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Etherson, Marianne E. ORCID

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### **Abstract**

Are feelings of not mattering an antecedent of depressive symptoms, a consequence, or both? Most investigations focus exclusively focus on feelings of not mattering as an antecedent of depressive symptoms. Our current study examines a vulnerability model, a complication model, and a reciprocal relations model according to a cross-lagged panel model (CLPM) and a random intercept cross-lagged panel model (RI-CLPM). A sample of 197 community adults completed the General Mattering Scale (GMS), the Anti-Mattering Scale (AMS), and a depression measure at three timepoints (i.e., baseline, three weeks, and six weeks). GMS and AMS scores were associated robustly with depressive symptoms at each timepoint. Other results highlighted the need to distinguish levels of anti-mattering and mattering. CLPM analyses supported a reciprocal relations model of anti-mattering (assessed by the AMS) and depressive symptoms and a complication model linking mattering (assessed by the GMS) and depressive symptoms. The RI-CLPM analyses provided tentative support only for a complication model of anti-mattering and depressive symptoms. Our findings highlight the differences between measures of the mattering construct and the need to adopt a temporal perspective that considers key nuances and the interplay among feelings of mattering, feelings of not mattering, and depression.

*Keywords:* mattering, depression, reciprocal, cross-lagged panel analysis, random-intercept cross-lagged panel analysis, longitudinal, treatment.

## Introduction

Depressive symptoms are a major public health problem. Over 300 million people suffer from depressive symptoms worldwide (World Health Organization, 2017), with recent evidence indicating that depressive symptoms are on the rise (Vos et al., 2017). Depressive symptoms consist of sadness, irritability, loss of interest, changes in appetite, sleep disturbances, poor concentration, psychomotor agitation, fatigue, guilt, and thoughts of death or suicide (American Psychological Association, 2019). While depressive symptoms are a possible indication of a future depressive disorder (Judd, Schletter, & Akiskal, 2002), even without a depressive disorder, depressive symptoms cause considerable distress and impairment at the individual and societal level (see World Health Organization, 2017). Research, for instance, has found depressive symptoms to be positively related to interpersonal stress reactivity, low self-esteem, and suicide ideation (Ribeiro, Huang, Fox, Franklin, 2018; Sheets & Armeiy, 2020; Sowislo & Orth, 2013). Though not fully understood, depressive symptoms are thought to reflect the complex interplay of biological, social, and psychological factors (e.g., Beck & Bredemeier, 2016). Thus, research is needed to further identify vulnerability factors and protective factors to prevent the onset of depressive symptoms.

Mattering is one factor which has been shown to be a protective factor for depressive symptoms (see Taylor & Turner, 2001). Rosenberg and McCullough (1981) define mattering as “the feeling that others depend on us, are interested in us, are concerned with our fate, or experience us as an ego-extension” (p.165). Mattering was originally conceptualized to consist of three facets: (1) attention – the feeling that one is noticed by others, (2) importance – the feeling that one is significant to others, and (3) dependence – the feeling that others depend and rely on us (Rosenberg & McCullough, 1981). Ego-extension was later added as a fourth facet and acknowledges emotional investment from others as a core feature of

mattering (Rosenberg, 1985). While mattering is conceptually similar to related interpersonal constructs, such as belongingness, social support, and loneliness, mattering has unique elements which are not captured by other constructs (see Drabenstott, 2019; Elliott, 2009; Taylor & Turner, 2001). In particular, mattering has a distinct emphasis on feeling important, significant, and valued by others (Casale & Flett, 2020; Flett, 2018; Prilleltensky, 2020).

Flett (2018) has recently extended conceptualizations of mattering by creating a construct tapping explicit feelings of not mattering (i.e., anti-mattering). Anti-mattering captures feelings of not mattering, alongside feelings of insignificance and feeling marginalized by others (Flett, 2018). Notably, Flett (2018) suggests this construct is not merely the opposite of positive feelings of mattering. Research supports this notion. For instance, feelings of not mattering are found to predict unique variance in outcomes such as loneliness, negative automatic thoughts, negative affect, depressive symptoms, and perceived stigma from others beyond variance attributed to mattering (Besser, Flett, Nepon, & Zeigler-Hill, 2020; Flett, 2018; Shannon, Flett, & Goldberg, 2019). Nevertheless, while feelings of not mattering exhibit stronger ties to depressive symptoms, no studies have longitudinally examined the relationship between feelings of not mattering and depressive symptoms. In addition, it is unclear whether feelings of not mattering are an antecedent of depressive symptoms, a complication of depressive symptoms or both. Against this background, we test three alternative theoretical models: a vulnerability model, a complication model, and a reciprocal relations model.

#### *Vulnerability model of mattering and depressive symptoms*

A vulnerability model suggests feelings of not mattering come before and contribute to depressive symptoms (e.g., mattering → depressive symptoms). According to a vulnerability model, feelings of not mattering are an antecedent but not a consequence of depressive symptoms. Theoretical accounts support this vulnerability model, suggesting that

people who feel like they do not matter and are not valued by others are prone to depressive symptoms (e.g., Flett, 2018). For instance, it is thought that a negative self-concept is likely to emerge for people who fail to derive a sense of care and affection from significant others (Flett, 2018). This is in line with cognitive accounts of depression suggesting that a highly negative self-concept is common among depressed individuals (Beck, 1967). In addition, theory also suggests that the depressive paradox (i.e., a paradoxical propensity to blame oneself for negative and uncontrollable experiences) may engender depressive symptoms for people who feel they do not matter (Abramson & Sackeim, 1977; Flett, 2018). When people perceive they are unimportant and fail to elicit a sense of interest and affection from others, for instance, they will likely internalize these messages and attribute their lack of mattering to a defective self (Flett, 2018). Consequently, feelings of self-blame and self-criticism arising from a lack of connection to others will likely generate feelings which are depressogenic (Flett, Burdo, & Nepon, 2020).

