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Citation for published version (APA):
Wiechert, S., van Bockstaele, B., Vertregt, M., van Marwijk, L., & Maric, M. (2023). Explicit and implicit self-esteem and their associations with symptoms of anxiety and depression in children and adolescents. *European Journal of Developmental Psychology*, *20*(5), 823-838. Advance online publication. https://doi.org/10.1080/17405629.2023.2216447

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Explicit and implicit self-esteem and their associations with symptoms of anxiety and depression in children and adolescents

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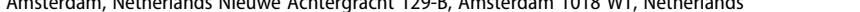
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ABSTRACT

Negative self-esteem is an important transdiagnostic factor underlying various youth psychological problems. Most studies so far have examined the role of more conscious, explicit self-esteem, assessed with self-report questionnaires. Our study investigated the role of explicit as well as implicit self-esteem (with Rosenberg's self-esteem scale and the implicit association test, respectively), and the nature of their interaction in explaining children's and adolescents' internalizing symptomatology. Self-esteem, depression, and anxiety symptoms were assessed in 279 youths (mean age: 13.92; 52% females). Explicit self-esteem (ESE) was consistently negatively related to internalizing symptoms, whereas implicit self-esteem (ISE) was not. For DSM-related anxiety symptoms, the interaction between ISE and ESE was significant: in youths who displayed low to average ESE, higher ISE predicted more anxiety symptoms, whereas for youths with high ESE, increased ISE was associated with lower levels of anxiety symptoms. Overall, our results suggest that explicit self-esteem is an important factor in explaining internalizing symptomatology for children and adolescents.

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/17405629.2023.2216447

Introduction

Self-esteem is a cognitive concept that reflects the appraisal of one's own worth or value (Van der Cruijsen & Boyer, 2020). It has been argued to be an important transdiagnostic factor (Keane & Loades, 2017), acting as a cognitive vulnerability to internalizing problems across age, gender, and various samples (McCarty et al., 2007). Individuals with low self-esteem often feel unworthy and incompetent, which can have a great impact on cognitions, emotions, and responses to stressful life events (Overholser et al., 1995). Already several decades ago, consistent associations between negative self-esteem and internalizing problems in youth were found. For example, Leitenberg et al. (1986, see also De Jong et al., 2012) found elevated depressive symptoms in children and adolescents with negative self-esteem, and Ginsburg et al. (1998) showed that children with social anxiety disorders showed lower levels of global self-esteem.

Most prior research into self-esteem is concerned with explicit and conscious opinions about the self (i.e., explicit self-esteem; ESE; Creemers et al., 2012), typically assessed via self-report questionnaires. This is even more so in the area of children and adolescents. However, in the past decades, implicit cognitions, such as implicit self-esteem (ISE), and the study of their association with psychopathology have become increasingly important. It has been suggested that implicit cognitions are not only vital in understanding the aetiology of problems but also in determining the success of therapies and relapse effects (Teachman et al., 2019). ISE represents a more automatic and intuitive processing of the information about the self and someone's own worth (Creemers et al., 2012) and is typically assessed via computerized implicit association tests. A meta-analysis by Krizan and Suls (2008) showed that ESE and ISE correlate weakly, implying that ESE and ISE represent different types of cognitions that may also relate differentially to psychopathology.

While consistent negative associations were found between ESE and internalizing symptoms, empirical evidence on the association between ISE and internalizing disorders and symptoms is scarce and mixed so far. On the one hand, in some studies, ISE did not distinguish between adults or adolescents with internalizing disorders and controls (e.g., De Raedt et al., 2006), nor did it predict internalizing problems in the general population (e.g., Creemers et al., 2012; De Jong et al., 2012; Kim & Moore, 2019). On the other hand, some studies have found associations between ISE and specific comorbidities involving internalizing disorders.

For example, Franck et al. (2007) found that depressed adults with suicidal ideation showed higher levels of ISE, whereas depressed individuals without suicidal ideation showed lower ISE compared to non-depressed controls. Further, Van Tuijl et al. (2016) found that ISE was lower for adults with current comorbid major depressive disorder and anxiety disorder compared to controls. Hence, the nature of the relation between ISE and internalizing disorders and symptoms remains to be determined.

