

Self-Perceived Competence, Relational Victimization, and Children's Depressive Symptoms: Evidence for a Sex-Specific Vulnerability-Stress Model

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The goal of the current multi-wave, longitudinal study was to test a cognitive vulnerability-stress model of depression in children by integrating Cole's (1990) competency-based model with Beck's (1983, 1987) event-congruency hypothesis. Focusing first on the main effects of children's self-perceived competence, we found that low self-perceived social acceptance and scholastic competence were both associated with elevations in children's depressive symptoms across the follow-up, though the effect was stronger for perceptions of social acceptance. Supporting a sex-specific vulnerability-stress model, low perceived social acceptance, but not scholastic competence, moderated the link between relational victimization and depressive symptoms over the follow-up for girls, but not boys.

According to cognitive theories of depression (e.g., Abramson, Metalsky, & Alloy, 1989; Clark, Beck, & Alford, 1999), negative cognitive styles contribute vulnerability to depression in the presence, but not absence, of negative life events. That is, negative cognitive styles are hypothesized to moderate the link between negative life events and depressive symptoms and diagnoses. Although these models were originally developed to explain vulnerability to depression in adults, there is growing support for cognitive vulnerability-stress theories in children (for reviews, see Abela & Hankin, 2008; Lakdawalla, Hankin, & Mermelstein, 2007). This said, however, the magnitude of the cognitive vulnerability-stress effects in children is small (Lakdawalla et al., 2007).

A potential limitation of previous studies testing the cognitive vulnerability-stress hypothesis in children is that the majority has focused on negative events generally,

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rather than events specific to the domain of cognitive vulnerability (for a review see, Abela & Hankin, 2008), which may have contributed to the relatively modest effect sizes observed. According to vulnerability event-congruency hypotheses (e.g., Beck, 1983, 1987; Blatt & Zuroff, 1992), depressive reactions are most likely when there is a match between the domain of vulnerability and the type of negative event experienced. For example, individuals exhibiting a cognitive vulnerability in the social or interpersonal domain should be more likely to develop depression following negative social or interpersonal events than negative achievement or academic events. Although a number of studies have provided support for the vulnerability event-congruency hypotheses in adults (for reviews, see Clark et al., 1999; Zuroff, Mongrain, & Santor, 2004), fewer studies have tested this hypothesis among children.

In the few prospective studies that have been conducted with children, support for the specific vulnerability hypothesis has been mixed (see Abela, Sakellaropoulou, & Taxel, 2007; Abela & Taylor, 2003; Little & Garber, 2000, 2004, 2005; Shahar, Blatt, Zuroff, Kupermine, & Leadbeater, 2004). A potential reason for these mixed results is that the previous research has focused on interpersonal and achievement stress at a more generic level, rather than on developmentally significant negative events (cf. Abela & Hankin, 2008). One type of event that is especially salient for school-age children is relational victimization (for reviews, see Crick et al., 2001; Crick, Casas, & Nelson, 2002).

Relational victimization is a type of peer victimization through which individuals use the withdrawal or threat of withdrawal of social relationships as a means of harm and manipulation (Crick et al., 2001; Crick et al., 2002). Examples of relational victimization include gossiping, spreading rumors, purposefully and maliciously ignoring peers, and excluding others from a social group. Relational victimization has been shown to be especially salient for school-age children (e.g., Cullerton-Sen & Crick, 2005; Murray-Close, Ostrov, & Crick, 2007), and studies have supported the link between relational victimization and depressive symptoms in youth (for a reviews, see Crick et al., 2001; Crick et al., 2002). However, no study of which we are aware has examined the potential effects of relational victimization on children within a cognitive vulnerability-stress framework. Consistent with Beck's vulnerability-event congruency hypothesis (Beck, 1983, 1987; Clark et al., 1999), children exhibiting a cognitive vulnerability in the social/interpersonal domain should be particularly vulnerable to experiencing depressive symptoms following experiences of relational victimization.