A large amount of research has shown support for a vulnerability model, in which low levels of mattering are found to predict depressive symptoms (e.g., Dixon & Robinson-Kurpius, 2008; Flett, Galfi-Pechenkov, Molnar, Hewitt, & Goldstein, 2012; Flett, Sue, Ma, & Guo, 2016). Importantly, longitudinal studies also provide support for the notion that low feelings of mattering confer vulnerability to depressive symptoms over time (Marshall & Tilton-Weaver, 2019; Taylor & Turner, 2001). Taylor and Turner (2001), for instance, examined the relationship between mattering and depressive symptomology cross-sectionally and over time in a large urban community sample. Mattering was found to inversely predict depressive symptomology 12 months later. In addition, Marshall and Tilton-Weaver (2019) also provide partial support for a vulnerability model in adolescents where perceptions of mattering to friends, but not family, predicted depressive symptoms one year later.

*Complication/scar model of mattering and depressive symptoms*

Almost all studies to date have examined the relationship between mattering and depressive symptoms through the lens of a vulnerability model. As such, tests of competing models (e.g., complication or scar models) are rare. A complication or scar model of mattering and depressive symptoms suggest depressive symptoms occur before and contribute to feelings of not mattering (e.g., depressive symptoms → mattering). According to a complication and scar model, feelings of not mattering are a consequence of depressive symptoms, but not an antecedent. The difference between a complication model and a scar model lies in whether changes are transient or permanent. In complication models, depressive symptoms result in transient, short-term increases in feelings of not mattering whereas, in scar models, depressive symptoms result in permanent increases in feelings of not mattering (Bagby, Quilty, & Ryder, 2008). Here, we focus on a complication model and shorter-term changes in mattering.

In terms of theoretical underpinning, the complication model is based on the idea that depressive symptoms impact how people perceive, behave, and interact with others. In line with this notion, interpersonal theories of depression suggest that depressive symptoms are characterized by social difficulties, withdrawal, and isolation (Coyne, 1976; Lewinsohn, 1974; Lewinsohn, Hoberman, Teri, & Hautzinger, 1985). Indeed, models adopting a social-cognitive lens of depression suggest people exhibiting depressive symptoms often inflict adverse interpersonal behaviors (e.g., reassurance-seeking, criticism, hostility) onto others and thus elicit negative reactions from others (Sacco & Vaughan, 2006). While people experiencing depressive symptoms may accurately detect poor social support and negative appraisals from others, it is also thought that a depressogenic self-schema will predispose people to view interpersonal encounters more negatively (Sacco & Beck, 1995). For instance, people experiencing depressive symptoms often engage in cognitive biases, and distorted beliefs about themselves and how others perceive them, which may impact upon their future

interpersonal expectancies (Beck, 1967, 1976; Clark et al., 1999; Sacco & Beck, 1995). Such beliefs may also extend to greater perceptions of not mattering to others.

While theories of depression suggest a complication model is plausible, there is a lack of research examining complication models of mattering and depressive symptoms and of the research which does exist, findings do not support a complication model (Marshall & Tilton-Weaver, 2019). Nevertheless, there is some indirect evidence supporting a complication model. For instance, studies examining depressive symptoms and related constructs to mattering found depressive symptoms to predict increased loneliness, and decreased belongingness and self-esteem over time, but not the reverse (Cockshaw, Shochet, & Obst 2014; McHugh Power et al., 2020; Shahar & Davidson, 2003). However, to date, no research has examined whether depressive symptoms predict greater feelings of not mattering over time. As such, both complication models and reciprocal relation models of feelings of not mattering and depressive symptoms are examined in the current study.

#### *Reciprocal relations model of mattering and depressive symptoms*

A final model we also examine is a reciprocal relations model. This model combines a vulnerability model and a complication model. This model is predicated on the notion that feelings of not mattering are both an antecedent and consequence of depressive symptoms and are interrelated. Given what is assumed in the aforementioned models it is conceivable that depressive symptoms and feelings of mattering co-occur and exacerbate cognitions and symptoms experienced. For instance, people who perceive they do not matter and are not important are more likely to perceive the self as defective and will generate a sense of despair and desolation, leading to symptoms of depression (Flett, 2018). And, at the same time, people experiencing depressive symptoms typically elicit poor interpersonal behaviors and adopt an extremely negative sense of self and way of thinking, which are likely to distort and magnify perceptions of not mattering (Beck, 1967; Clark et al., 1999; Sacco & Vaughan,

2006). As such, it is possible that perceptions of not mattering and depressive symptoms reciprocally influence one another over time.

Although a reciprocal relations model is quite plausible, it is seldom tested. To date, only one study has examined reciprocal relations between mattering and depressive symptoms (Marshall & Tilton-Weaver, 2019) and did not provide support for a reciprocal relations model. Specifically, Marshall & Tilton-Weaver (2019) examined mattering to family and friends and psychosocial wellbeing (depressive symptoms and problem behavior) in adolescents. Findings provided support for a vulnerability model where perceptions of lower mattering to friends, but not family, predicted depressive symptoms one year later. Although a reciprocal relations model was not supported in this case, it is possible that it may be supported when examining feelings of not mattering or over shorter periods of time (indicative of complications rather than scars). As research examining the reciprocal relations model is only just beginning, research adopting different methodological designs, measures, and samples is clearly warranted to test this model.

