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Quadratic Associations between Empathy and Depression as Moderated by Emotion Dysregulation

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Abstract

Empathic tendencies have been associated with interpersonal and psychological benefits, but empathy at extreme levels or in combination with certain personal characteristics may contribute to risk for depression. This study tested the moderating role of cognitive emotion regulation in depression's association with empathy using nonlinear models. Young adults (*N*=304; 77% female; *M*=19 years) completed measures of cognitive emotion regulation strategies, depression, and affective and cognitive empathy. Individuals with good regulation had low levels of depression overall and their depression symptoms were lowest when levels of affective empathy were average. Individuals with poor regulation had high levels of depression overall, particularly when levels of empathy were moderate to high. Extremely high and low levels of cognitive empathy were associated with elevated depression, and this association was not moderated by regulation. These findings suggest tendencies to respond empathically to others' needs is neither an adaptive nor maladaptive characteristic but rather moderate empathy, particularly in the context of good regulation, may offer the greatest protection against depression.

Keywords: depression, empathy, emotion regulation, guilt, rumination

Quadratic Associations between Empathy and Depression as Moderated by Emotion Regulation

Models explaining the emergence and maintenance of depression increasingly recognize the role of impaired emotion regulation (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Berking & Wupperman, 2012) and deficits in cognitive and affective processing of socially-relevant information (Gotlib & Joormann, 2010). Empathic responses to other's emotions have empirical links to these mechanisms (Decety, 2007; Eisenberg, 2010) as well as to depression (Schreiter, Pijnenborg, & aan het Rot, 2013), but empathy's relation to cognitive-emotional accounts of depression remains largely uninvestigated. Well-regulated empathy is typically an adaptive characteristic, and we propose that understanding empathy as a risk for depression will require investigating the moderating influence of regulation abilities and distinguishing moderate empathy from both deficient and excessive empathy. The purpose of this study was to test these moderating and nonlinear effects.

Affective and Cognitive Empathy

Empathy is a multidimensional construct that has been the focus of extensive recent empirical work in several related disciplines. This research evinces neurobiological origins and varied psychological and interpersonal correlates, underscoring the widespread relevance of this construct. Despite varied conceptualizations across relevant literatures, most definitions of empathy recognize related, yet distinct, affective and cognitive components. Affective empathy refers to feeling the emotions experienced by another (Davis, Luce, & Kraus, 1994; Eisenberg, 1989) and is often referred to as empathic concern. It involves recognition and comprehension of the other person’s emotions and is distinct from sympathy, which refers to concern or sorrow for a distressed person but not necessarily emotions that match the distressed person’s emotions, and

emotion contagion, which involves experiencing but not necessarily apprehending another's emotions (Eisenberg, 1989; Singer & Leiberg, 2009). Moderate, well-regulated affective empathy typically has varied interpersonal and psychological benefits as it promotes immediate altruistic behavior (Oswald, 1996) and tendencies to experience affective empathy during childhood predict compassionate behaviors during adulthood (Eisenberg & Eggum, 2008; Eisenberg et al., 2002).

Cognitive empathy, sometimes called perspective-taking, refers to attempts to comprehend and mentalize another's perspectives and affective states (Davis, 1983; de Waal, 2008; Shamay-Tsoory, Aharon-Peretz, & Perry, 2009). It involves several related social cognitive processes, including theory of mind, defined as the ability to distinguish one's own thoughts and emotions from those of others (Blair, 2005), and empathic accuracy, which is the ability to infer others' feelings from their actions and affect (Ickes, Stinson, Bissonnette, & Garcia, 1990). Cognitive empathy promotes psychological closeness with others (Myers & Hodges, 2013) and, like affective empathy, contributes to socially beneficial behaviors, such as volunteerism and provision of social support (Carlo, Allen, & Buhman, 1999; Gleason, Jensen-Campbell, & Ickes, 2009; Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008).

Although empathic responses often involve processes related to both the affective and cognitive components of empathy, these two constructs are associated with largely separate neural systems. Affective empathy has been linked to activation of subcortical structures, including the amygdala, hypothalamus, and hippocampus, and cortical structures, primarily the anterior insula (Decety, Michalska, & Kinzler, 2011), whereas cognitive empathy is associated with higher order functioning attributed to the medial and dorsolateral regions of the prefrontal

cortex (Shamay-Tsoory, 2011; Shamay-Tsoory et al., 2009). Taken together, these conceptual and neurobiological distinctions highlight the importance of investigating the functions of affective and cognitive empathy separately.

Empathy and Depression

Despite evidence that empathic individuals have warmer, more satisfying, and better quality relationships (Chow, Ruhl, & Buhrmester, 2013; Cramer & Jowett, 2010; Lam, Solmeyer, & McHale, 2012), researchers have recently argued that empathy might contribute to risk for depression when it is present at extreme levels or in combination with certain personal characteristics (e.g., O'Connor, Berry, Lewis, Mulherin, & Crisostomo, 2007). Investigations of empathy's relation to depression, which have focused exclusively on linear associations, have yielded mixed findings. Some studies support positive associations between empathy-related constructs and depression (e.g., Cramer & Jowett, 2010; Gawronski & Privette, 1997; Silton & Fogel, 2010; Wilbertz, Brakemeier, Zobel, Härter, & Schramm, 2010), others support reduced cognitive and affective empathy in individuals with major depressive disorder (e.g., Cusi, MacQueen, Spreng, & McKinnon, 2011; Derntl, Seidel, Schneider, & Habel, 2012; Schneider et al., 2012), and others find no associations between various measures of empathy and depression (e.g., Hughes, Gullone, & Watson, 2011; Thoma et al., 2011). In a recent review of research on empathy and depression, Schreiter, Pijnenborg, and aan het Rot (2013) conclude depression is related to impaired cognitive empathy, but not to affective empathic concern.

