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Symptoms of depression and the discrepancy between implicit and explicit self-esteem

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ABSTRACT

Background and objectives: While the role of explicit self-esteem (ESE) in depression has been well established, the relationship between implicit self-esteem (ISE) and depression is more uncertain. Recently, it has been suggested that a simultaneous consideration of both ESE and ISE may provide a more comprehensive understanding of the development and maintenance of depression than considering either ESE or ISE in isolation. The present paper tested whether the absolute discrepancy between ESE and ISE and the direction of the discrepancy are important factors to consider in relation to depressive symptoms.

Methods: 87 university students from the northeastern U.S. were recruited for the present study. The Beck Depression Inventory, the Rosenberg Self-Esteem Scale, and Implicit Association Test were used to assess participants' severity of depressive symptoms, explicit self-esteem, and implicit self-esteem, respectively.

Results: Results revealed a negative association between ESE and symptoms of depression. In addition, a positive relationship was found between the degree of discrepancy between ISE and ESE and depression. However, this relationship was only found among participants with higher ISE than ESE (i.e., damaged self-esteem), but not among participants with higher ESE than ISE (i.e., defensive or fragile self-esteem).

Conclusions: While damaged self-esteem may be a meaningful marker of depressive symptoms, it should be noted that the association between symptoms of depression and the interaction of ISE and ESE may be driven primarily by the strong link between ESE and depression. As prior studies of ESE and ISE have not looked, specifically, at the relative contributions of both constructs, this issue needs further investigation in future research.

1. Introduction

Lower self-esteem is associated with higher levels of depression in both adults and adolescents (e.g., Creemers, Engels, Prinstein, & Wiers, 2012; Ingram, Miranda, & Segal, 1998; Sowislo, Orth, & Meier, 2014). Moreover, a significant body of research has identified low self-esteem as a causal risk factor for the onset and maintenance of depression (vulnerability model; Beck, 1967; Sowislo & Orth, 2013). However, the overwhelming majority of studies have focused on the relationship between *explicit* self-esteem and depression.

Explicit self-esteem (ESE) is measured using a self-reported questionnaire, such as the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). However, explicit measures of self-esteem rely on individuals' cognitive resources, ability to reflect on their self-worth, willingness to reveal this information. Therefore, it is possible that explicit measures may not be capable of fully evaluating important aspects of self-esteem. These limitations have led researchers to develop implicit measures of self-esteem. They are assumed to be accessing self-knowledge or representations that are introspectively inaccessible, preconscious, automatic, stable, and less susceptible to social desirability (Gawronski, LeBel, & Peters, 2007).

Despite the large literature linking ESE and depression, the research examining the link between implicit self-esteem (ISE) and depression is very limited and presents disparate results. While a few studies have shown a negative relationship between ISE and symptoms of depression (e.g., Risch et al., 2010), others have failed to replicate this effect (e.g., De Raedt, Schacht, Franck, & De Houwer, 2006; Franck, De Raedt, & De Houwer, 2007).

However, more recently an interesting line of research has emerged looking at ESE and ISE together, focusing on both the direction of difference (i.e., which assessment of self-esteem is greater) as well as its magnitude (Creemers, Engels, Prinstein, & Wiers, 2013; Creemers,

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Scholte, Engels, Prinstein, & Wiers, 2012; Leeuwis, Koot, Creemers, & van Lier, 2015). This seems to be presenting more converging results. When ESE and ISE do not agree, such discrepancy can take two different forms: higher ESE than ISE, where people are described to hold "defensive self-esteem," and higher ISE than ESE, where people are believed to possess "damaged self-esteem." A number of studies have demonstrated that, compared to individuals with congruent self-esteem, people with defensive self-esteem tend to display more self-enhancement tendencies, narcissism, defensive behaviors, in-group bias, dissonance reduction, and aggression (Bosson, Brown, & Zeigler-Hill, 2003; Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003; Sandstrom & Jordan, 2008; Zeigler-Hill, 2006). On the other hand, researchers have revealed that individuals with damaged self-esteem exhibit higher levels of anger suppression, maladaptive perfectionism, and symptoms of internalizing disorders (DeHart, Pelham, & Tennen, 2006; Franck, De Raedt, & De Houwer, 2008; Schroder-Abe, Rudolph, Wiesner, & Schutz, 2007).