#### *Advancing literature on feelings of mattering and depressive symptoms*

We also sought to advance existing research from a methodological perspective in two respects. The first advance is the inclusion of additional waves of data. The only longitudinal study that exists in the previous literature which examined reciprocal relations of mattering and depressive symptoms consists of two waves of data (Marshall & Tilton-Weaver, 2019). However, three or more waves are recommended when testing cross-lagged reciprocal relations model to depict a broader and more comprehensive slice of change (Burkholder & Harlow, 2003). The second advance is that researchers in this area have typically employed traditional cross-lagged panel models (CLPM) to examine reciprocal relations (e.g., Besser, Flett, Sherry & Hewitt, 2020; Marshall & Tilton-Weaver, 2019; McHugh Power et al., 2020). However, traditional cross-lagged panel models do not separate

between and within-person variance (Hamaker, Kuiper, & Grasman, 2015). This is problematic because estimates of parameters are confounded by between-person variance and do not accurately reflect within-person (causal) changes (Hamaker et al., 2015). As such, random-intercept cross-lagged panel analysis (RI-CLPM) is preferable as it calculates cross-lagged effects solely based on within-person fluctuations providing a better test of the underlying hypothesized processes (Hamaker et al., 2015). By adopting a three-wave design and using both a CLPM and RI-CLPM, we provide the most robust test of the three possible models, to date.

### *The Present Study*

Against this background, our study tests reciprocal relations between feelings of mattering and not mattering and depressive symptoms. Based on theory (e.g., Flett, 2018) and research (e.g., Taylor & Turner, 2001), we hypothesize that feelings of mattering and not mattering are antecedents of depressive symptoms, in line with a vulnerability model. Moreover, due to inconclusive findings (e.g., Marshall & Tilton-Weaver, 2019), we took an exploratory approach concerning complication and reciprocal effects between feelings of mattering and not mattering and depressive symptoms.

## **Method**

### *Participants and procedure*

Our sample consisted of 200 community adults (59.5% female; 3 undisclosed;  $M_{\text{age}} = 40.17$  years,  $SD = 12.68$ ) recruited from Prolific Academic, an online crowdsourcing platform for academic researchers. Participants were from the United Kingdom and were predominantly White British (82.5%).

The present study received ethical approval from the university's research ethics committee. Participants signed up to the study on Prolific Academic and were only eligible to participate if they were from the United Kingdom and had a minimum of 100 previous

submissions with a 95% or above approval rate. Participants then completed a consent form and online questionnaire on Qualtrics via Prolific Academic on three occasions separated by three weeks. All participants were compensated £0.85 per questionnaire completed.

Demographics were reported in Wave 1. 200 participants (100%) completed Wave 1, 177 of 200 (88.5%) completed Wave 2, and 189 of 200 (94.5%) completed Wave 3. The average time lag between Time 1 and Time 2 was 21.51 days ( $SD = 1.39$ ) and between Time 2 and Time 3 was 21.02 days ( $SD = 0.56$ ).

### *Measures*

#### *Mattering*

Mattering was measured using the five-item Rosenberg General Mattering Scale (GMS; Marcus & Rosenberg, 1987). The GMS is the most widely used measure of mattering (Flett, 2018). This scale captures the extent to which individuals perceive they matter to others (e.g., “How much do you feel others would miss you if you went away”). All items are worded in a positive direction. Participants rated the GMS on a 4-point scale from 1 (*not at all*) to 4 (*a lot*). The GMS has high internal reliability ( $\alpha > .85$ ; Besser et al., 2020; Flett & Nepon, 2020; Shannon et al., 2019) and adequate construct and discriminant validity (Flett, 2018). The GMS, for instance, is found to negatively correlate with depression, loneliness, social anxiety, suicide ideation, and physical susceptibility to stress (Flett, Goldstein, Pechenkov, Nepon, & Wekerle, 2016; Joiner et al., 2009; Taylor, McFarland, & Carr, 2019). Confirmatory factor analysis indicates that items have good fit and represent one factor (Taylor & Turner, 2001; see MacDonald, Kumar, & Schermer, 2020).

#### *Anti-Mattering*

Feelings of not mattering were measured using the five-item Anti-Mattering Scale (AMS) detailed in Flett (2018). The AMS captures feelings of not mattering to others, alongside feelings of being marginalized (e.g., “How much do you feel like you will never

matter to certain people?”). The AMS parallels the GMS, however all items are worded in a negative direction. Participants responded to the AMS on a 4-point scale ranging from 1 (*not at all*) to 4 (*a lot*). Evidence supports the reliability and validity of the AMS. For instance, the AMS has high internal reliability ( $\alpha = .87$  to  $.91$ ) and strong one-week test-retest reliability ( $r = .65$ ; Flett, 2018). In addition, feelings of not mattering are found to be positively related to depression, social anxiety, and loneliness and negatively related to mattering and self-esteem (see Besser et al., 2020; Flett, 2018). Confirmatory factor analysis indicates that a unidimensional model provides excellent fit to the data (Flett, 2018).

### *Depressive Symptoms*

Depressive symptoms were measured using the 10-item short-form of Radloff's (1977) Centre for Epidemiological Studies Depression Scale (CES-D-SF; e.g., “I felt that I could not shake off the blues even with the help from my friends or family”; Cole, Rabin, Smith, & Kaufman, 2004). Participants responded to the CES-D-SF on a four-point scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). The CES-D-SF has good psychometric properties (Cole et al., 2004). For instance, the CES-D-SF has high internal reliability ( $\alpha > .71$ ; Mushquash et al., 2013) and strong two-week test-retest reliability ( $r = .68$ ; Smith et al., 2017). The CES-D-SF is also found to strongly correlate with the original 20-item scale ( $r = .94$ ; McGrath et al., 2012). A confirmatory factor analysis of item responses indicates that a single factor model exhibits the best fit to the data (Cole et al., 2004).

