrepancy and the corresponding importance of actual/ideal self jointly explained additional variance in (i) depressive symptoms, (ii) anxious symptoms, and (iii) rumination. In no case was significant additional variance explained,  $F(2, 131) < 0.50$ ,  $ps > .61$ . Thus, self-discrepancy did not interact with importance of ideal/ought self to predict rumination, anxious or depressive symptoms.

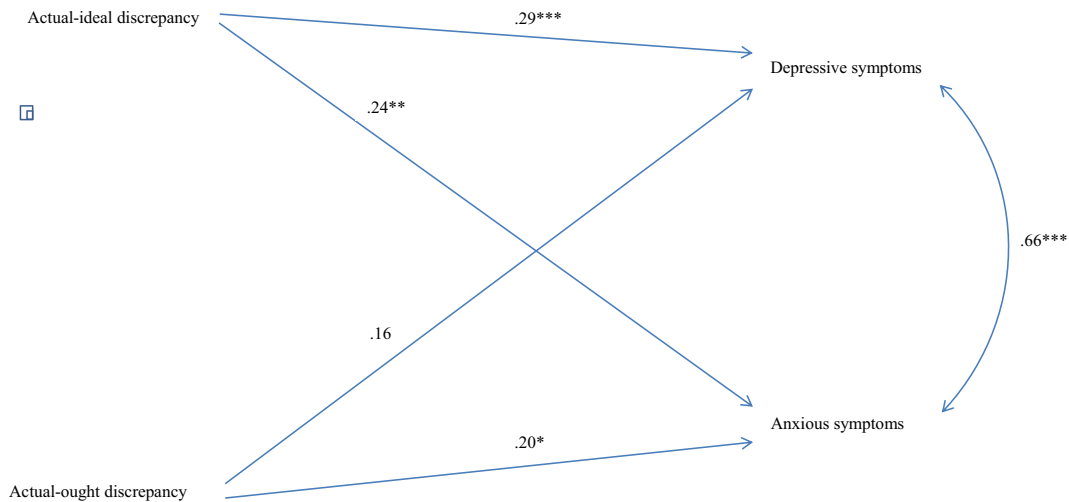


Fig. 1. Standardized path coefficients for the model in which AI and AO self-discrepancy predict depressive and anxious symptoms. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

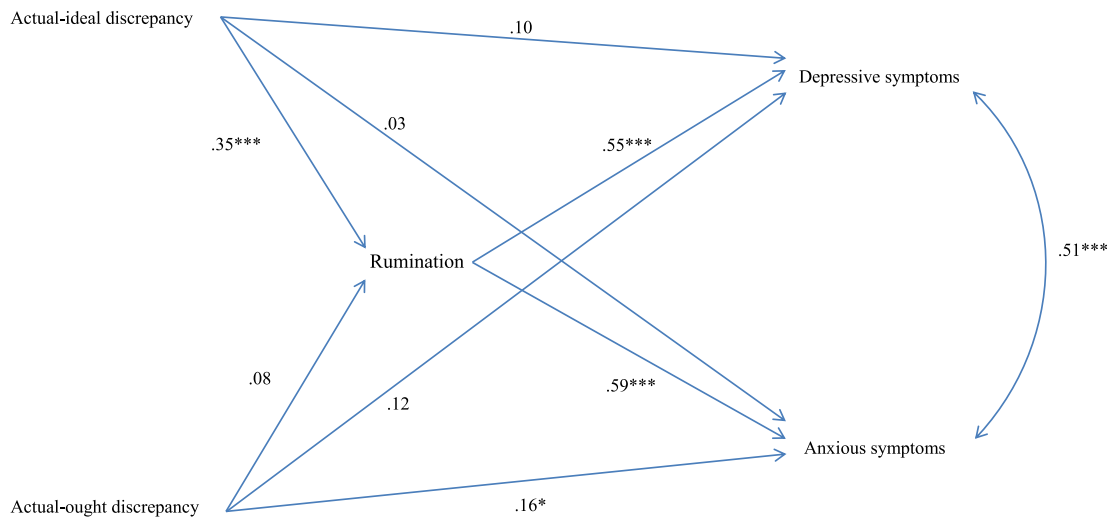


Fig. 2. Standardized path coefficients for the model in which rumination mediates the relationships between AI and AO self-discrepancy and depressive and anxious symptoms. \* $p < .05$ . \*\*\* $p < .001$ .

the variance in rumination,  $p = .009$ . AI self-discrepancy, AO self-discrepancy and rumination jointly explained 40.4% of the variance in depressive symptoms, and jointly explained 42.9% of the variance in anxious symptoms,  $ps < .001$ . AI self-discrepancy was significantly and independently associated with rumination, whereas AO self-discrepancy was not. In turn, rumination was a significant predictor of both depressive and anxious symptoms after controlling for AI and AO self-discrepancy. After controlling for rumination, AI self-discrepancy did not retain a significant independent association with either anxious or depressive symptoms, whereas AO self-discrepancy retained a significant independent association with anxious but not depressive symptoms.