While previous studies examined separate contributions of ESE and ISE to psychopathology, we consider an additional perspective on the explicit-implicit conceptualization of self-esteem in children and adolescents. In a previous study, it has been argued that ESE represents the 'actual self' (i.e., how individuals view themselves), whereas ISE represents the 'ideal self' (i.e., how individuals would want to be; Franck et al., 2007). In this way, ESE and ISE may be working through different information-processing modes (Phillips & Hine, 2016). If individuals receive diverging information through these modes, their differences may potentially lead to an internal conflict causing negative emotions (Phillips & Hine, 2016), and increasing the probability of experiencing internalizing problems (Creemers et al., 2013). Illustrating this idea, Franck et al. (2007) found that currently depressed individuals with suicidal ideation showed a combination of low ESE and high ISE, suggesting that *the relationship between ISE and ESE* may predict internalizing symptoms.

There are two different ways in which the relationship between ISE and ESE could be deemed unbeneficial. First, ISE and ESE might interact with each other and this could affect internalizing problems (Bosson et al., 2003), such that the effect of one type of SE on internalizing symptoms depends on the specific level of the other SE. So far, in a longitudinal study by van Tuijl et al. (2014) interaction between ISE and ESE was not predictive of depression and social anxiety at a 2-year follow-up in secondary school pupils, but explicit self-esteem alone was. Second, the *discrepancy* between both types of self-esteem may be crucial (Creemers et al., 2012) as such that the absolute difference between ISE and ESE would be of importance. Previous studies in (young) adults have shown that discrepancies between ISE and ESE are associated with more depressive symptoms (Kim & Moore, 2019), suicidal ideation, and loneliness (Creemers et al., 2012). When investigating the effect of self-esteem discrepancy on internalizing symptomatology, one additional question arises – is the effect of discrepancy dependent on the direction of the discrepancy? The opposing discrepancy directions have been framed as

fragile self-esteem and *damaged self-esteem*: Fragile self-esteem reflects higher ESE than ISE, while damaged self-esteem reflects lower ESE than ISE (Creemers et al., 2012). Both are hypothesized to be maladaptive as they reflect a lack of integration in self-representation (Creemers et al., 2012). So far, in one longitudinal study, it was found that higher levels of ISE than of ESE at age 11 predicted internalizing symptoms at age 12 (Leeuwis et al., 2015). However, this study investigated a rather limited age range (11- and 12-year-olds) and internalizing problems were assessed via a general internalizing questionnaire without assessing distinct (e.g., anxious versus depressive) symptoms.

The latter operationalization (measuring the effect of discrepancy size and direction) might potentially be less reliable due to its statistical properties. The rationale for this suggestion is that if each of the two measures (ESE and ISE) are imperfect measures of self-esteem, each with some level of unreliability, the reliability of their difference score may be even less reliable (Lord, 1956). Hence, the standard approach (measuring the interaction of ISE and ESE) in investigating internalizing symptom differences may be more straightforward and less affected by potential poor reliability of the specific measures. With this in mind, we decided to more strongly focus on the comparison of ESE and ISE in predicting internalizing symptomatology, and only discuss the discrepancy methodology in the light of supplementary analyses (see supporting information B).

Overall, it remains unclear whether and how ISE contributes to different internalizing symptomatology, and how it is associated with ESE. The main goal of the current study was therefore to replicate prior findings on the association between ESE and internalizing symptoms, and further investigate the directionality of effects between ISE and internalizing symptomatology in youths, and in interaction with ESE. We investigated both explicit and implicit self-esteem (separately and in interaction) in explaining anxiety and depression symptoms in children and adolescents. We expected that ESE would be negatively associated with internalizing symptoms, but as literature on the association between ISE and internalizing symptoms is mixed so far, no specific hypotheses on their relationship were generated.