### *Analytical Approach*

A CLPM and a RI-CLPM (Hamaker et al., 2015) was used to examine the stability and reciprocal relationships of feelings of mattering and not mattering and depressive symptoms over time. In the CLPM, the autoregressive paths are used to test the stability of the variables over time (e.g., depressive symptoms at Time 1 to depressive symptoms at Time

2) and cross-lagged paths are used to test whether a change in one variable (e.g., feelings of not mattering at Time 1) was related to a change in another variable over time (e.g., depressive symptoms at Time 2; Kearney, 2018). However, because the CLPM does not distinguish between within- and between-person variance, causal paths are typically over-estimated (Mulder & Hamaker, 2021). As such, the RI-CLPM is advantageous over the traditional CLPM because the RI-CLPM accounts for stable, trait-like differences between individuals and separates the within-person variations from between-person variations by partialling out the between-person variance. In this sense, the cross-lagged paths in the RI-CLPM differ from the traditional CLPM because they pertain exclusively to within-person variations (Hamaker et al., 2015). Therefore, in contrast to the CLPM, autoregressive paths in the RI-CLPM capture within-person stability and carry-over effect in measures over time (e.g., depressive symptoms for an individual at one timepoint may predict greater depressive symptoms at a subsequent timepoint), whereas cross-lagged paths capture the degree to which changes in one measure is predicted by a previous deviation from an individual's score on another measure, controlling for preceding expected scores (e.g., depressive symptoms for an individual at one timepoint predict greater feelings of not mattering at a subsequent timepoint, controlling for prior feelings of not mattering; Mund & Nestler, 2019).

## **Results**

### *Data Screening*

Less than .08% data was missing across waves. Little's MCAR test was non-significant, inferring data was missing completely at random  $\chi^2(95) = 94.584, p = .493$ . Missing data was handled using full information maximum likelihood. In addition, because multivariate outliers distort results of correlational analyses, we excluded three participants who exhibited a Mahalanobis distance above the critical value  $\chi^2(21) = 46.797, p < .001$ .

This produced a final sample of 197 community adults (59.4% female; 3 undisclosed;  $M_{\text{age}} = 40.06$  years,  $SD = 12.75$ ).

### *Descriptive statistics*

Means, standard deviations, Cronbach's alpha, and bivariate correlations appear in Table 1. Cronbach's alphas are high ( $\alpha > .86$ ). In addition, the three-week and six-week test-retest reliabilities were strong ranging from .78 to .81 for mattering, .73 to .79 for feelings of not mattering, and .80 to .86 for depressive symptoms. Based on Cohen's (1992) guidelines for small, medium, and large correlations ( $r = .10, .30, .50$ ), mattering displayed a significant large negative correlation with depressive symptoms and feelings of not mattering displayed a significant large positive correlation with depressive symptoms across all timepoints (see Table 1).

### *Data Analyses*

Cross-lagged panel analyses and random-intercept cross lagged panel analyses in Mplus Version 8.5 evaluated the reciprocal relations model (Muthén & Muthén, 1998-2018). The significance of effects was determined using bias-corrected bootstrapping with 20,000 resamples (Shrout & Bolger, 2002). Model fit was evaluated using the chi-square, comparative fit index (CFI), tucker-lewis index, (TLI), standardized root mean square residual (SRMR) and the root mean square error of approximation (RMSEA; Hu & Bentler, 1999). The CLPM (see Figure 1) exhibited poor fit:  $\chi^2(13) = 75.40, p < .001$ ; CFI = .95; TLI = .88; RMSEA = .16 (95% CI .123, .191); SRMR = .04. In comparison, the constrained RI-CLPM exhibited excellent fit to the data:  $\chi^2(7) = 8.38, p > .05$ ; CFI = 1.0; TLI = 1.0; RMSEA = .03 (95% CI .00, .10); SRMR = .03 (see Figure 2).

In the CLPM, correlations ranged from -.15 to -.60,  $p < .01$  for mattering and depressive symptoms, .19 to -.53,  $p < .01$  for anti-mattering and mattering, and .29 to .73,  $p < .01$  for anti-mattering and depressive symptoms. In comparison, in the RI-CLPM, when

within-person correlations were partialled out, the between-person correlations of the random-intercept factors were also high and statistically significant. For instance, the between-person correlation of mattering and depressive symptoms was  $r = -.73, p < .01$ , the between-person correlation of mattering and anti-mattering was  $r = -.63, p < .01$ , and the between-person correlation of anti-mattering and depressive symptoms was  $r = .82, p < .01$ . Here, the between-person correlations show that individuals with higher feelings of not mattering tend to experience greater depressive symptoms. In addition, as expected in the RI-CLPM, the within-person correlations were considerably smaller compared to correlations within the traditional CLPM (Mund & Nestler, 2019). Here, all within-person correlations between mattering, anti-mattering and depressive symptoms were insignificant, with exception of the within-person correlation between anti-mattering and depressive symptoms at Time 1 ( $r = .44, p < .01$ ).

Comparison of the estimates of model parameters between the CLPM and RI-CLPM also revealed substantial differences. For the CLPM, autoregressive paths were statistically significant and ranged from  $\beta = .70$  to  $.72$  for feelings of mattering,  $\beta = .55$  to  $.69$  for anti-mattering, and  $\beta = .74$  to  $.91$  for depressive symptoms. For the RI-CLPM, after controlling for the between-person variance the autoregressive parameters were substantially attenuated and were no longer statistically significant ranging from  $\beta = .15$  to  $.19$  for mattering,  $\beta = .08$  to  $.23$  for anti-mattering, and  $\beta = .22$  to  $.50$  for depressive symptoms. These findings indicate that most of the stability from the CLPM captures between-person variance.