Emerging theoretical and empirical literatures posit empathy is related to depression through complicated mechanisms that involve excessive compassion and its resulting empathic fatigue (Klimecki & Singer, 2012; Oakley, Knafo, & McGrath, 2012), misattributions of self-

blame and guilt for others' distress (O' Connor, Berry, Lewis, & Stiver, 2012; O'Connor et al., 2007; O'Connor, Berry, Weiss, & Gilbert, 2002; Zahn-Waxler & Van Hulle, 2013), and empathic personal distress that leads to withdrawal, avoidance of empathy-inducing situations, and depression (Batson, 2009; Schreiter et al., 2013). These accounts suggest poorly regulated emotional and cognitive reactions to others' distress may be associated with elevated depression, but to our knowledge no studies have tested dysregulation as a moderator of empathy's linear or nonlinear relation to depression. Studying this moderating effect may help explain the complicated, mixed findings about affective and cognitive empathy's relation to depression and clarify empathy's function in cognitive and affective models of depression.

Cognitive Emotion Dysregulation

Depression has been described as a disorder of impaired emotion regulation (Joormann & Gotlib, 2010). Emotion regulation refers to the processes through which individuals consciously and unconsciously modulate their emotional experiences (Rottenberg, Wilhelm, Gross, & Gotlib, 2003). Various cognitive processes that impede successful regulation of negative emotions have been linked to depression (Aldao et al., 2010), including rumination, guilt, suppression of expression, and poor cognitive reappraisal.

Nolen-Hoeksema (1991) conceptualized rumination as repetitively focusing on experiences of distress and the possible causes and consequences of the distress. Rumination has two empirically-supported components, brooding, which refers to passive comparisons of one's current situation to an abstract standard, and pondering, defined as purposeful self-reflection and contemplation aimed at alleviating the distress (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Rumination is a maladaptive strategy for regulating emotions in that it interferes with active

problem-solving (Lyubomirsky & Tkach, 2004), exacerbates depression and erodes social support (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), and is associated with deficits in cognitive control (Joormann, Levens, & Gotlib, 2011; Zetsche, D'Avanzato, & Joormann, 2012).

Guilt is a related cognitive process that generally refers to persistent negative thoughts and feelings about one's role in actual or imagined personal transgressions (e.g., Kochanska, Barry, Jimenez, Hollatz, & Woodard, 2009; Kugler & Jones, 1992). It is a construct with multifarious theoretical definitions that vary, for example, in conceptualizing guilt as an adaptive promoter of atonement for transgressions to a maladaptive process leading to withdrawal from others' distress (Tilghman-Osborne, Cole, & Felton, 2010). Depression has been linked to generalized guilt that involves self-focused blame, feelings of shame, and the experience of psychological pain (Kim, Thibodeau, & Jorgensen, 2011; O'Connor et al., 2007; Zahn-Waxler & Van Hulle, 2012). This generalized, shame-related guilt is a maladaptive strategy for regulating one's response to interpersonal encounters that may have particular relevance to understanding the association between empathy and depression.

Gross and John (2003) distinguished two additional emotion regulation strategies, cognitive reappraisal and expressive suppression. Reappraisal is generally an effective strategy that involves construing potentially emotion-eliciting situations in ways that minimize their negative but not positive impact (Gross, 2013). Suppression is a response-modulation strategy used to inhibit emotion-expressive behaviors (Gross, 2013). It generally leads to impaired cognitive functioning, decreases in the experience of positive, but not negative, emotions, and various maladaptive mental health outcomes, including depression (Aldao et al., 2010; Gross & Thompson, 2007).

These varied strategies tend to be intercorrelated (e.g., Szasz, 2009; Wenzlaff & Luxton, 2003), and Aldao and Nolen-Hoeksema (2010) found support for a latent cognitive emotion dysregulation variable, with rumination (both brooding and pondering) and suppression having strong loadings on this factor and reappraisal having a lower loading (Aldao & Nolen-Hoeksema, 2010). Guilt was not included in their study, but maladaptive, shame-related guilt has empirical links to rumination (Joireman, 2004; Orth, Berking, & Burkhardt, 2006), empathic distress (O'Connor et al., 2002), and depression (Kim et al., 2011; Zahn-Waxler & Van Hulle, 2012) and may be another important indicator of the cognitive emotion regulation construct that may moderate the effect of empathic tendencies on depression.

Purpose and Hypotheses

In summary, while a proclivity to respond with affective and cognitive empathy to another's distress is typically associated with healthy personal outcomes and prosocial acts, recent theoretical and empirical work suggests these tendencies may be associated with elevated depression when present at extreme levels and/or in the context of poor cognitive regulation of one's emotional experiences. The purpose of the present study was to examine empathy's relation to depression and the potential moderating role of poor cognitive emotion regulation strategies in this association.

We made the following four hypotheses. First, consistent with previous research on regulation strategies (e.g., Aldao & Nolen-Hoeksema, 2010), we hypothesized that ruminative brooding, ruminative pondering, maladaptive guilt, reappraisal, and suppression would be interrelated and best represented by an underlying, latent cognitive emotion regulation factor. Second, we hypothesized positive quadratic associations between affective and cognitive

empathy and depression. We predicted extremely high cognitive and affective empathy, reflecting excessive compassion and self-blame, and extremely low cognitive and affective empathy, reflecting empathic fatigue and withdrawal, would be associated with elevated levels of depression. Third, we hypothesized that these quadratic associations would be moderated by poor cognitive emotion regulation, specifically that the positive quadratic associations would be strongest at high levels of emotion dysregulation. This hypothesis predicts that some individuals with poor regulation of their emotions and high levels of empathy are particularly likely to become over-aroused and too empathically involved in others' distress and thus will have especially high levels of depression. Other individuals with poor emotion regulation may be prone to withdrawing from others' hardships as a means of reducing their poorly regulated emotional reactions, and we predict these individuals will also have especially elevated levels of depression. We expected this moderation would be particularly evident for affective empathy, as it necessarily involves an emotional reaction and cognitive empathy may or may not.