Materials and methods

Participants and procedure

Children and adolescents from the general population ($N = 298$) were recruited via schools in the Netherlands. Within the final analytical sample

of $N = 279$ (after exclusions as explained in the *IAT Scoring* section), participants were on average 13.92 years old ($SD = 2.32$), and 52.33% ($n = 146$) were female. The final sample consisted of 66 children (41 females; *M*age $= 10.33$, $SD = 0.85$; Range $= 8–11$; based on 33 responses) and 213 adolescents (105 females; *M*age $= 14.56$, $SD = 1.86$; Range $= 12–18$; based on 183 responses; age as a continuous variable is missing for 63 participants in total as the paper-and-pencil data for these participants was lost). Twelve was chosen as the cut-off age for children, as it represents the moment of transition in the Netherlands from elementary to secondary schooling, and is in line with the cut-off age used in previous studies (Schwartz & Maric, 2015). 36.20% of the total sample ($n = 101$) was in primary school, 63.44% reported to be in middle school ($n = 177$; information of one individual is missing for this variable). The majority of the sample was born in the Netherlands ($n = 261$, 93.55%); 49 children and adolescents had at least one parent born outside of the Netherlands (17.56%; both parents born outside the Netherlands: $n = 23$, 8.24%). For more information on the descriptive statistics of the final analytical sample and correlations between variables, see supplementary material (see Table A1), https://osf.io/uvdf8/?view_only=d146a0dbf83e4 d6685e930365a8cb5c3. Both participants and their parents consented prior to participation. The study was approved by the Ethics Review Board (University of Amsterdam). The assessment session was conducted at the school under the supervision of an experimenter and one to two research assistants. Questionnaires and the computer task were completed in a counterbalanced order.

Measures

ESE: *Rosenberg's Self-Esteem Scale* (RSES; Rosenberg, 1965) is a 10-item, 4-point questionnaire of which items were slightly adapted in wordings to ease administration with children and adolescents (e.g., 'some people' were replaced by 'some children'). Higher score indicated higher ESE. The internal consistency in our study was good for both versions (Cronbach's α: children $=.85$; adolescents $=.91$).

ISE: *Implicit Association Test*. To measure implicit self-esteem, we included a self-esteem Implicit Association Test (IAT: Greenwald et al., 1998), modelled after Creemers et al. (2013). This is a computerized reaction-time task measuring the relative strength of automatic positive and negative associations towards the self and others. Participants were asked

to classify words into two different dimensions (using either the 'E' or 'I' key of a standard keyboard): For the target dimension, the words referred either to oneself or to others. The labels for this dimension were 'Me' and 'Not me', and the words were Dutch translations of 'my', 'myself', 'self', 'Me', 'I', 'own', and 'mine' versus 'they', 'their', 'others', 'them', 'his', 'her', and 'him', respectively. For the attribute dimension, words referred to importance or unimportance. The labels for this dimension were 'Important' and 'Unimportant'. For children, we used the Dutch translations of 'handy', 'good', 'nice', 'successful', 'strong', and 'Important' versus 'bad', 'weak', 'wrong', 'Unimportant', 'loser', and 'dumb'. For adolescents, we used the same words, except for the word 'wrong', which was changed into 'failed'. The words were piloted in a sample of 10 children and adolescents. All words were presented in the centre of the screen against a black background, and the relevant category labels were shown in the upper corners of the screen. Words and labels referring to the target dimension were presented in white, while words referring to the attribute dimension were presented in green. Words were always selected randomly from their respective sets without replacement. Participants were instructed to categorize words as quickly as possible. A red 'X' was presented for 200 ms on incorrect responses (pressing 'E' when 'I' should have been pressed, and vice versa). Participants could only proceed to the next trial when they pressed the correct key. Trials were separated by a 250 ms inter-trial interval.

Participants were randomly assigned to one of four different versions of the IAT, counterbalancing (1) whether the first combined blocks contained the compatible (self + important and others + unimportant) or the incompatible (others + important and self + unimportant) mapping and (2) which of the two target categories (self or others) was first mapped on the right versus left response button. The IAT consisted of seven blocks. In the first block, the target dimension was practiced in 20 trials, with 10 words referring to oneself and 10 words referring to others. In the second block, the attribute dimension was practiced in 20 trials, with 10 words referring to importance and 10 words referring to unimportance. The third block was the first combination practice block, consisting of 20 trials, with alternating words of the target and attribute dimension (5 words for each of the categories). The fourth block was the first combination test block and was identical to the third block but contained a total of 40 trials (10 words for each of the categories). In the fifth block, consisting of 40 trials (20 words referring to self and 20 referring to others), the response

keys of the target dimension were switched. In the sixth block, participants practiced the reversed combination of the target and attribute dimension in 20 trials (5 words for each of the categories, and trials alternating between the two dimensions). Finally, the seventh block was the reversed combination test block and was identical to the sixth block but contained a total of 40 trials (10 words for each of the categories).