Creemers et al. (2012) demonstrated that the absolute discrepancy between ESE and ISE was positively associated with depressive symptoms, suicidal ideation, and loneliness, only in participants with damaged self-esteem using the Name-Letter Task as a measure of ISE (NLT; Nuttin, 1985). Creemers, Scholte, Engels, Prinstein, and Wiers (2013) replicated their earlier findings using another measure of ISE, the self-esteem Implicit Association Test (self-esteem IAT; Greenwald & Farnham, 2000). While the replication of the findings using two different measures of ISE serves to illustrate the reliability of the unique association between damaged self-esteem and symptoms of depression, both of the previous two studies used the same sample that consisted solely of young adult women from the Netherlands. More recently, Leeuwis et al. (2015) conducted a longitudinal study and examined the influence of self-esteem discrepancies on the development of internalizing problems in Dutch children within the context of peer victimization. Their findings revealed that peer victimization was positively related only to damaged self-esteem at age 11 and showed that damaged self-esteem at age 11 predicted an increase in internalizing problems at age 12. Additionally, their study demonstrated that only damaged self-esteem mediated the relationship between the experience of victimization at age 11 and the development of internalizing problems at age 12. Thus, Leeuwis et al. (2015) not only replicated the findings of Creemers et al. (2012; 2013), but were also able to speak to a causal relationship where the interaction of ISE and ESE temporally precedes internalizing problems. In sum, these studies suggest that the discrepancy between ESE and ISE, more specifically where ISE is higher than ESE, may be an important factor of psychological problems, such as depression. Nevertheless, the few available studies examining the discrepancy between ESE and ISE were largely conducted by Creemers and his affiliates using European samples. This underscores the need for a replication experiment using a different sample.

Hypotheses are as follows:

1. ESE will be negatively associated with symptoms of depression.
2. The absolute discrepancy between ESE and ISE will be:
   a. positively associated with symptoms of depression for participants with damaged self-esteem
   b. not significantly associated with symptoms of depression for participants with defensive self-esteem.

2. Methods

2.1. Participants

A total of 87 undergraduates (67 female) at a private university in the northeastern U.S. participated in the study in exchange for course credit. Their mean age was 18.84 years (SD = 1.93, range 18–29). The sample was predominantly Caucasian (57%).

2.2. Measures

2.2.1. Severity of depressive symptoms

The *Beck Depression Inventory, second edition* (BDI-II; Beck, Steer, & Brown, 1996) was used to measure symptoms of depression. It is a self-report questionnaire consisting of 21 items. The BDI-II has well-established psychometric properties as a screening measure for depression (Beck et al., 1996). Cronbach's α in the current sample was .87.

2.2.2. Explicit self-esteem

The *Rosenberg Self-Esteem Scale* (RSES; Rosenberg, 1965) is a measure of global self-esteem and was used to measure ESE. The RSES is a self-report questionnaire that assesses overall feelings of self-worth and self-acceptance. The RSES has satisfactory validity and reliability as a tool for global self-esteem (Sinclair et al., 2010). Cronbach's α in the current sample was .90.

2.2.3. Implicit self-esteem

The *Implicit Association Test* (IAT) for self-esteem, developed by Greenwald and Farnham (2000), was utilized to measure ISE. The IAT assessed the associations between four categories by pairing two target categories (i.e., me vs. others) with two attribution categories (i.e., positive vs. negative). The evaluative attributes were eight positive (marvelous, superb, pleasure, beautiful, joyful, valuable, lovely, and wonderful) and eight negative (tragic, horrible, agony, painful, terrible, awful, worthless, and nasty). The underlying assumption of the IAT is that when certain concepts (i.e., "good" and "me") are more strongly associated in schema than other concepts, participants' responses should be faster when these concepts share a response key (Farnham, Greenwald, & Banaji, 1999). Past research has demonstrated satisfactory reliability and validity of both the general and the self-esteem IAT (Farnham et al., 1999; Greenwald & Farnham, 2000). IAT scores were computed using the algorithm programmed by Greenwald, Nosek, and Banaji (2003).