Fourth, studies support higher levels of affective empathy in women compared to men, though most studies do not find gender differences in cognitive empathy (Grynberg, Luminet, Corneille, Grèzes, & Berthoz, 2010; Laurent & Hodges, 2009). In light of these gender differences in empathy, higher rates of depression in women than men by young adulthood (Essau, Lewinsohn, Seeley, & Sasagawa, 2010), and greater use of rumination and suppression (Nolen-Hoeksema & Aldao, 2011) in women compared to men, we tested a fourth hypothesis that the quadratic associations and moderation effects would be stronger in women than men.

Method

Sample

Participants were recruited from undergraduate psychology courses through a web-based research participant pool at a large, public university in a large city in the southeastern region of the United States. The sample consisted of 304 young adults (78% female) who ranged in age from 18 to 25 years (M = 19.70; SD = 1.74). The ethnic composition is representative of the university from which the sample was drawn, with 42.5% self-identifying as "Black/African American," 26.2% as "White, not of Hispanic Descent,"11.6% as "Asian," 9% as "Multiracial," 7.6% as "Hispanic," and 3.0% as other races. For analyses, participants were grouped into "African American," "White, not of Hispanic Descent," and "Other" categories.

Questionnaires

Depression. The *Inventory of Depression and Anxiety Symptoms* (IDAS; Watson et al., 2007) was used to assess participants' current levels of depression symptoms. This questionnaire consists of 64 items that measure symptoms of major depression and anxiety disorders during the previous two weeks. The 20-item general depression scale, which assesses dysphoric mood, suicidality, fatigue/lack of energy, insomnia, appetite loss, and reversed scored high energy/positive affect items, was used in this study. Participants rate how well the items (e.g., "I felt fidgety or restless") describe their recent feelings and experiences on a 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*), with higher scores on this measure indicating more depression. The general depression scale is reported to have excellent internal consistency reliability in college study samples (α=.89; Watson et al., 2007), and similarly, high internal consistency in our sample (Table 1). Evidence also supports the convergent and discriminant validity of this scale, as correlations were strong with the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) and stronger with the BDI-II than the Beck Anxiety Inventory

(Beck & Steer, 1990).

Empathy. Empathy was measured with two scales of the *Interpersonal Reactivity Scale* (IRI; Davis, 1980, 1983). Affective empathy was measured with the empathic concern scale, which assesses feelings of warmth, compassion, and concern for other's distress. Cognitive empathy was assessed with the perspective-taking scale, which measures tendencies to see things from another's point of view and adopt their outlook. Each scale contains seven statements (e.g., "I often have tender, concerned feelings for people less fortunate than me," "I believe that there are two sides to every question and try to look at them both," and "In emergency situations, I feel apprehensive and ill-at-ease") for which participants rate how well the statement describes their empathic tendencies on a 5-point Likert scale from 0 (*does not describe me at all*) to 4 (*describes me very well*). Items are summed with higher scores indicating more affective and cognitive empathy. These scales have strong test-retest reliability and internal consistency reliabilities and are correlated but distinct (Davis, 1980, 1983) and have strong internal consistency reliabilities in our sample.

Cognitive Emotion Regulation Measures. Several questionnaires were administered to provide measures of cognitive emotion regulation. The *Ruminative Responses Scale* (RRS: Treynor et al., 2003) is a self-report instrument designed to assess tendencies to engage in repetitive rumination in response to one's own distress and depression. It contains 22 items that comprise three subscales, two of which were used in the present study. Respondents rate how often they think or do each item using a 4-point scale from 1 (*almost never*) to 4 (*almost always*). The pondering subscale (5 items) reflects an individual's attempts to analyze problems relating to depression and includes items such as "go someplace alone to think about your feelings." The

brooding subscale (5 items) includes items such as "Think 'why can't I handle things better?"' that tap more passive, moody reflection of one's current state in comparison to unachieved standards. Items on both scales are summed, with higher scores indicating more pondering and brooding. Adequate internal consistency reliabilities and strong construct validity, particularly predicting depression symptoms, have been reported for this measure, and internal consistency reliabilities are strong in our sample.

The *Positive and Negative Affect Schedule – Expanded Form* (PANAS-X; Watson & Clark, 1994) is a 60-item measure of specific positive and negative emotional and cognitive states. The present study used the trait guilt subscale, which consists of 6 items. Participants used a 5-point scale from 1 (*very slightly or not at all*) to 5 (*extremely*) to rate the extent to which they generally feel each of the six guilt/shame descriptors that focus on feelings toward the self (e.g., "guilty" and "disgusted with self"). Items are summed so that higher scores indicate more shame-related guilt. Overall, the PANAS-X has strong psychometric properties, with evidence that the guilt subscale has strong reliability, and in our sample, the internal consistency reliability was strong.

The *Emotion Regulation Questionnaire* (ERQ; Gross & John, 2003) is a 10-item self-report measure designed to assess the tendency to engage in two forms of emotion regulation (coping) techniques: cognitive reappraisal (6 items) and expressive suppression (4 items). Respondents indicate how they tend to control their emotions by rating items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The cognitive reappraisal scale includes items such as, "When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation," and measures attempts to change one's interpretations of potentially emotion-eliciting situations

for the purpose of altering their emotional impact. Items on the suppression scale, such as "When I am feeling negative emotions, I make sure not to express them," assess one's tendencies to inhibit or otherwise modify the behavioral expressions of negative emotions. Items on these scales are summed, with higher scores indicating greater cognitive reappraisal, generally an adaptive regulation strategy, and more expressive suppression, which is typically less adaptive. These subscales have strong internal consistency, test-retest reliabilities, and convergent and discriminant validity (Gross & John, 2003). Internal consistency reliabilities for both scales are strong in our sample.

Procedure

The present study was reviewed, approved, and monitored by the institutional review board at the university with which the authors are affiliated. Participants completed these questionnaires as part of a larger study. Participants visited the research lab on one occasion for approximately three hours. The questionnaires used in this study and other questionnaires that assess social relationships, mindfulness, and symptoms of psychopathology were administered on a computer and several other social-cognitive and psychophysiological paradigms were completed. The order of administration of questionnaires was IRI, PANAS-X, ERQ, and then IDAS. These questionnaires were administered after participants viewed and rated interpersonal photos and before a startle-response psychophysiological paradigm.