IAT Scoring. The assumption is that individuals with high ISE would respond faster in compatible compared to incompatible blocks. Thus, ISE was inferred from differences in reaction times between compatible blocks (self + important and others + unimportant) and incompatible blocks (others + important and self + unimportant). Higher scores reflected a more positive ISE.

Following Greenwald et al. (2003), we calculated the D-measure with a built-in error penalty (script downloaded from https://faculty.washing ton.edu/agg/iat_materials.htm). This score includes reaction times on all combined task blocks (i.e., blocks 3, 4, 6, and 7) and latencies are corrected for individual latency variability. For the final sample, D-measures of 19 participants for whom more than 10% of trials had reaction times faster than 300 ms were set missing, resulting in a final analytical sample of 279 participants.

Overall accuracy level on the IAT was high (*M* correct = 90.35%, *SD* = 7.04), and also similar when divided over children (*M* correct = 88.03%, *SD* = 8.40) and adolescents (*M* correct = 91.07%, *SD* = 6.41). The Spearman–Brown corrected split-half reliability of the IAT score in this study was good, *r* = .81 for children and *r* = .83 for adolescents. Average latency across age groups was 1245 ms (*SD* = 341.84), with slightly longer average latencies for children (*M* = 1466.60, *SD* = 368.13) compared to adolescents (*M* = 1118.70, *SD* = 302.75).

Children's Depression Inventory (CDI; Kovacs, 1992) was used to assess the severity of depression symptoms. CDI included 26 items (one item on suicidal thought was not included as the participant pool was chosen from the general population) and is scored on a 3-point scale, with higher scores indicating more depressive symptoms. The CDI in this study had a good internal consistency (Cronbach's α: children =.81; adolescents =.87).

Screen for ChildAnxiety-RelatedDisorder – 5 (SCARED-5) is based on the 41-item version of the SCARED (Birmaher et al., 1999). The SCARED-5 included five self-report items in which each item measured a different DSM-related anxiety disorder (referred to as DSM-related anxiety at later parts for clear distinction with the state-trait inventory for children).

Examples of items include 'I am afraid to be alone in the house' and 'I am scared to go to school'. Items were scored on a 3-point scale (Not true/ Somewhat true/Very true), and higher scores indicated higher anxiety symptomatology. The SCARED-5 has demonstrated good internal consistency and discriminant validity in previous studies (Birmaher et al., 1999). In our sample, the SCARED-5 measure displayed poor reliability (Cronbach's α: children =.56; adolescents =.50).

State-Trait Inventory for Children (STAI-C) measures anxiety symptoms in children and adolescents (Spielberger, 1973) on two subscales: state anxiety (anxiety at that given moment) and trait anxiety (stable pattern of anxiety symptomatology). An example of an item for state anxiety scale is 'I feel … not upset/upset/very upset' and for the trait anxiety subscale 'I notice my heart beats fast: hardly-ever/sometimes/ often'. Both subscales included 20 items, on a 3-point scale; higher scores indicated greater state and trait anxiety, and showed high internal consistency (Children: Cronbach's α trait =.87; Cronbach's α state =.85; Adolescents: Cronbach's α trait =.90; Cronbach's α state =.89).

Data analysis

All primary analyses were conducted in RStudio (Version 1.2.5019) on the final analytical sample. Four separate hierarchical multiple regression analyses were conducted to examine the effects of ESE and ISE on different measures of anxiety and depression symptoms. In the first step, the RSES, IAT score, age group, and gender were included as predictors. In the second step, the interaction between RSES and IAT was included.

Results

Data assumptions (independence, multicollinearity, and homoscedasticity) were met, and a few outliers did not influence our findings and were retained in the sample. To examine whether ESE and ISE (and their interaction) were associated with depressive and anxiety symptoms, four regression analyses were conducted (see Table 1 and Figure 1). ESE was significantly associated with all internalizing outcomes in the sense that lower ESE predicted more depressive and anxiety symptoms. ISE did not predict any outcome measure. Furthermore, the interaction between ESE and ISE significantly predicted DSM-related anxiety (i.e., the SCARED-5

score). To illustrate this descriptively (see Figure 1b), participants scoring low-to-average on ESE showed a tendency towards a positive association between ISE and DSM-related anxiety. In contrast, participants with high ESE showed a tendency towards a negative association between ISE and DSM-related anxiety. None of the other outcome variables was predicted by the interaction between ESE and ISE (see Figure 1).