There is evidence that adolescent girls are more likely than boys to become depressed following negative interpersonal events (for a review, see Leadbeater, Blatt, & Quinlin, 1995). In addition, although evidence remains mixed, there is some support for sex moderation of vulnerability-stress models of depression in children, such that high cognitive risk girls are more likely than high cognitive risk boys to experience depressive symptoms following negative interpersonal events (e.g., Abela, 2001; Little & Garber, 2004; Prinstein & Aikins, 2004). Researchers have suggested that this sex moderation may be because interpersonal relationships tend to play a more central role in self-identity for girls than boys (for a review, see Rudolph, 2002). Given this, theorists have suggested that relational victimization (conceptualized as a developmentally salient negative interpersonal event) might be more damaging to girls than boys (for a review, see Crick et al., 2002). Few studies, however, have actually tested this hypothesis and those that have yielded mixed results, with some supporting a link between relational victimization and internalizing problems among girls specifically (e.g., Crick et al., 2002; Storch, Phil, Nock, Masia-Warner, & Barlas, 2003) and others showing

no sex differences in the link between victimization and internalizing problems in children (e.g., Storch, Zelman, Sweeney, Danner, & Dove, 2002). One possible reason for these mixed findings is that researchers have typically focused specifically on the effects of relational victimization, without taking into consideration the potential impact of differences in levels of cognitive vulnerability. In the current study, therefore, we focused on children's reports of relational victimization within a cognitive vulnerability-stress model and tested for gender moderation of the vulnerability-stress effect. Although sex differences in depression do not emerge until early adolescence (e.g., Hankin & Abramson, 2001), preadolescent children are an important group to study, given that potential sex-specific vulnerabilities to depression might emerge earlier in development. Better understanding of these sex-specific vulnerabilities in preadolescent children should provide valuable information regarding the possible reasons for the emergence of sex difference in depression in adolescence.

The primary goal of the current study was to test an integration of Cole's (1990) competency-based model of depression with Beck's (1983, 1987) event-congruency hypothesis among a sample of children. Focusing first on the main effects of cognitive vulnerability, we examined the effects of two forms of self-perceived competence--social acceptance and scholastic competence--on children's depressive symptom trajectories over a multi-wave prospective follow-up. Consistent with the results of previous studies (e.g., Cole & Turner, 1993; Seroczynski, Cole, & Maxwell, 1997; Tram & Cole, 2000), we hypothesized that low self-perceived social acceptance and low self-perceived scholastic competence would both be associated with elevated depressive symptom levels across the follow-up. Next, we tested the vulnerability-stress models. Consistent with Beck's event congruency hypothesis, we predicted that low self-perceived social acceptance, but not scholastic competence, would moderate the link between relational victimization and children's depressive symptoms. In addition, we hypothesized that this vulnerability-stress relation would be stronger among girls than boys.

METHOD

Participants

Participants were part of a larger study of maternal depression and included 100 mothers and their children drawn from the community. Participants were recruited through newspaper ads, bus ads, and flyers distributed in the community. To qualify for inclusion in the study, mothers were required to either (a) meet criteria for at least one *DSM-IV* major depression (MD) during the child's lifetime ($n = 52$) or (b) have no lifetime diagnosis of any *DSM-IV* mood disorder ($n = 48$). Exclusion criteria for both groups included symptoms of schizophrenia, organic mental disorder, alcohol or substance abuse within the last six months, or history of bipolar I disorder. Children's participation was limited such that no more than one child per mother could participate, and all children were between the ages of 8 and 12.

The average age of mothers in our sample was 39.56 years ($SD = 6.66$, Range = 26–53). In terms of race, 88% of the mothers were Caucasian, 5% were African American, 4% were Asian, and the remainder were either biracial or from other racial groups. The median family income was \$50,000-55,000. In terms of education level,

62% of the mothers had completed an associate's degree, bachelor's degree, and/or postgraduate work. For the children in our sample, the average age was 9.97 years ($SD = 1.32$, Range = 8-12) and 59% were girls. In terms of race, 81% were Caucasian, 5% were African American, 1% was Asian, and the remainder were either biracial or from other racial groups. Maternal history of MD was not significantly related to children's age, sex, or race (Caucasian vs. non-Caucasian). Because mothers' diagnostic status was not the focus of the current study, mother's history of depression (yes vs. no) was statistically controlled in all analyses.¹

Measures

The Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L; Endicott & Spitzer, 1978) was used to assess mothers' lifetime histories of MD. The SADS-L is a widely used diagnostic interview with well-established psychometric properties (Endicott & Spitzer, 1978). Mothers' diagnoses on the SADS-L were coded dichotomously and used to determine study inclusion/exclusion and group assignment (i.e., history of MD during child's life versus no lifetime diagnoses of any mood disorder). A subset of 20 SADS-L interviews from this sample was coded by a second interviewer and inter-rater reliability for lifetime diagnoses of MD was excellent ($\kappa = 1.00$).