Regarding the cross-lagged effects, estimates were also substantially different between the CLPM and the RI-CLPM. In the CLPM, the negative predictor effect of depressive symptoms at Time 1 on mattering at Time 2 ( $\beta = -.14, p < .05$ ) and the positive predictor effect of depressive symptoms at Time 1 on anti-mattering at Time 2 ( $\beta = .33, p < .01$ ) was significant. Conversely, the negative predictor effect of mattering at Time 1 on

depressive symptoms at Time 2 ( $\beta = -.02, p > .05$ ) and the positive predictor effect of anti-mattering on depressive symptoms at Time 2 ( $\beta = -.10, p > .05$ ) was non-significant. In addition, the negative predictor effect of depressive symptoms at Time 2 on mattering at Time 3 ( $\beta = -.14, p < .05$ ) was significant, whereas the positive predictor effect of depressive symptoms at Time 2 on anti-mattering at Time 3 ( $\beta = .10, p > .05$ ) was non-significant. In addition, the positive predictor effect of mattering at Time 2 on depressive symptoms at Time 3 ( $\beta = -.02, p > .05$ ) was non-significant, whereas the positive predictor effect of anti-mattering at Time 2 on depressive symptoms at Time 3 ( $\beta = .12, p < .05$ ) was significant (see Figure 1).

In the RI-CLPM, we found that the negative predictor effect of mattering at Time 1 on depressive symptoms at Time 2 was non-significant ( $\beta = .24, p > .05$ ) and the negative predictor effect of depressive symptoms at Time 1 on mattering at Time 2 was non-significant ( $\beta = -.06, p > .05$ ). The positive predictor effect of anti-mattering at Time 1 on depressive symptoms at Time 2 was non-significant ( $\beta = -.33, p > .05$ ), whereas the positive predictor effect of depressive symptoms at Time 1 on anti-mattering at Time 2 was significant ( $\beta = .47, p < .05$ ). The negative predictor effect of mattering at Time 2 on depressive symptoms at Time 3 ( $\beta = .11, p > .05$ ) and the negative predictor effect of depressive symptoms at Time 2 on mattering at Time 3 was non-significant ( $\beta = .27, p > .05$ ). Likewise, the positive predictor effect of anti-mattering at Time 2 on depressive symptoms at Time 3 was non-significant ( $\beta = .14, p > .05$ ) and the positive predictor effect of depressive symptoms at Time 2 on anti-mattering at Time 3 was non-significant ( $\beta = -.28, p > .05$ ) (see Figure 2). In sum, three significant cross-lagged paths in the CLPM were rendered insignificant when examined in the RI-CLPM.

## Discussion

The aim of our study was to test vulnerability, complication, and reciprocal relations models of feelings of mattering and not mattering, and depressive symptoms. We did so using both traditional and more contemporary analytical approaches (CLPM and RI-CLPM). We hypothesized that feelings of mattering and not mattering are antecedents of depressive symptoms (vulnerability model). The CLPM provided unique support for a reciprocal relations model of anti-mattering and depressive symptoms and a complication model of mattering and depressive symptoms. However, the RI-CLPM provided partial support for a complication model of anti-mattering and depressive symptoms.

The primary focus of this research was on evaluating the models described above. However, it should also be noted that the current results also attest to the relative stability of levels of mattering and not mattering. Notably, the test-retest reliability of mattering and anti-mattering measures have not been studied extensively, particularly with the recently developed Anti-Mattering Scale (Flett, 2018; Flett et al., 2022). Analyses indicated that feelings of mattering and not mattering had strong and comparable temporal stability over the period of this investigation. These findings are congruent with theory suggesting that perceptions of mattering become internalized and engrained into a broader sense of self yet are also somewhat state-like and reactive to feedback from others (Flett, 2018).

*A vulnerability model, complication model, and reciprocal relations model.*

Though empirical research on complication models is relatively scarce, we found depressive symptoms at Time 1 to be an antecedent of feelings of not mattering at Time 2 in both the CLPM and the RI-CLPM. This finding is in line with interpersonal theories of depression suggesting that people experiencing depressive symptoms may struggle to engage in positive social encounters and derive a sense of mattering from others (Allen & Badcock, 2003; Coyne, 1976; Sacco & Vaughan, 2006). For instance, depressed people are considered to have heightened self-awareness and self-criticism which leads them to become socially

withdrawn or alternatively lack the social skills to form positive interactions with others (Lewinsohn, 1974). In addition, theory suggests that perceptions of mattering are interactional and require a mutual exchange between people (Carson, 1969; Fazio, 2009; Flett, 2018). Therefore, because people experiencing depressive symptoms are less likely to form positive social interactions, they are less able to convey to others that they matter, and in turn, may fail to derive a sense of mattering to others.

The emergence of a complication model in the present study is in line with research which found depressive symptoms predict greater social and emotional loneliness and lower belongingness over time (Cockshaw, Shochet, & Obst 2014; McHugh Power et al. 2020). However, this finding is not in keeping with previous research on mattering and depressive symptoms which did not find support for a complication model (Marshall & Tilton-Weaver, 2019). There are several possible explanations for this discrepancy. Notably, the present study had a time lag of three weeks between Time 1 and 2, whereas Marshall and Tilton-Weaver (2019) had an interval of 12 months between waves. Congruent with this notion, research has shown that it is possible for complication effects to diminish over time. In support of this idea, Shahar and Davidson (2003) found a complication effect of depressive symptoms predicting decreased self-esteem over time in the first 4 months, but not in the subsequent 5 months. This finding is potentially quite relevant given that mattering and self-esteem are typically correlated, but clearly distinguishable (see Rosenberg & McCullough, 1981). It is possible, then, that any complication effect in Marshall and Tilton-Weaver's (2019) would have diminished at 12 months.