These results were consistent with rumination mediating the relationship between AI (but not AO) self-discrepancy and both depressive and anxious symptoms. Bootstrapped confidence intervals revealed that rumination was a significant mediator of both (i) the relationship between AI self-discrepancy and depressive symptoms, unstandardized effect = 0.97, 95% CI [0.47, 1.56], standardized effect = 0.19, 95% CI [0.09, 0.30] and (ii) the relationship between AI self-discrepancy and anxious symptoms, unstandardized effect = 0.85, 95% CI [0.43, 1.31], standardized effect = 0.20, 95% CI [0.10, 0.31]. Rumination neither significantly mediated the relationship between AO self-discrepancy

and depressive symptoms, unstandardized effect = 0.22, 95% CI [-0.35, 0.74], standardized effect = 0.04, 95% CI [-0.06, 0.15], nor that between AO self-discrepancy and anxious symptoms, unstandardized effect = 0.19, 95% CI [-0.29, 0.66], standardized effect = 0.04, 95% CI [-0.06, 0.16]. Rumination mediated 66% of the independent association between AI self-discrepancy and depressive symptoms and 87% of the independent association between AI self-discrepancy and anxious symptoms.<sup>2</sup>

<sup>2</sup> To explore model fit, we also tested a complete mediation model differing from the just-identified model in omitting direct paths from actual/ideal self-discrepancies to anxious/depressive symptoms such that these associations were completely mediated by rumination. This ‘complete mediation’ model was a reasonable fit to the data,  $\chi^2(4) = 9.51$ ,  $p = .05$ , RMSEA = .10, 90% CI [.00, .18], CFI = .97, TLI = .94, SRMR = .06. We also tested a ‘partial mediation’ model that added to the complete mediation model the direct paths from (i) AI discrepancy to depressive symptoms and (ii) AO discrepancy to anxious symptoms. This model was a good fit to the data,  $\chi^2(2) = 3.16$ ,  $p = .21$ , RMSEA = .07, 90% CI [.00, .19], CFI = .99, TLI = .97, SRMR = .03, and a significant improvement on the full mediation model,  $\Delta\chi^2(2) = 6.35$ ,  $p = .04$ . Finally, this partial mediation model was not significantly improved by including individual paths from (i) AI discrepancy to anxious symptoms,

#### 4. Discussion

Our findings do not support the prediction derived from self-discrepancy theory (Higgins, 1987) that AI self-discrepancies are independently and uniquely associated with depressive symptoms, because AI self-discrepancies were also independently associated with anxious symptoms. Consistent with self-discrepancy theory, AO self-discrepancies were independently associated with anxious affect. Our more original contribution is the finding that rumination selectively mediates the independent relationships between AI self-discrepancies (but not AO self-discrepancies) and both anxious and depressive symptoms.

Carver and Scheier (1998) suggested that ideal self-regulation represents a relatively pure form of approach motivation whereas ought self-regulation is principally motivated by the desire to avoid a negative outcome (e.g., ‘I ought to be academic, so my parents will not be disappointed in me’). Motivational theories of psychopathology (e.g., Fowles, 1994) suggest that depression is characterised by reduced approach motivation and increased avoidance motivation, whereas anxiety is characterised by increased avoidance motivation. Taking these theoretical accounts together, the finding that AI self-discrepancy independently predicted *anxious* as well as depressive symptoms is difficult to reconcile with an understanding of AI self-discrepancy as uniquely relevant to approach motivation. Ideal selves may evoke anxious uncertainty about whether they can be attained. Given that other studies have failed to find differentiated associations between particular symptoms and self-discrepancies (e.g., Ozgul et al., 2003), AI self-discrepancies may not be as motivationally pure as self-discrepancy theory suggests, particularly in young adult populations who remain involved in a developmental stage of identity formation during which ideals and oughts are under negotiation. Although the independent association between AO self-discrepancies and anxious symptoms supported self-discrepancy theory, the magnitude of the AO-anxious and AO-depressive symptom path coefficients was very similar.

As expected on the basis of transdiagnostic models (Nolen-Hoeksema et al., 2008), both anxious and depressive symptoms were positively associated with rumination. Unexpectedly, however, only AI self-discrepancy (and not AO self-discrepancy) predicted independent variance in rumination. Although the goal progress model (Martin & Tesser, 1996) suggests that a discrepancy on any important goal may instigate rumination, we originally speculated that an independent association would obtain for AO self-discrepancy. This originated from our assumption that the salient (though covert) avoidance motives that predominate in ought-based self-regulation would encourage monitoring for undesirable outcomes and hence rumination (Moberly & Dickson, 2016). In fact, when rumination was included in the model, the AO self-discrepancy retained a direct relationship with anxious symptoms that was not mediated by rumination. Although Moberly and Dickson (2016) found evidence that people were most likely to ruminate about goals that they pursued for avoidant reasons, they did not collect data on the extent to which people were experiencing discrepancies in relation to goal attainment or progress, which may explain the different pattern of findings. Furthermore, the evolutionary necessity to take urgent action may dictate that proximity to a negative outcome (indicated by a large AO discrepancy) generates anxious arousal through a more direct route than ruminative contemplation.