Table 1. Four hierarchical multiple regression analyses: Associations with self-esteem and symptoms of depression and anxiety.

Variable	B	SE	95% CI for B LL	95% CI for B UL	t	R^2	ΔR^2
CDI							
Step 1						0.53	0.52***
Constant	4.75**	1.46	1.87	7.63	3.25		
Age	2.15***	0.62	0.93	3.38	3.45		
Gender	−0.47	0.53	−1.52	0.57	−0.89		
ESE	−4.40***	0.26	−4.92	−3.87	−16.60		
ISE	−0.09	0.26	−0.61	0.42	−0.35		
Step 2						0.53	0.52***
Constant	4.62**	1.46	1.74	7.50	3.16		
Age	2.23***	0.63	1.00	3.47	3.57		
Gender	−0.46	0.53	−1.50	0.59	−0.86		
ESE	−4.43***	0.27	−4.96	−3.91	−16.64		
ISE	−0.08	0.26	−0.59	0.44	−0.30		
ESE*ISE	−0.30	0.24	−0.78	0.18	−1.21		
SCARED-5							
Step 1						0.32	0.31***
Constant	0.58	0.46	−0.34	1.49	1.24		
Age	0.07	0.20	−0.32	0.46	0.35		
Gender	0.69***	0.17	0.36	1.02	4.09		
ESE	−0.79***	0.08	−0.96	−0.62	−9.37		
ISE	0.15	0.08	−0.01	0.32	1.85		
Step 2						0.33	0.32***
Constant	0.49	0.46	−0.42	1.40	1.06		
Age	0.12	0.20	−0.27	0.51	0.62		
Gender	0.70***	0.17	0.37	1.03	4.19		
ESE	−0.81***	0.08	−0.98	−0.65	−9.68		
ISE	0.16	0.08	<-0.01	0.32	1.95		
ESE*ISE	−0.19*	0.08	−0.35	−0.04	−2.51		
Trait STAI-C							
Step 1						0.52	0.52***
Constant	24.65***	1.88	20.95	28.35	13.11		
Age	2.47**	0.80	0.89	4.04	3.08		
Gender	2.14**	0.68	0.80	3.48	3.15		
ESE	−5.31***	0.34	−5.98	−4.64	−15.57		
ISE	0.10	0.34	−0.56	0.76	0.31		
Step 2						0.52	0.52***
Constant	24.62***	1.89	20.90	28.34	13.03		
Age	2.48**	0.81	0.89	4.07	3.07		
Gender	2.15**	0.68	0.80	3.49	3.15		
ESE	−5.32***	0.34	−5.99	−4.64	−15.48		
ISE	0.11	0.34	−0.56	0.77	0.31		
ESE*ISE	−0.06	0.32	−0.68	0.56	−0.20		

(*Continued*)

Table 1. (Continued).

Variable	B	SE	95% CI for B		t	R^2	ΔR^2
			LL	UL			
State STAI-C							
Step 1						0.43	0.43***
Constant	22.99***	1.38	20.28	25.71	16.69		
Age	2.57***	0.59	1.42	3.73	4.40		
Gender	1.82***	0.50	0.84	2.81	3.65		
ESE	−3.02***	0.25	−3.52	−2.53	−12.10		
ISE	−0.01	0.25	−0.49	0.48	−0.03		
Step 2						0.44	0.43***
Constant	22.93***	1.38	20.20	25.65	16.58		
Age	2.61***	0.59	1.45	3.77	4.44		
Gender	1.83***	0.50	0.85	2.81	3.66		
ESE	−3.04***	0.25	−3.54	−2.55	−12.09		
ISE	<-0.01	0.25	−0.49	0.48	−0.01		
ESE*ISE	−0.15	0.23	−0.61	0.31	−0.65		

Note. SE = standard error; 95% confidence interval (CI) of the estimate; LL = lower bound, UL = upper bound; ESE = explicit self-esteem; ISE = implicit self-esteem. The predictors ESE and ISE were scaled as z-scores prior to conducting the regression analyses.
*$p < .05$ **$p < .01$ ***$p < .001$.