Results

Descriptive Statistics

Data were first inspected for errors, excessive missing cases, outliers, and violations of distributional assumptions of the selected statistical tests before conducting analyses (Tabachnick

& Fidell, 2013). Outlier data points were removed if their value was greater than three standard deviations above or below the mean; individual measures had no more than two (M=0.75) outliers. An individual's score on a measure was dropped if more than 25% of the items were skipped, which resulted in a small number of missing cases (M=1.13) per measure. The outcome variable, depression scores, had a skewed distribution and a square root transformation of this variable was used.

Means, standard deviations, Cronbach's alphas, and zero-order correlations for measures of cognitive emotion dysregulation, empathy, and depression are presented in Table 1. Depression scores were positively related to empathic concern but were not related to perspective-taking, and depression scores were related to higher levels of ruminative brooding, ruminative pondering, maladaptive guilt, suppression, and lower levels of reappraisal. Empathic concern was positively related to perspective-taking. For the cognitive emotion dysregulation variables, higher levels of ruminative brooding, ruminative pondering, and maladaptive guilt were moderately to strongly related to one another, suppression had small but significant relations with these variables, and reappraisal had a small positive association with ruminative pondering and small negative association with maladaptive guilt. Most associations between the empathy variables and the cognitive emotion dysregulation variables were small, though reappraisal had a small to moderate positive association with perspective-taking.

Series of t-tests and ANOVAs were run to test for differences in study variables by gender and race. Women had significantly higher levels of empathic concern, $t(298) = -3.75$, $p < .001$, and lower levels of maladaptive guilt, $t(300) = 2.07$, $p = .04$, and suppression, $t(299) = 2.52$, $p = .01$ (See Table 2). Black/African American participants had significantly lower levels

of maladaptive guilt than participants in the White and "other" groups, $F(2, 300) = 6.97$, $p = .001$, and individuals in the "other" group had significantly higher levels of suppression than Black/African American participants, $F(2, 299) = 4.46$, $p = .01$. No other gender or race differences in study variables were significant, though women had slightly elevated levels of depression compared to men. Participant's age was not correlated with any study variables.

Structural Equation Modeling

Mplus 6 software (Muthén & Muthén, 1998-2010) was used to calculate moderated, nonlinear SEM models with manifest nonlinear terms, a manifest endogenous variable, and a latent moderator variable. Informed by Latent Moderated Structural (LMS) modeling and nonlinear structural equation models (e.g., Dimitruk, Schermelleh-Engel, Kelava, & Moosbrugger, 2007; Kelava, Moosbrugger, Dimitruk, & Schermelleh-Engel, 2008; Moosbrugger, Schermelleh-Engel, Kelava, & Klein, 2009), a model with random slopes (TYPE=RANDOM) and maximum likelihood estimation with robust standard errors using a numerical integration algorithm (ALGORITH=INTEGRATION) was used. Age, gender, and race were included as covariates in the models.

Several fit indices were used to evaluate the fit of the measurement model. Nonsignificant chi-square (X^2) values indicate good fit (Hu & Bentler, 1998). Bentler's Comparative Fit Index (CFI; Bentler, 1990) values above .95 indicate good fit (Hu & Bentler, 1998), Root Mean Square Error of Approximation (RMSEA) values below about .06 indicate good fit (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996), and Standardized Root Mean Square Residual (SRMR) values less than .08 indicate good fit (Hu & Bentler, 1999).

Multiple group latent class models were used to test for gender differences in model

parameters. The best-fitting measurement model with parameters constrained across genders was compared to a model with parameters free to vary across genders. The moderated curvilinear model with all parameters constrained to be equal across genders was compared to a model with all parameters free to vary across the sexes and to several models with different main effects and interaction terms constrained to be equal across sexes. The Akaike Information Criterion (AIC; Akaike, 1987) and the Sample Size Adjusted Bayesian Information Criterion (SABIC; Tofighi & Enders, 2007) were used to compare the fit of the models. Lower values of both are preferred.

Measurement model for cognitive emotion dysregulation factor. We first examined the loadings of the five cognitive emotion regulation variables onto one latent factor. Consistent with the univariate correlations, the loadings of ruminative brooding, ruminative pondering, and maladaptive guilt were strong and significant, the loading of suppression was small but significant, and the loading for reappraisal was small and nonsignificant (Figure 1). This model fit the data relatively poorly, $X^2 = 65.23$, $p < .001$; CFI = .86; RMSEA = .08, 90%CI [.06, .10]; SRMR = .06. Removing reappraisal resulted in improved though still relatively poor model fit, $X^2 = 40.47$, $p = .001$; CFI = .92; RMSEA = .07, 90%CI [.04, .09]; SRMR = .06. Removing suppression further improved the fit and resulted in a model with good fit indices, $X^2 = 20.21$, $p = .06$; CFI = .97; RMSEA = .04, 90%CI [.00, .08]; SRMR = .04. Therefore, the latent factor with three factor indicators, ruminative brooding (.97), ruminative pondering (.70), and maladaptive guilt (.48), was used in the structural models. Since these three strategies are maladaptive, we subsequently refer to it as a dysregulation, rather than regulation, factor. The factor determinacy estimate for this model was .97, well above established guidelines (e.g., Gorsuch, 1983), indicating the estimated factor scores are strongly representative of their model-based

counterparts. Tests of gender differences in the CFA revealed the model with loadings constrained across genders (*AIC* = 7168.12, *SABIC* = 7177.83) fit better than the model with different loadings across genders (*AIC* = 7175.96, *SABIC* = 7188.36). Thus, consistent with the first hypothesis, the data support a latent cognitive emotion dysregulation factor. However, only some of the hypothesized cognitive emotion regulation strategies loaded onto this factor. Specifically, ruminative brooding, ruminative pondering, and maladaptive guilt were indicators of this factor and reappraisal and suppression were not.

Structural model for affective empathy (empathic concern). As expected, in the structural model for empathic concern predicting depression, greater cognitive emotion dysregulation predicted higher levels of depression symptoms, and the latent cognitive emotion dysregulation variable moderated the quadratic effect of empathic concern on depression symptoms (see Table 3). Figure 2 displays a plot of the moderated quadratic effect.