Taken together with the finding that AI self-discrepancy indiscriminately predicted both anxious and depressive symptoms, the asymmetric relationship between AI and AO self-discrepancy and rumination may be explained by differences in other processes relating to participants' ideal and ought selves. Although no significant differences

emerged on either the magnitude or importance of participants' ideal versus ought selves, a slower perceived rate of discrepancy reduction with respect to ideal versus ought selves may have resulted in greater rumination for a constant level of discrepancy (Martin & Tesser, 1996). Alternatively, people may have entertained particularly optimistic standards for desired rate of progress toward their ideal selves, contributing to rumination and negative affect. Future studies could test these possibilities while attempting to replicate our findings.

Our study was the first to reveal that rumination selectively mediated the association between AI self-discrepancy and both depressive and anxious symptoms. This suggests that AI self-discrepancy is associated with psychological distress to the extent that it is accompanied by repetitive self-focus on that discrepancy. Previous studies (e.g., Roelofs et al., 2007) did not examine whether rumination mediated independent relationships for AI and AO self-discrepancies. Our finding that rumination selectively mediated the link between AI self-discrepancy and distress is consistent with results from an experimental paradigm demonstrating that rumination triggered by promotion goal failure (more so than prevention goal failure) was likely to intensify negative affect (Jones et al., 2013). These results are important in that they indicate that the transdiagnostic process of ruminative thinking serves as a lynchpin between motivational representations of the future self and psychological distress.

Although Scott and O'Hara (1993) found elevated self-discrepancies in clinically depressed and anxious samples, future research could test whether rumination is causally implicated in the relationship between self-discrepancies and clinical episodes of depression and generalized anxiety. Nevertheless, the following suggestions can be tentatively drawn from our data. First, self-discrepancies with respect to the ideal self may not be inherently problematic if a person adopts a mindful stance toward them and does not engage in negative ruminative thinking (Watkins, 2018). Indeed, holding positive future self-representations has been found to be an important contributor to well-being (MacLeod, 2017). Second, self-discrepancies with respect to the ought self may generate anxiety that is more difficult to downregulate. Although a prevention-based mode of regulation is appropriate in some circumstances, clients might be encouraged to work toward positive representations of the future self that are self-concordant, attainable and not undergirded by avoidance.

Some methodological limitations deserve comment. First, the cross-sectional design means that we cannot infer causality. Unmeasured variables that correlate with rumination may be responsible for the link between AI self-discrepancy and psychological distress. However, we found no evidence for a reverse mediation model in which symptoms mediated the relationship between self-discrepancies and rumination. Further, the GAD-7 is a generalized measure of anxiety and as such is highly correlated with depression. Therefore, it is possible that a more fear-based measure of anxiety (e.g., BAI) may not have shown the same mediated effect of rumination between AI self-discrepancy and anxious symptoms. This awaits further investigation. Second, we tested a student sample and our findings are not necessarily generalizable to community or clinical populations. Although our sample scored across the range of depressive and anxious symptoms, 51% reported minimal to mild levels of depressive symptoms, and 65% reported minimal to mild levels of anxious symptoms. Therefore, future research is needed to investigate whether the findings are replicable in clinical samples. Our research relied on self-report measures and an idiographic selves questionnaire. Future research would benefit from implicit measures of self-discrepancy, which would provide greater confidence that the association between self-discrepancy, rumination and symptoms is not due to shared method variance.

##### 4.1. Conclusions

Our findings contribute to the evidence that distinct forms of self-discrepancy may not have independent relationships with specific

(footnote continued)

$\Delta\chi^2(1) = 0.57, p = .45$ , or (ii) AO discrepancy to depressive symptoms,  $\Delta\chi^2(2) = 2.97, p = .08$ .

forms of psychological distress, as predicted by self-discrepancy theory. Moreover, our results provide further evidence that rumination serves as a transdiagnostic process that links self-regulatory processes of relevance to motivation to psychological distress. Strauman et al. (2006) found that an intervention targeting promotion goal pursuit is effective in reducing dysphoric responses to ideal selves in depressed persons. Our results suggest that the efficacy of such therapies may in part be due to a reduction in rumination and consequent reductions in anxious and depressive symptoms. It remains for future research to determine the extent to which these relationships emerge over time and contribute to clinical levels of psychological disorder.

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## Declaration of Competing Interest

None.

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