The lack of finding of a vulnerability model with mattering and depressive symptoms in the CLPM and the RI-CLPM was unexpected. Though, this finding contrasts against previous research (e.g., Taylor & Turner, 2001), our study was the first to examine feelings of not mattering alongside mattering in a vulnerability model. Here, this finding is not

completely surprising given that feelings of not mattering are deemed to be much more destructive and insidious than feelings of low mattering and fit more aptly with the negative self-views and self-schemas associated with depressive symptoms (Flett, 2018). Accordingly, feelings of not mattering likely accounted for most of the variance in the model. Based on our findings, then, when considered in tandem with feelings of not mattering as assessed by the AMS, feelings of mattering are less likely to be important when considering risk of depressive symptoms.

Nonetheless, the finding that feelings of not mattering assessed with the AMS at Time 2 predicted greater depressive symptoms at Time 3 in the CLPM is in line with a growing body of research which show that feelings of mattering are inversely related to depressive symptoms over time (Marshall & Tilton-Weaver, 2019; Taylor & Turner, 2001). This finding aligns with theory suggesting that when people repeatedly fail to elicit care and interest from others, a negative self-concept will emerge (Beck, 1967). In line with this, self-blame and helplessness may ultimately develop from repeated negative interpersonal encounters (Abramson & Sackeim, 1977), which in turn perpetuate depressive symptoms. For people who feel they do not matter, overgeneralizations concerning particular situations and encounters will be extremely threatening, particularly when thoughts concern hopelessness regarding future expectancies (Flett, 2018). Thus, it is unsurprising that people who encounter these thoughts are greater prone to depressive symptoms.

The findings of the CLPM are tempered by those of the RI-CLPM where the vulnerability effect of feelings of not mattering and depressive symptoms did not emerge. Previous studies examining a vulnerability effect of mattering and depressive symptoms have examined this relationship using a traditional CLPM (e.g., Marshall & Tilton-Weaver, 2019), which are known to overestimate cross-lagged paths (Hamaker et al., 2015). Therefore, in cross-lagged panel models, estimates of cross-lagged paths are confounded by trait-like

between-person differences, which do not solely reflect changes in the within-person differences (Hamaker et al., 2015). The present study suggests that a vulnerability effect for feelings of not mattering and depressive symptoms may not emerge when cross-lagged paths pertain only to causal within-person differences. In line with our findings, previous research has also found cross-lagged relationships found in a CLPM to become attenuated when replicated in a RI-CLPM (Burns, Crisp, & Burns, 2020). On a related note, it is also possible that the lack of findings here may be attributed to a lack of statistical power needed to detect an effect, particularly as the RI-CLPM requires larger sample sizes (Hamaker, 2018). Future research is needed to replicate these findings adopting a RI-CLPM.

Our study examined reciprocal relations between feelings of mattering and not mattering and depressive symptoms. In addition, we compared findings using a CLPM and a RI-CLPM to examine the extent to which findings from the CLPM replicate in a more robust RI-CLPM. A CLPM provided support for a reciprocal relations model of feelings of not mattering and depressive symptoms and a complication model of mattering and depressive symptoms. By contrast, a RI-CLPM provided support for a complication model of feelings of not mattering and depressive symptoms only. Here, both models found support for a complication effect of depressive symptoms at Time 1 predicting feelings of not mattering at Time 2, where the complication effect of mattering and depressive symptoms and the vulnerability effect of feelings of not mattering and depressive symptoms did not emerge in the RI-CLPM. Our discrepancy in findings suggest that future research should re-examine findings from cross-lagged panel models to determine the extent to which findings replicate in more robust random-intercept cross-lagged panel models which reflect within-person differences to determine causal mechanisms. This is especially important when using findings of cross-lagged models for the basis of future individual interventions (Hamaker et al., 2015).

### **Limitations and Future Directions**

Our study has clear limitations. First, we employed self-report measures, which may lead to greater social desirability and common-method bias (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). Future research should move beyond self-report measures by utilising multi-source designs (e.g., informant reports from significant others). Second, our sample size may have been too low across timepoints ( $N$  range = 177 to 195). In line with Kline's (2015) suggestion of an  $N:q$  ratio of between 10 to 20 participants per parameter, it is possible our longitudinal sample lacked statistical power, particularly in the RI-CLPM. Future research should replicate relationships of the study using larger sample sizes. Third, our study examined reciprocal relations over a relatively short-time frame consisting of three waves across six weeks. Future research should examine these relationships over a longer timeframe to allow relationships to unfold (e.g., months as opposed to weeks). Lastly, our study was conducted with a non-clinical community sample; overall, our participants exhibited low levels of depressive symptoms. It is possible that the associations between feelings of not mattering and depressive symptoms may be more pronounced in clinical samples experiencing elevated feelings of not mattering and depressive symptoms. Future research is needed to test this possibility.

### **Concluding Remarks**

This investigation is unique in being one of the few studies to longitudinally examine mattering and depressive symptoms, and it is distinguished by have more than two assessments of each variable across time points. Overall, the pattern of findings attested to the need to go beyond the tendency to rely on data from cross-sectional research. Our study examined reciprocal relations between feelings of mattering and not mattering and depressive symptoms using both a CLPM and a RI-CLPM. The CLPM provided support for a reciprocal relations model of anti-mattering and depressive symptoms and a complication model of depressive symptoms and mattering. However, the RI-CLPM only provided partial support

for a complication model of anti-mattering and depressive symptoms. In weighing evidence of the two, the results of the current study provides strongest support for a complication model and suggest that the interpersonal behavior, self-schemas, and beliefs that characterize people with depressive symptoms are responsible for generating feelings of not mattering. Of course, the sequences involved here can be quite complicated for individual people and may reflect the degree and quality of social interactions experienced by the person who feels both depressed and unimportant. A related consideration based on a complication model for those who have sought help is whether the depressed individual feels that her or his therapist or counselor has acted positively in ways that result in feeling important and significant. Experiences that add further to a sense of not mattering may strongly impact someone who is already distressed (for a discussion, see Flett, 2018), but it should also be the case that significant improvements in mood states will result within the context of caring therapeutic relationships that foster a sense of being heard, seen, and valued.