The Self-Perception Profile for Children (SPPC; Harter, 1985) was used to assess children's levels of self-perceived competence in the domains of social acceptance and scholastic competence. The SPPC consists of 36 items, each scored on a 4-point Likert-type scale with higher scores reflecting greater self-perceived competence. Examples of items from the SPPC are: "Some kids feel like they are just as smart as other kids their age, but other kids aren't so sure and wonder if they are as smart," and "Some kids wish that more people their age liked them, but other kids feel that most people their age do like them." For each item, participants are asked to indicate which type of children they are more like, and then rate whether the chosen statement is "really like me" or "sort of like me." For the current study, the social acceptance (SPPC-SA) and scholastic competence (SPPC-SC) subscales were used to assess children's levels of perceived competence in the social and scholastic domains, respectively. Studies have supported the reliability and validity of the SPPC subscales (see Harter, 1985), and both SPPC subscales exhibited adequate internal consistency in the current study (SPPC-SC $\alpha = .79$, SPPC-SA $\alpha = .73$).

The Relational Victimization subscale of the Social Experiences Questionnaire (SEQ-RV; Crick & Grotpeter, 1996) was used to assess children's levels of relational victimization. The SEQ is a self-report measure, and the relational victimization subscale (SEQ-RV) consists of 5 items scored on a 5-point Likert-type scale (i.e., 1 = Never, 5 = All the Time), with higher scores reflecting more victimization. Items from the SEQ-RV include, "How often does a kid try to keep others from liking you by saying mean things about you," and "How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?" Studies have supported the psychometric properties of the SEQ (e.g., Crick & Bigbee, 1998; Crick & Grotpeter, 1996; Storch, Masia-Warner, Crisp, & Klein, 2005). In the current study,

1. We also examined whether mother MD moderated any of the self-perceived competence effects; however, none of these analyses was significant.

the SEQ-RV exhibited adequate internal consistency at each of the assessment points ($\alpha = .73 - .82$).

The Children's Depression Inventory (CDI; Kovacs, 1981) was used to assess the presence and severity of depressive symptoms in the children. The CDI is a 27-item self-report questionnaire designed to assess depressive symptoms in children between the ages of 7 and 17. Total scores for the CDI range from 0–54, with higher scores representing more severe symptoms of depression. Studies have supported the reliability and validity of the CDI (e.g., Kovacs, 1981, 1985; Smucker, Craighead, Craighead, & Green, 1986). The CDI exhibited adequate internal consistency across time points in the current sample ($\alpha = .76 - .86$).

Procedure

The study consisted of four assessment points. At the initial assessment, children completed the SPPC, SEQ-RV, and CDI, and mothers were interviewed using the SADS-L. Following this, the children were assessed every two months for the next six months during which they were administered the SEQ-RV and CDI over the phone. Families were compensated \$100 for participating in this study.

RESULTS

Means, standard deviations, and intercorrelations for all variables are presented in Table 1. Although we tested for the presence of sex, age, and racial/ethnic differences in the study variables, no significant differences were observed (lowest $p = .10$).²

Given the presence of some missing data (1–2 missing cases per variable at Time 1; 4–7 missing cases per variable across the 2-, 4-, and 6-month follow-ups), we examined whether data were missing at random, thereby justifying the use of data imputation methods for estimating missing values (cf. Schafer & Graham, 2002). As a first step in these analyses, we examined whether children who attrited from the study ($n = 11$) differed from non-attriters on any study variables. The only significant difference was that children who attrited reported higher levels of self-perceived scholastic competence than non-attriters, $t(96) = 2.31, p = .02, r_{\text{effect size}} = -.22$. This said, Little's missing completely at random (MCAR) test, for which the null hypothesis is that the data are MCAR (Little & Rubin, 1987), was nonsignificant, $\chi^2(116) = 95.721, p = .92$, supporting the imputation of missing values. Given this, maximum likelihood estimates of missing data were created as part of the Hierarchical Linear Modeling (HLM; Raudenbush & Byrk, 2002; Raudenbush, Byrk, Cheong, & Congdon, 2004) program and used in all subsequent analyses (see Schafer & Graham, 2002).