3. Data Analyses

A hierarchical multiple regression analysis (HMR) was conducted to investigate how ESE and ISE as well as their interaction were related to the severity of depressive symptoms. As predictor variables, ESE and ISE were entered in step one and their interaction in step two. Subsequently, we performed a second HMR to examine the relationships among the discrepancy between ESE and ISE, the direction of the discrepancy, and their interaction with respect to the severity of depressive symptoms using the discrepancy analysis as seen in Creemers et al. (2012) (see Data Analyses section in Creemers et al., 2012). This method has been used in a number of prior studies to examine the association between the discrepancy between ISE and ESE and internalizing problems, such as depression (Creemers et al., 2013; Schröder-Abé, Rudolph, Wiesner, & Schu¨tz, 2007). In the present study, 42 participants had damaged self-esteem.

4. Results

Gender failed to moderate any results reported below, which are reported collapsing across genders. Descriptive statistics are reported in

Table 1
Descriptive statistics for measures of explicit and implicit self-esteem and the severity of depressive symptoms.

	Mean	SD
Depressive symptoms (BDI-II)	9.33	6.75
Explicit Self-esteem (RSES)	20.71	4.97
Implicit Self-esteem (IAT)	.59	.35

Table 1. The intercorrelations among the variables are presented in Table 2. Consistent with expectations, ESE was negatively correlated with symptoms of depressive and ISE was correlated with neither symptoms of depression, nor ESE. However, a significant positive correlation was observed between the discrepancy between ESE and ISE and symptoms of depression, such that a greater discrepancy between ESE and ISE, regardless of the direction, was associated with symptoms of depression.

An HMR was used to scrutinize the associations of ESE as well as ISE and their interaction with the severity of depressive symptoms (see Table 3). In the first step, only ESE served as a significant predictor (Cohen's $f^2 = 0.71$), suggesting that lower ESE is associated with elevated depressive symptoms. The addition of the interaction between ESE and ISE in step 2 did not increase the predictive ability of the model, and the interaction variable did not serve as a significant predictor.

Next, we regressed the severity of depressive symptoms on the discrepancy between ESE and ISE, the direction of the discrepancy, and the interaction of these two terms. Results from the analysis are reported in Table 4. In the first step, the direction of the discrepancy predicted participants' severity of depressive symptoms ($f^2 = 0.08$), indicating that participants with damaged self-esteem reported higher levels of depressive symptoms, as predicted. The discrepancy, however, predicted the severity of depressive symptoms only at a trend level such that people with greater absolute discrepancy between measures of self-esteem tended to have elevated depressive symptoms.

When the interaction between the discrepancy and direction of the discrepancy was added in step 2, the variance accounted for by the predictors increased significantly. The interaction predicted the severity of depression significantly and more strongly than either one of the predictors did in isolation ($f^2 = 0.14$). More precisely, the results of our analysis revealed that the relationship between the discrepancy and depressive symptoms depended on the direction of the discrepancy. Among participants with damaged self-esteem, there was a positive relationship between the discrepancy and severity of depressive symptoms. In contrast, for participants with defensive self-esteem, there was a negative association between the discrepancy and depressive symptoms at a trend level (see Fig. 1).