When looking at the effect of age group and gender on internalizing symptomatology (see Table 1), some tendencies became evident. In our analyses, the older age group (adolescents vs. children) was associated with higher depressive symptomatology (as measured by CDI) and higher state and trait anxiety (as measured by STAI-C). Thus, adolescents reported more depressive and anxiety symptoms compared to children. However, age group was not associated with DSM-related anxiety, as measured by the SCARED-5. Considering gender, we found associations with anxiety (SCARED-5 and STAI-C), but not depressive symptomatology (CDI). Thus, female children and adolescents reported more anxiety symptoms overall.

Discussion

We investigated whether ESE, ISE, and their interaction (alongside gender and age group as covariates) predicted internalizing symptoms in youth. ESE but not ISE negatively predicted all internalizing symptom outcomes. Interestingly, for DSM-related anxiety symptoms, the interaction between ISE and ESE was significant. When individuals displayed low-to-average ESE, higher ISE predicted more DSM-related anxiety symptoms, whereas for individuals with high ESE, increased ISE was associated with lower levels of DSM-related anxiety symptoms. Here, we note that only one of the models showed a significant interaction for ESE and ISE in predicting
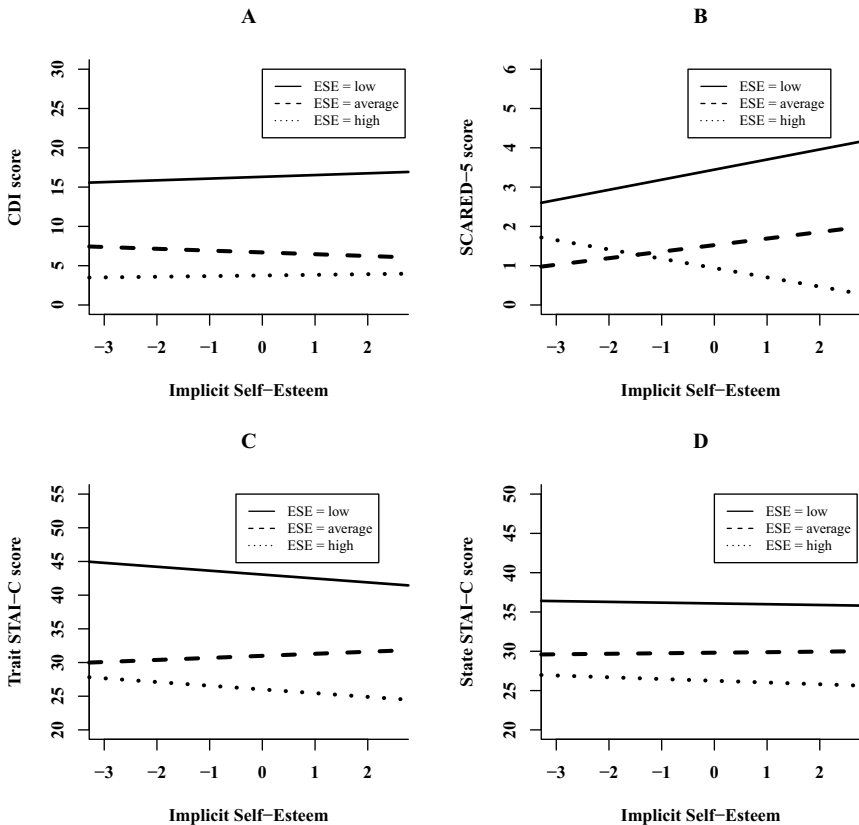
Figure 1. Interaction of explicit and implicit self-esteem in explaining the outcome measures (a: CDI, b: SCARED-5, c: Trait STAI-C, d: State-C) . *Note*. The figures' implicit self-esteem measures were scaled as z-scores. ESE categories were operationalized as follows: low ESE (<1 *SD* below the mean), high ESE (>1 *SD* above the mean), and average ESE (scores outside of low/high categories).

the internalizing outcome. As the SCARED-5 measure is a very short measure (five items) and showed the lowest reliability in our sample, and was the only outcome measure that showed an effect of the interaction of ISE and ESE, this finding may not be fully reliable and potentially represent a Type 1 error. In a supplementary analysis looking at the predictive effect of discrepancy size and direction between ISE and ESE in predicting internalizing outcomes (see supporting information B and Table B1 for further details), we found that for youths with higher ISE than ESE (those with *damaged self-esteem*), larger discrepancies between ISE and ESE were associated with higher levels of internalizing problems. Thus, there may be some effect of ISE in interaction with ESE on outcomes

of internalizing symptoms. However, as stated above, the discrepancy approach and the use of difference scores have been criticized for its low reliability (Lord, 1956). In the light of its inconsistencies with our main analysis, its results should be interpreted with caution.