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Table 1 *Bivariate correlations, means, standard deviations, and alpha reliabilities*

Variable	1	2	3	4	5	6	7	8	9	<i>M</i>	<i>SD</i>	$\alpha$
<b>Time 1</b>												
1. Mattering	—									13.50	3.40	.86
2. Anti-mattering	-.53**	—								11.15	4.10	.90
3. Depressive symptoms	-.60**	.73**	—							10.80	6.20	.88
<b>Time 2</b>												
4. Mattering	<b>.79**</b>	-.47**	-.58**	—						13.65	3.50	.87
5. Anti-mattering	-.46**	<b>.79**</b>	.74**	-.51**	—					10.85	4.00	.90
6. Depressive symptoms	-.50**	.58**	<b>.86**</b>	-.54**	.69**	—				10.40	6.20	.89
<b>Time 3</b>												
7. Mattering	<b>.78**</b>	-.51**	-.58**	<b>.81**</b>	-.48**	.54**	—			13.45	3.55	.88
8. Anti-mattering	-.47**	<b>.73**</b>	.62**	-.48**	<b>.76**</b>	.57**	-.49**	—		10.75	3.95	.90
9. Depressive symptoms	-.52**	.59**	<b>.80**</b>	-.52**	.65**	<b>.84**</b>	-.53**	.69**	—	10.30	6.00	.88

Note. Test-retest correlations appear in bold. Pairwise deletion. (*N* range 166 - 186)

\*  $p < .05$ , \*\*  $p < .01$ .

Figure 1.

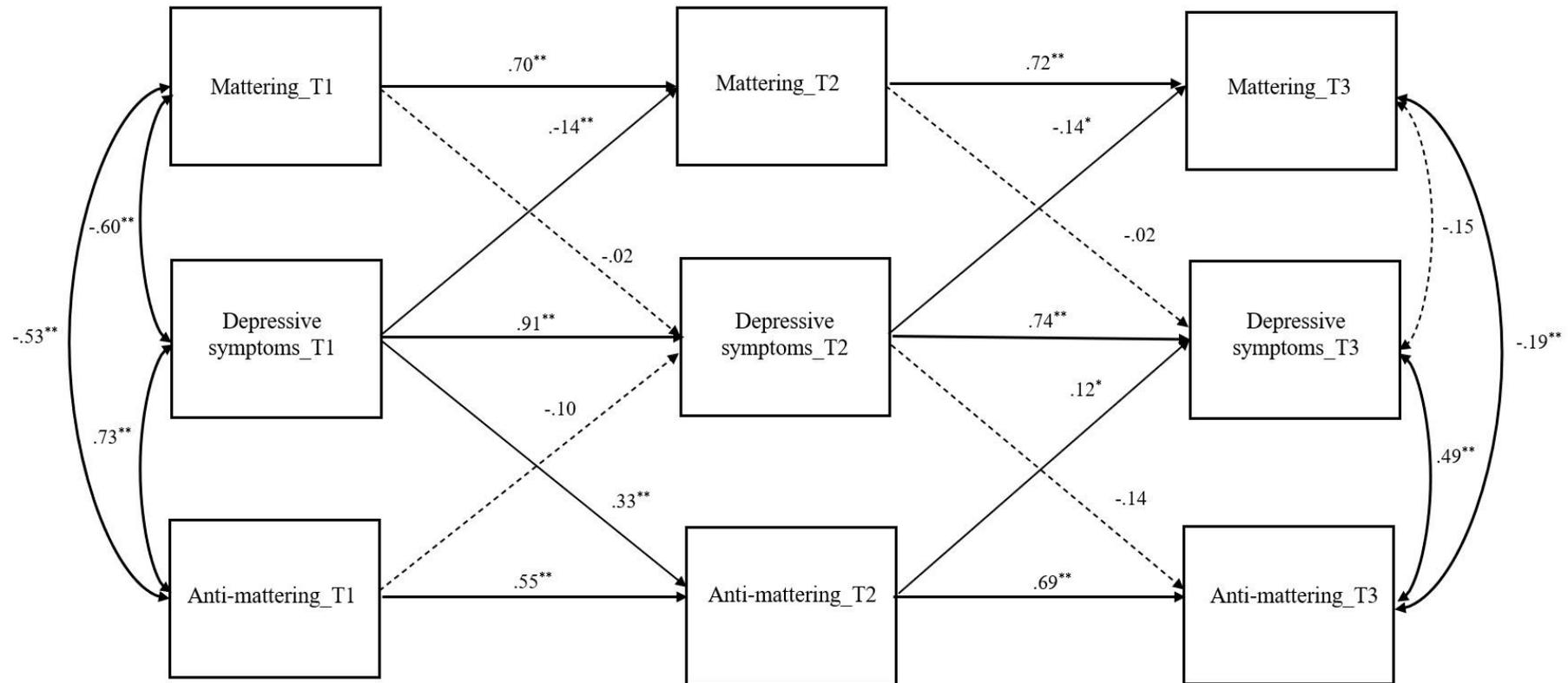
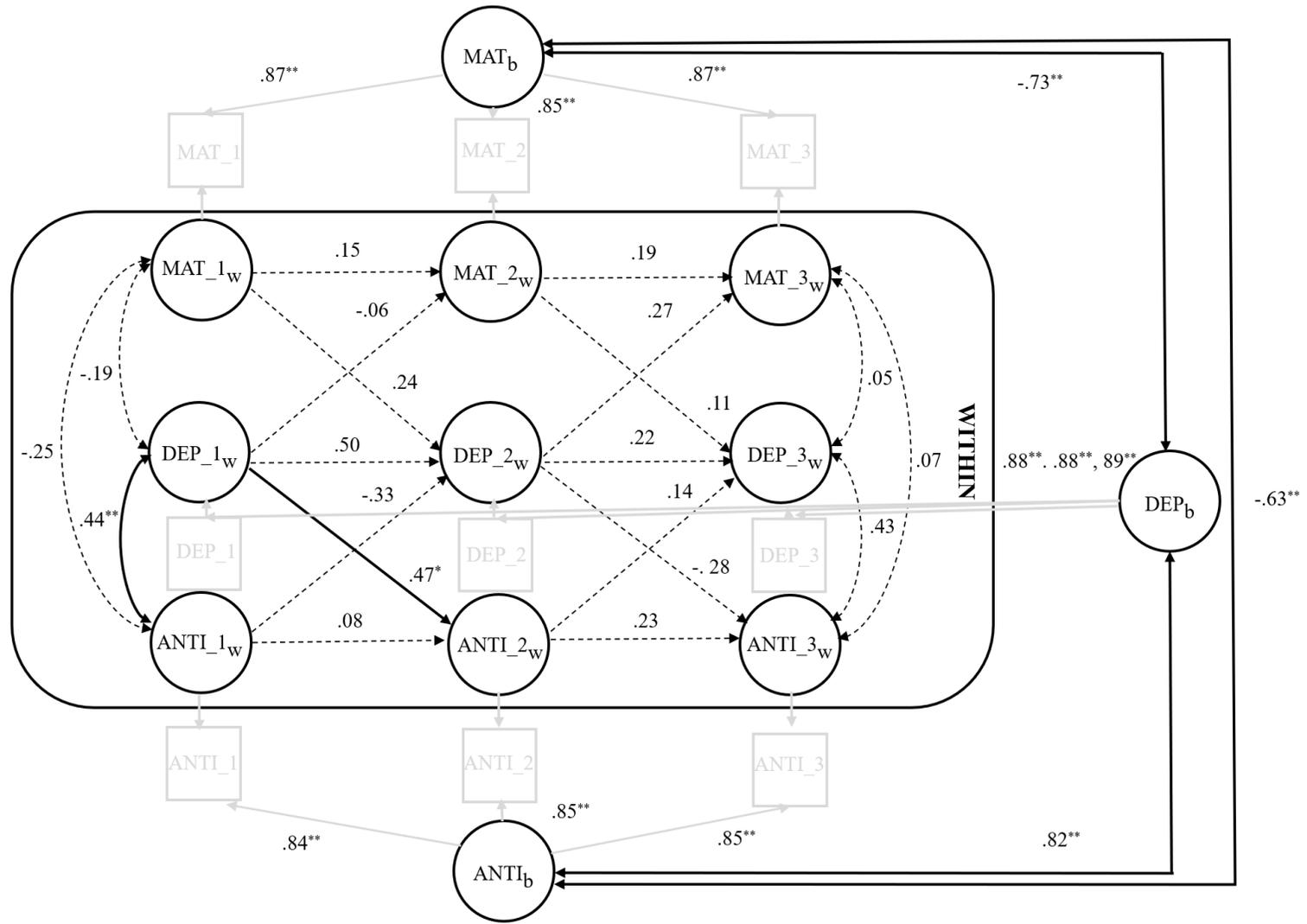