In addition, two more HMRs were conducted to examine the extent to which the aforementioned results were driven by either ESE or ISE.[1] Both analyses are identical to what is presented in Table 4, with the addition of either ESE or ISE in both Step 1 and 2. When ESE was added to the regression, it served as a significant predictor of symptoms of depression in Step 2, $p = .007$, $f^2 = 0.09$, however, the interaction term was no longer significant in Step 2, $p = .86$, $f^2 = 0.0004$. When ISE was added, however, ISE, $p < .001$, $f^2 = 0.35$, and the interaction terms, $p < .001$, $f^2 = 0.36$, were both significant predictors of symptoms of depression. Taken together, these results suggest that the association between the discrepancy × direction interaction term and symptoms of depression was primarily accounted for by ESE. However, given that symptoms of depression was measured explicitly, it is also possible that the pattern of results noted above is due to common method variance between our measures of ESE and symptoms of depression.

5. Discussion

As expected, our results show a negative relationship between ESE and symptoms of depression. Our results replicate the findings by Creemers et al. (2012; 2013) and by Leeuwis et al. (2015) and demonstrate that damaged self-esteem was uniquely positively associated with depressive symptoms in a non-clinical college-aged population in the U.S. However, additional analyses suggest that the association between symptoms of depression and the interaction of ISE and ESE may be driven primarily by the strong link between the ESE and depression. Therefore, despite having a converging result, the results of the study should be interpreted with caution. While damaged self-esteem may be a meaningful marker of depressive symptoms, it should be noted that the importance of the interaction between ESE and ISE on the study of depression needs further investigation.

The addition of implicit measures in clinical research may yield a more thorough understanding of how self-esteem is related to depression. Unfortunately, very little research in the efficacy and mechanisms of Cognitive Therapy for depression (CT; Beck, Rush, Shaw, & Emery, 1979) assesses ESE through the course of psychotherapy, and no studies have assessed ISE. The available research literature has found that CT is effective at increasing ESE and decreasing depressive symptoms (Kunikata, Yoshinaga, & Nakajima, 2016; Pack & Condren, 2014). While it is possible that CT works similarly on ISE, there is only one study that has examined this construct and its participants were suffering from social anxiety disorder, not depression (SAD; Ritter, Leichsenring, Strauss, & Stangier, 2013). Results of this study showed increases in ISE over the course of both CT and psychodynamic therapy among patients with SAD; nevertheless, while changes in ESE were

Table 2
Correlations among measures of explicit and implicit self-esteem, the absolute difference between implicit and explicit self-esteem (Discrepancy), direction of the discrepancy (Direction), and severity of depression.

	BDI-II	RSES	IAT	Discrepancy	Direction
BDI-II	–				
RSES	-.64**	–			
IAT	-.04	.04	–		
Discrepancy	.21*	-.21	.16	–	
Direction	.27**	-.488**	.66**	.05	–

Note: BDI-II: Beck Depression Inventory, 2nd edition: RSES: Rosenberg Self-Esteem Scale; IAT: Implicit Association Test, self-esteem.
*$p < .05$.
**$p < .01$.

Table 3
The result of a hierarchical multiple regression analysis examining the associations of explicit self-esteem, implicit self-esteem, and the interaction between the two with the severity of depression.

	R^2	ΔR^2	F	B	SE	β
Step 1	.42	.42	29.80	–	–	–
Explicit Self-esteem	–	–	–	-.87	.11	-.64*
Implicit Self-esteem	–	–	–	-.24	1.63	-.01
Step 2	.42	.00	19.65	–	–	–
Explicit Self-esteem	–	–	–	-.83	.30	-.61*
Implicit Self-esteem	–	–	–	1.22	8.54	.06
Explicit * Implicit Self-esteem	–	–	–	-.07	.43	-.09

*$p < .01$.

Table 4
The result of a hierarchical multiple regression analysis examining the associations of the absolute discrepancy between explicit self-esteem and implicit self-esteem, direction of the discrepancy, and the interaction between the two with the severity of depression.

	R^2	ΔR^2	F	B	SE	β
Step 1	.11	.11	5.32	–	–	–
Discrepancy	–	–	–	.25	.13	.20
Direction of the Discrepancy	–	–	–	.52	.21	.26*
Step 2	.22	.11	7.89	–	–	–
Discrepancy	–	–	–	-.40	.23	-.31
Direction of the Discrepancy	–	–	–	-.53	.36	-.27
Discrepancy * Direction	–	–	–	.93	.27	.82**

*$p < .05$.
**$p < .01$.