Tests of simple slopes using saved factor scores were used to describe the nature of the moderated quadratic effect. These tests revealed: (a) nonsignificant linear, $b = .018$, $SE = .012$, $z = 1.452$, $p = .147$, and quadratic, $b = .0004$, $SE = .002$, $z = 0.236$, $p = .814$, effects of empathic concern on depression at the mean of cognitive emotion dysregulation, (b) a nonsignificant linear effect, $b = .009$, $SE = .015$, $z = 0.627$, $p = .531$, and nearly significant quadratic effect, $b = -.002$, $SE = .001$, $z = -1.821$, $p = .069$, at one standard deviation below the mean, (c) a nonsignificant linear effect, $b = .014$, $SE = .010$, $z = 1.337$, $p = .181$, and nearly significant quadratic effect, $b = .003$, $SE = .002$, $z = 1.668$, $p = .095$, at one standard deviation above the mean, and (d) a nonsignificant linear effect, $b = .016$, $SE = .017$, $z = 0.927$, $p = .354$, and significant quadratic effect, $b = .006$, $SE = .003$, $z = 2.296$, $p = .022$, at two standard deviations above the mean. (Two

standard deviations below the mean is outside the actual range of the cognitive emotion dysregulation latent variable.) To summarize, empathic concern was not associated with depression symptoms for people with average levels of cognitive emotion dysregulation. For individuals with good regulation, depression symptoms were low in general and lowest at moderate levels empathic concern. That is, the combination of good regulation and moderate empathic concern was associated with the lowest levels of depression. For poorly regulated individuals, there was a positive association between empathic concern and depression only when empathic concern was below average; empathic concern and depression were not related (i.e., depression was consistently high) when empathic concern was above average. That is, when individuals are highly dysregulated, depression is low only when levels of empathic concern are very low; when empathic concern is moderate to high, levels of depression are very high.

We tested the moderating effect of suppression and reappraisal individually, since they did not load onto the latent dysregulation factor. The effect of empathic concern on depression symptoms was not moderated by reappraisal, $b_{\text{linear}} = .000$, $SE = .002$, $z = -0.043$, $p = .966$; $b_{\text{quadratic}} = .000$, $SE = .000$, $z = -0.253$, $p = .801$, or suppression, $b_{\text{linear}} = -.001$, $SE = .002$, $z = -0.388$, $p = .698$; $b_{\text{quadratic}} = .000$, $SE = .000$, $z = 1.108$, $p = .268$.

Contrary to expectations, the model with parameters constrained across sexes (*AIC* = 8434.80, *SABIC* = 8450.77) fit better than models with all parameters allowed to vary across genders (*AIC* = 8452.38, *SABIC* = 8475.28), with only the moderation term free to vary (*AIC* = 8436.52, *SABIC* = 8453.03), and with all main effects and interactions involving the latent variable and empathy variables free to vary (*AIC* = 8438.52, *SABIC* = 8456.09). In addition, a Wald test revealed a nonsignificant gender difference in the interaction term, $Wald(1) = .37$, $p =$

.54. Thus, there were no gender differences in the association between empathic concern and depression or the moderating role of dysregulation.

Structural model for cognitive empathy (perspective-taking). The structural model for perspective-taking also revealed a significant effect of cognitive emotion dysregulation, but contrary to expectations, neither the linear nor quadratic effects of perspective-taking on depression symptoms were significantly moderated by the latent cognitive emotion dysregulation variable. The quadratic effect of perspective-taking on depression symptoms was significant and is displayed in Figure 3. Moderate levels of perspective-taking were associated with the lowest levels of depression, and high and low levels of perspective-taking were associated with the highest levels of depression. To summarize, individuals with average levels of cognitive empathy had the lowest levels of depression, and individuals with very high and low levels of cognitive empathy had high depression regardless of their ability to regulate emotions.

Similar to findings from the structural model with empathic concern, the effect of perspective-taking on depression symptoms was not moderated by reappraisal ($b_{\text{linear}} = .000$, $SE = .002$, $z = 0.097$, $p = .922$; $b_{\text{quadratic}} = .000$, $SE = .000$, $z = -0.683$, $p = .495$) or suppression ($b_{\text{linear}} = .001$, $SE = .002$, $z = 0.506$, $p = .613$; $b_{\text{quadratic}} = .000$, $SE = .000$, $z = 0.976$, $p = .329$).

The model with parameters constrained across genders (*AIC* = 8498.62, *SABIC* = 8514.59) fit better than models with all parameters free to vary for males and females (*AIC* = 8518.78, *SABIC*=8541.64), with only the moderation term free to vary (*AIC* = 8500.62, *SABIC* = 8517.12), and with all main effects and interactions involving the latent variable and empathy free to vary (*AIC* = 8507.23, *SABIC* = 8525.87). The Wald test showed a nonsignificant difference between males and females in the interaction term, *Wald*(1) = .00, $p = .98$.

Summary of Structural Models. Consistent with the second hypothesis, cognitive empathy had a positive quadratic association with depression, supporting a link between depression and both high and low cognitive empathy. Affective empathy and depression were also related quadratically related, but the direction of this association depended on emotion dysregulation. The third hypothesis was partially supported. The quadratic effect was moderated by dysregulation for affective empathy but not cognitive empathy, and the nature of the affective empathy moderation was not exactly as hypothesized. As predicted, high and low affective empathy were associated with higher depression (and thus moderate affective empathy with low depression) among people who effectively regulate their emotions. However, unexpectedly, low affective empathy was associated with low depression and moderate to high empathy was associated with high depression among poorly regulated individuals. Last, gender did not moderate any of the associations, providing no support for the fourth hypothesis.

Discussion

Empathy has been linked to depression in a theoretical literature that suggests the potential importance of emotion dysregulation in shaping this link and a mixed empirical literature supporting negative, positive, and no associations between varied empathy constructs and depression. This paper sought to advance our understanding of the nature of affective and cognitive empathy's relation to depression by testing if both high and low empathy are related to elevated depression and if this quadratic association is moderated by cognitive emotion regulation.