The absence of significant main effects of ISE on internalizing symptoms in youths adds to results from previous literature (e.g., De Jong et al., 2012). However, we note that this lack of effect may arise from the fact that self-esteem is a complex construct, and different ISE and ESE measures may capture different facets of the construct that may not all be central to internalizing symptomatology (Koole & Pelham, 2003). Nevertheless, ISE showed some positive associations with other constructs throughout the analyses. ISE and ESE interacted in explaining DSM-related anxiety symptoms, and discrepancy size and direction interacted in explaining all internalizing outcomes. However, even if ISE indeed affected depression and anxiety symptoms in our sample, high ISE was not beneficial for internalizing symptomatology if ESE was low. Thus, high ISE may not be able to compensate for low ESE to guard against depressive and anxiety symptoms.

Another potential explanation for the absence of direct ISE results is that the psychometric properties of implicit measures have been questioned (Buhrmester et al., 2011). These researchers even argued that the IAT and other implicit measures of self-esteem can be better understood as measures of generalized implicit affect rather than as implicit measures of self-esteem. At the same time, the split-half reliability of the IAT in our study was shown to be good, and other studies have shown meaningful correlations between implicitly measured self-esteem using the IAT and explicit SE, and other criterion measures (Van Tuijl et al., 2016).

Differences between ESE and ISE have been hypothesized to represent a conflict between the 'actual self' (or perceived reality) and the 'ideal self' (or self-referent goals), respectively (Creemers et al., 2013). We argue that *damaged* youths (ISE > ESE) are more at risk for internalizing symptoms than *fragile* youths (ESE > ISE) because when ESE is high, the ideal self becomes irrelevant as one is likely content with the current perceived reality. Even if self-referent goals are low, the explicit opinions about the self are positive and thus exceed the goals. In contrast, when ESE is low, high self-referent goals (i.e., ISE) may be maladaptive as the child feels an internal conflict between the actual state and the desired state. The goals thus exceed the actual self, creating a perception that the actual self cannot live up to the self-created goals. Although these propositions

seem interesting from a theoretical and aetiological point of view, there is a discussion whether actual and ideal self-esteem indeed represent the two states of self-esteem and whether they can be distinguished from each other at all (Remue et al., 2014).

To sum up, our study shows that ESE is the more dominant factor in explaining internalizing symptomatology. Across all outcome variables, lower ESE was consistently associated with higher depression and anxiety symptoms. Yet, even though ESE most consistently predicted internalizing symptoms, we argue that ISE should not be completely discarded, but should rather be further investigated, especially in interaction with ESE. We found some indications that in the case of low ESE, ISE may be associated with elevated internalizing symptoms, specifically, DSM-related anxiety symptoms.

We note two main limitations to our study; our study is cross-sectional and further, its design does not allow for causal inferences (i.e., no experimental manipulation). While low self-esteem may give rise to internalizing problems, internalizing problems could also be associated with lower levels of self-esteem (e.g., Orth et al., 2009). However, evidence from a meta-analysis involving longitudinal studies supports the idea that self-esteem predicts depression symptoms (Sowislo & Orth, 2013). Another limitation is related to the suicide item that was excluded from the depression questionnaire in our study. Therefore, we could not compare our results with results from studies that investigated associations between ISE and suicidal ideation (Creemers et al., 2012). Notwithstanding these limitations, our results suggest that diagnostic efforts in internalizing problems should assess both types of self-esteem in order to prevent overlooking the role of implicit processes in youth internalizing problems. To do so, more research into the most psychometrically sound measures of self-esteem in children and adolescents is needed. Apart from longitudinal designs, future studies including clinical populations and multiple implicit measures of self-esteem and adding indirect outcome variables (e.g., physiological indices of internalizing symptomatology) could increase the reliability and generalizability of our results.

Disclosure statement

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Data availability statement

All data analysed during this study as well as the code for analyses can be found here: https://osf.io/uvdf8/?view_only=d146a0dbf83e4d6685e930365a8cb5c3

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