[1] We are thankful to an anonymous reviewer for suggesting these analyses.

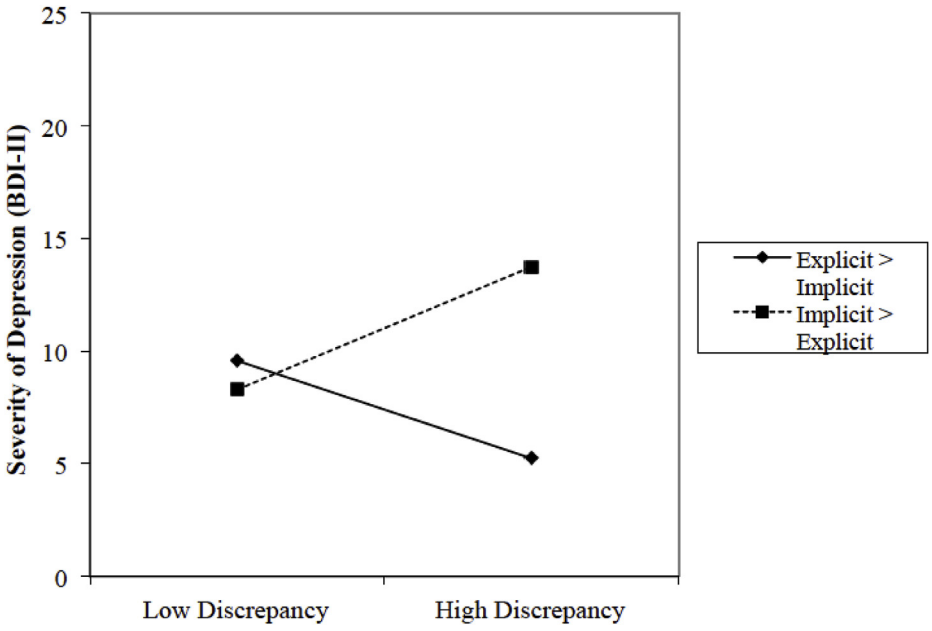

Fig. 1. Prediction model from the secondary hierarchical multiple linear analysis demonstrating the interaction between the absolute discrepancy between explicit and implicit self-esteem and the direction of the discrepancy: Explicit > Implicit denotes Defensive Self-esteem, whereas Implicit > Explicit represents Damaged Self-esteem.

associated with changes in SAD symptoms, no such relationships were found in ISE. The scarcity of studies that include implicit assessment of constructs is, to some extent, at odds with the underlying principles of CT. CT is thought to operate via the reduction of cognitive biases that are not within the awareness of the individual suffering from them (Beck et al., 1979) and, therefore, not something on which the individual can report. Future research in CT would benefit from the implicit assessment of key constructs to determine if these variables serve as important predictors of outcome and to better disentangle treatment effects from the effects of common method variance.

Limitations of the current study provide useful avenues for future research. Frist, our study only utilized one type of ISE measure. Although the self-esteem IAT appears to be the most well-established and supported measure, it should be noted that the self-esteem IAT might not be the ideal measure for ISE. Second, the severity of depression was assessed exclusively using an explicit measure, while self-esteem was assessed with both implicit and explicit measures. As previously noted, our results suggest that the association between symptoms of depression and the interaction of ISE and ESE is driven primarily by the strong link between the ESE and depression. However, a larger correlation might have been found between ISE and depression had an implicit measure of symptoms of depression been used, due to common method variance. It will be valuable for future research to assess both depression and self-esteem in a multi-modal format using measures such as the Structured Clinical Interview for *DSM-5* (First, Williams, Karg, & Spitzer, 2015). Moreover, longitudinal studies examining the changes in both types of self-esteem over the course of psychotherapy using a treatment-seeking population are sorely needed to make this work more readily applicable to treatment providers.

Conflicts of interest

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. There is no interest to be declared.

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