Consistent with expectations and previous research (e.g., Aldao & Nolen-Hoeksema, 2010), we found evidence for a latent factor that represented the overlap among several cognitive

strategies for regulating emotional experiences, specifically ruminative pondering, ruminative brooding, and maladaptive guilt. Suppression and reappraisal strategies did not load onto this factor. Reappraisal also had a small loading on the latent factor in Aldao and Nolen-Hoeksema's (2010) study, and it is conceptually distinct from the other strategies in that it is an adaptive strategy aimed at altering emotional experiences, whereas the other strategies are maladaptive and alter the behavioral or cognitive consequences of the emotional experience (e.g., Aldao & Nolen-Hoeksema, 2012; Averill, Diefenbach, Stanley, Breckenridge, & Lusby, 2002; Gross, 2013; Nolen-Hoeksema et al., 2008). The lower loading for suppression may be explained by its more behavioral focus on decreasing emotional expression (Gross, 1998), compared to the more cognitive focus of rumination and maladaptive guilt, which involve directing attention and cognitive resources toward one's feelings and their consequences (O'Connor, Berry, Lewis, & Stiver, 2012; Webb, Miles, & Sheeran, 2012).

Although the tendency to be highly empathic is typically an adaptive characteristic associated with positive interpersonal and mental health outcomes (e.g., Chow, Ruhl, & Buhrmester, 2013), our findings indicate that tendencies to respond to others' distress with excessively high or low cognitive empathy or with high affective empathy in combination with poor emotion regulation are associated with elevated depression. Responding with moderate affective and cognitive empathy was most adaptive. Proclivities toward high empathy may increase risk for depression via excessive, prolonged, and exhausting empathic reactions or negatively biased interpretations and erroneous self-blame for the problems of others, as suggested by existing theoretical accounts (e.g., O'Connor et al., 2007; Oakley et al., 2012; Zahn-Waxler & Van Hulle, 2012). Since maladaptive cognitive regulation strategies involving *re-*

thinking interpersonal problems (i.e., maladaptive guilt) and distressing experiences (i.e., brooding, pondering) moderated the effect, whereas strategies involving attempts to alter *emotional* experiences (i.e., reappraisal) and behaviors (i.e., suppression) did not moderate this effect, cognitive self-blame explanations may account for this moderated effect better than affective exhaustion explanations. Research on related cognitive deficits, such as difficulty removing irrelevant negative information from the working memory (Joormann & Gotlib, 2008), in depressed individuals provides a broader context for understanding the detrimental consequences of sustained cognitive processing. While empathic concern expressed during an emotional encounter may enhance interpersonal relationships, failure to cognitively disengage from others' distress may increase risk for depression.

Depression levels were particularly high at low levels of cognitive empathy, which is consistent with Schreiter et al.'s (2013) meta-analysis of linear effects that concluded depression is associated with limited cognitive empathy. The failure of cognitive emotion dysregulation to moderate the quadratic association between cognitive empathy and depression creates a challenge for explaining the quadratic effect. Low cognitive empathy's association with elevated depression is consistent with depressed people's tendencies to focus on the self and withdraw socially (Seidel et al., 2010) and may reflect bidirectional influences between poor perspective-taking and social impairments that confer risk for depression. The association between excessive perspective-taking and depression is puzzling in the absence of rumination and irrational guilt about one's role in other's distress as explanations, but perhaps may be understood in the context of impaired interpersonal sensitivity. Having adept interpersonal sensitivity skills, including accurately perceiving and attributing causes and consequences of other's emotions and behaviors,

is associated with reduced risk for depression (Hall, Andrzejewski, & Yopchick, 2009). Perhaps people with moderate perspective-taking have both proficient skills in perceiving from another's point of view and an ability to make accurate distinctions between the self and others, and this balanced perspective may protect against depression.

In summary, cognitive and affective empathy are typically beneficial attributes associated with positive outcomes like compassion and charitable acts. Findings from this study suggest moderate, well-regulated empathy, specifically, offers the greatest protection against depression. This type of empathy may also be associated with the greatest social benefits, as it allows individuals to become affectively and cognitively involved in the misfortunes of others without becoming overwhelmed by it. Improving effective regulation of empathic thoughts and emotions may be an important additional goal for cognitive, interpersonal, and emotion-focused therapies for depression. These interventions may target the development of strategies that allow individuals to realize their empathic potential within healthy, regulated limits. Empathy-focused therapeutic components would promote the personal and societal benefits of empathic behavior while preventing excessive concern, irrational guilt, empathic rumination, social withdrawal, and subsequent depression.

Limitations

Several limitations of this study should be noted. First, this study used a college student sample with mean levels of depression that are similar to the mean level of symptoms in the college student sample but lower than the psychiatric sample in Watson et al.'s (2007) IDAS validity study. Furthermore, although women had higher levels of empathic concern as anticipated, unexpectedly, there were no significant gender differences in depression and men

had higher levels of maladaptive guilt and suppression. This pattern of descriptive statistics suggests our findings may have limited applicability to samples of clinically depressed individuals, and it will be important to test the hypotheses in clinical samples. Nevertheless, social impairments in individuals with subclinical depression are similar in level and type to the impairments experienced by individuals with diagnosable depression, suggesting the importance of investigating empathy's role in non-clinical samples (Goodman & Tully, 2009; Lewinsohn, Solomon, Seeley, & Zeiss, 2000). Relatedly, it will be important to examine the hypotheses at other developmental stages.

Second, this study is a cross-sectional investigation and it relied exclusively on self-report measures. Although the analytic strategy is sufficient for investigating associations between the constructs of interest, it does not permit drawing causal inferences about empathy and dysregulation as risks for depression. Diverse methodology for assessing empathic reactions, such as paradigms that present empathy-inducing stimuli that vary the type and intensity and index behavioral and physiological reactivity, may be useful for further clarifying the conditions under which empathy is related to depression.