Figure 1. Cross-lagged analysis of mattering, anti-mattering, and depressive symptoms. Rectangles represent manifest variables; arrows represent significant paths; dashed arrows represent nonsignificant paths. Double-headed arrows represent correlations. Autoregressive paths are represented by horizontal arrows and cross-lagged paths are represented by diagonal arrows. Path coefficients are standardized. In the interest of clarity, correlations between mattering, anti-mattering, and depressive symptoms at Time 2 are omitted from the figure. The correlation amongst mattering (Time 2) and depressive symptoms (Time 2) was  $-.16$  ( $p > .05$ ). The correlation amongst anti-mattering (Time 2) and depressive symptoms (Time 2) was  $.29$  ( $p < .01$ ). The correlation amongst mattering (Time 2) and anti-mattering (Time 2) was  $-.25$  ( $p < .01$ ).

\*  $p < .05$ , \*\*  $p < .01$ .

Figure 2



*Figure 2.* A random-intercept cross-lagged panel analysis of mattering, anti-mattering, and depressive symptoms across three waves. Squares represent observed variables. Of the observed variables, latent variables at both the between and within level were created. Circles represent latent variables. The three random intercepts ( $MAT_b$ ,  $DEP_b$ , and  $ANTI_b$ ) reflect the between-person variances for mattering, depressive symptoms, and anti-mattering. The nine latent within-person variables ( $MAT_{1w}$ ,  $MAT_{2w}$ ,  $MAT_{3w}$ ,  $DEP_{1w}$ ,  $DEP_{2w}$ ,  $DEP_{3w}$ ,  $ANTI_{1w}$ ,  $ANTI_{2w}$ ,  $ANTI_{3w}$ ) reflect the within-person variances between waves 1 to 3. Factor loadings of between-person and within-person variables were constrained to 1. Arrows represent significant paths; dashed arrows represent nonsignificant paths. Double-headed arrows represent correlations. Autoregressive paths are represented by horizontal arrows and cross-lagged paths are represented by diagonal arrows. Path coefficients are standardized. In the interest of clarity, correlations between mattering, anti-mattering, and depressive symptoms at Time 2 are omitted from the figure. The correlation among within-person variables of mattering (Time 2) and depressive symptoms (Time 2) was .05 ( $p > .05$ ). The correlation among mattering (Time 2) and anti-mattering (Time 2) was  $-.29$  ( $p > .05$ ). The correlation among anti-mattering (Time 2) and depressive symptoms (Time 2) was .22 ( $p > .05$ ).

\*  $p < .05$ , \*\*  $p < .01$ .