Third, guilt is a multidimensional construct with varied definitions (Tilghman-Osborne et al., 2010) and certain types of guilt are especially related to depression (Kim et al., 2011; O'Connor et al., 2002). The guilt scale used in this study measures some components of maladaptive guilt that have been related to depression, specifically generalized negative feelings toward the self, but not other depression-related facets of guilt, such as exaggerated responsibility for uncontrollable events. Investigations of the moderating role of specific facets of guilt on associations between empathy and depression may be informative for specifying

guilt's function in empathy's relation to depression. Current theoretical accounts of empathic distress (e.g., O'Connor et al., 2007; Zahn-Waxler & Van Hulle, 2012) suggest these specific interpersonal forms of guilt may mediate the association between empathy and depression, and longitudinal investigations may test guilt as a causal mechanism. Despite these limitations, the present study extends the existing literature by demonstrating the importance of considering nonlinear associations between empathy and depression and the moderating influence of cognitive emotion dysregulation.

Conclusion

Empathic responding was previously understood to have complex underpinnings, and this study suggests empathy's relation to psychological functioning is also complex. Moderate, well-regulated empathy appears protective against depression. Tendencies toward extreme and unregulated emotional concern for others and both excessive mindfulness of others' perspectives as well as disengagement from others' perspectives were associated with high levels of depression symptoms. Targeting the development of moderate, well-regulated empathy may be an efficacious addition to treatments for depression.

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Table 1

Means, Standard Deviations, Coefficient Alphas, and Zero-Order Relations between all Variables

	N	Mean	SD	1	2	3	4	5	6	7	8
1. Depression	303	41.06	13.92	.91							
2. Empathic Concern	302	21.03	4.69	.19**	.77						
3. Perspective-Taking	302	18.36	5.03	.00	.40***	.79					
4. Ruminative Brooding	301	10.27	3.88	.58***	.11*	-.07	.83				
5. Ruminative Pondering	301	9.18	3.66	.50***	.12*	.12*	.68***	.80			
6. Maladaptive Guilt	304	10.08	5.15	.60***	.00	-.13*	.47***	.34***	.92		
7. Suppression	303	14.21	5.42	.21***	-.01	.14**	.11*	.12*	.19***	.76	
8. Reappraisal	302	29.29	7.17	-.10*	.15**	.27***	-.05	.14**	-.10*	.08	.80

Notes. Cronbach's alphas on the diagonal. *p < .05, ** *p* < .01, ***p < .001.

Table 2

Means and Standard Deviations by Gender

	Men			Women		
	n	*Mean*	*SD*	*n*	*Mean*	*SD*
1. Depression	68	40.37	13.35	235	41.26	14.10
2. Empathic Concern	68	19.21	5.01	234	21.57	4.47
3. Perspective-Taking	68	18.60	4.51	234	18.30	5.18
4. Ruminative Brooding	68	10.36	3.87	234	10.24	3.89
5. Ruminative Pondering	68	9.37	3.73	234	9.13	3.65
6. Maladaptive Guilt	68	11.22	5.38	236	9.75	5.04
7. Suppression	68	15.65	5.40	235	13.79	5.36
8. Reappraisal	68	28.94	6.55	234	29.39	7.35

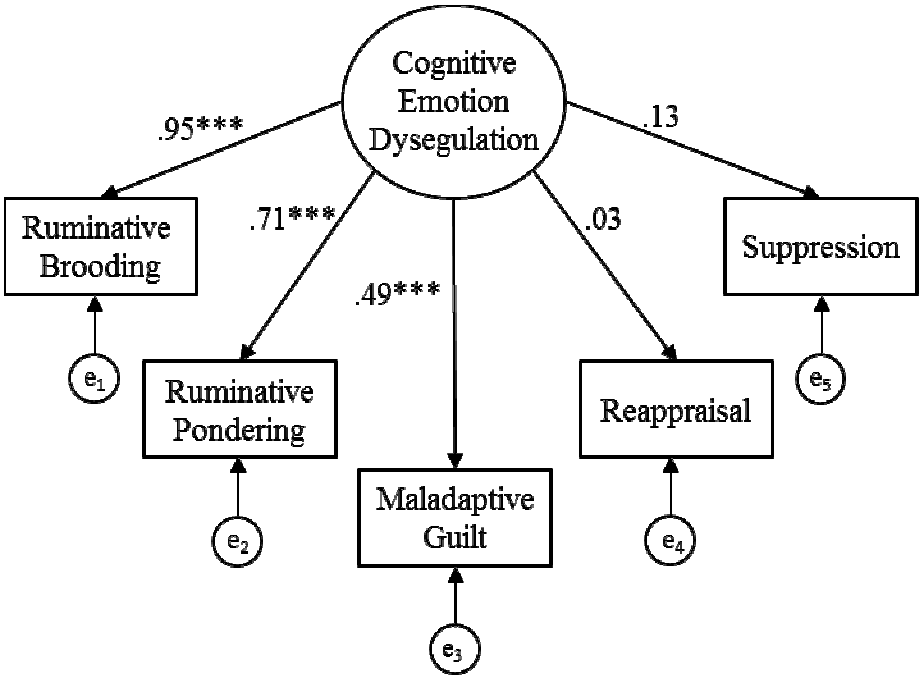
Table 3

Structural Models for the Latent Cognitive Emotion Dysregulation Moderating the Curvilinear Effects of Empathy on Depression Symptoms

Variable	Estimate	*S.E.*	*z*-score	*p*-value
Empathic Concern (EC)				
Age	-.025	.028	-0.890	.373
Gender	.135	.132	1.024	.306
Race	.077	.059	1.303	.193
Latent Dysregulation	.265	.027	9.747	<.001
Linear EC	.018	.012	1.452	.147
Quadratic EC	.0004	.002	0.236	.814
Linear EC x Dysregulation	.0004	.004	0.104	.917
Quadratic EC x Dysregulation	-.0006	.0003	-2.005	.045
Perspective-Taking (PT)				
Age	-.015	.029	-0.515	.606
Gender	.153	.119	1.283	.200
Race	.090	.060	1.501	.133
Latent Dysregulation	.253	.026	1.856	<.001
Linear PT	.009	.011	0.879	.379
Quadratic PT	.003	.001	2.221	.026
Linear PT x Dysregulation	.006	.003	1.856	.063
Quadratic PT x Dysregulation	.000	.000	-0.153	.876

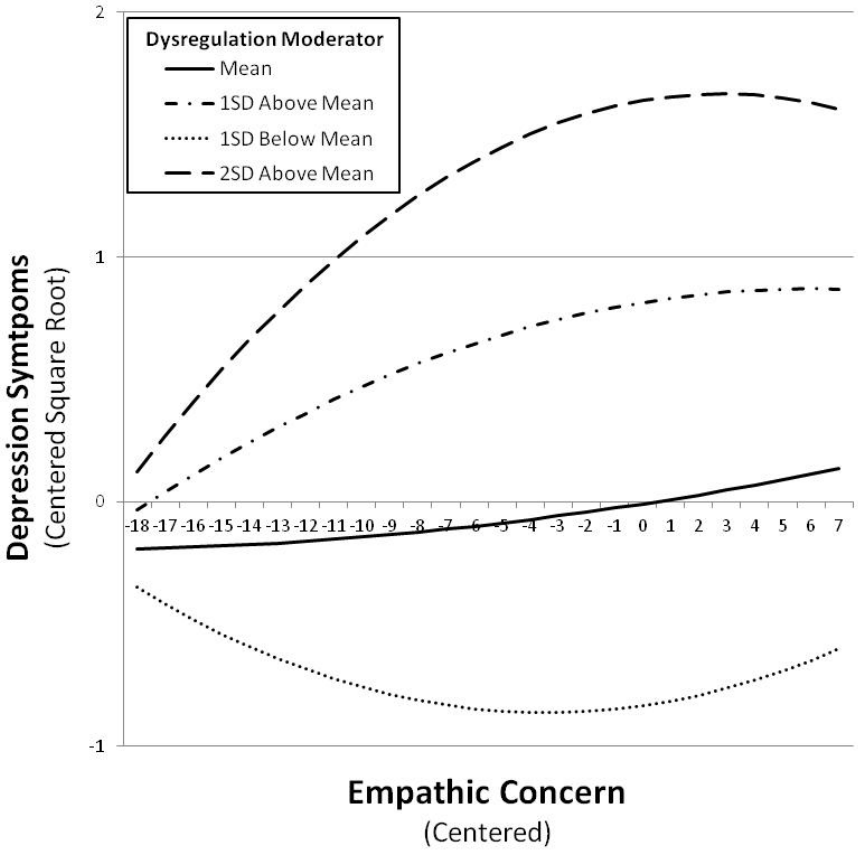
Notes. Estimate = unstandardized parameter estimate. S.E. = standard error. Gender (1=male, 2=female). Race (1=Black/African American, 2=White/Caucasian, 3=Other). $N = 304$.

Figure 1. *Original 5-factor measurement model for the latent cognitive emotion dysregulation factor.*



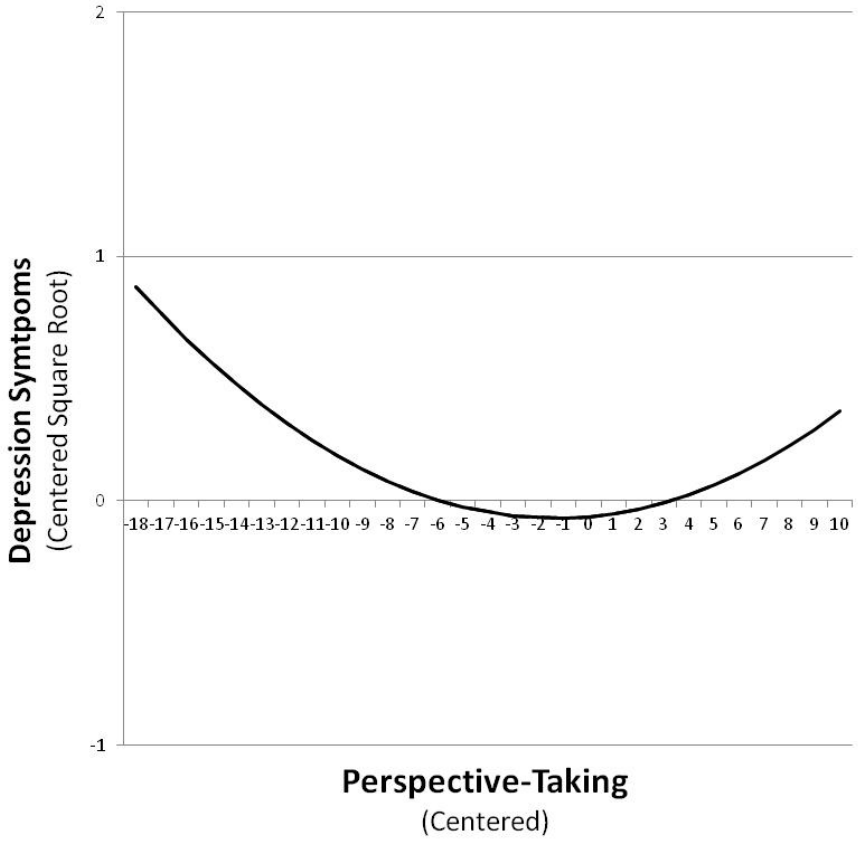
Note. *$p < .05$, ** $p < .01$, ***$p < .001$.

Figure 2. *The quadratic effect of empathic concern on depression symptoms moderated by the latent cognitive emotion dysregulation variable.*



Notes. The effects of age, gender, and race were included in the model. The full range of the centered empathic concern variable is displayed. $N = 304$.

Figure 3.*The quadratic effect of perspective-taking on depression symptoms*.



Notes. The effects of age, gender, race, cognitive emotion dysregulation, and all linear and quadratic main and interaction effects were included in the model. The full range of the centered perspective-taking variable is displayed. $N = 304$.

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