Next, HLM was used to test the prospective hypotheses. We first examined the main effects of self-perceived social acceptance and scholastic competence on children's depressive symptom trajectories over the follow-up. The Level 1 (within subject) model focused on depressive symptom change over the course of the follow-up for each participant individually, and the Level 2 (between subjects) model allowed us

2. Although we also tested whether children's age and/or ethnicity moderated any of the self-perceived competence effects, none of these analyses was significant.

TABLE 1. Intercorrelations and Descriptive Statistics for Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Mom MD	—												
2. Child Sex	-.07	—											
3. Child Age	.09	-.05	—										
4. SPPC-SA	-.19	.03	.26**	—									
5. SPPC-SC	-.25*	.00	.14	.22*	—								
6. T1 SEQ-RV	.08	.08	-.05	-.31**	-.44**	—							
7. T2 SEQ-RV	.13	.05	-.21*	-.24*	-.31**	.43**	—						
8. T3 SEQ-RV	.15	.03	-.10	-.33**	-.36**	.62**	.62**	—					
9. T4 SEQ-RV	.13	.02	-.10	-.19	-.18	.34**	.63**	.51**	—				
10. T1 CDI	.19	.05	-.11	-.37**	-.44**	.57**	.22*	.29**	.25*	—			
11. T2 CDI	.29**	.01	-.03	-.36**	-.33**	.45**	.23*	.42**	.28**	.74**	—		
12. T3 CDI	.25*	-.07	-.05	-.39**	-.42**	.51**	.18	.42**	.35**	.58**	.68**	—	
13. T4 CDI	.14	-.03	.00	-.40**	-.24*	.44**	.14	.38**	.33**	.54**	.58**	.76**	—
Mean	—	—	9.97	2.99	3.14	9.92	9.06	8.45	8.30	6.72	4.36	3.26	3.03
SD	—	—	1.32	0.67	0.65	4.09	3.74	3.15	3.63	6.19	4.17	3.68	3.54

Note. Mom MD = Maternal depression status (coded 1 = history of major depression, 0 = no depression history). SPPC-SA = Self-Perception Profile for Children-Social Acceptance. SPPC-SC = Self-Perception Profile for Children-Scholastic Competence. SEQ-RV = Social Experiences Questionnaire-Relational Victimization. CDI = Children's Depression Inventory. * $p < .05$. ** $p < .01$.

to examine whether the two domains of self-perceived competence moderated any of the Level 1 relations.

The Level 1 model was:

$$\text{CDI}_{ij} = \pi_{0j} + \pi_{1j}(\text{Time}_{\text{Linear}}) + \pi_{2j}(\text{Time}_{\text{Quadratic}}) + e_{ij}$$

where CDI_{ij} represents the CDI score at week i for participant j , π_{0j} is the CDI intercept, π_{1j} is the slope of the linear relation between Time (measured in weeks) and CDI scores for participant j , and π_{2j} is the slope of the quadratic relation between Time and CDI scores for participant j . Finally, e_{ij} represents the error term.

The Level 2 model was:

$$\pi_{0j} = \beta_{00} + \beta_{01}(\text{Mother MD}) + \beta_{02}(\text{Self-perceived competence}) + r_{0j}$$

$$\pi_{1j} = \beta_{10} + \beta_{11}(\text{Mother MD}) + \beta_{12}(\text{Self-perceived competence}) + r_{1j}$$

$$\pi_{2j} = \beta_{20} + \beta_{21}(\text{Mother MD}) + \beta_{22}(\text{Self-perceived competence}) + r_{2j}$$

where β_{02} is the cross-level interaction term representing the effect of self-perceived competence on the CDI intercept, β_{12} is the cross-level interaction term representing the effect of self-perceived competence on the slope of the relation between the linear Time effect and CDI scores, and β_{22} is the cross-level interaction term representing the effect of self-perceived competence on the slope of the relation between the quadratic Time effect and CDI scores. In addition, β_{01} , β_{11} , and β_{21} represent the effect of maternal history of depression in their respective equations. As noted above, mother's history of MD was included as a covariate in all analyses to statistically control for its effect on children's depressive symptoms. Finally, β_{00} , β_{10} , and β_{20} represent the intercepts of their respective equations, and r_{0j} , r_{1j} , and r_{2j} represent the error terms. In these analyses, self-perceived social acceptance and scholastic competence were examined in separate analyses.

Self-perceived social acceptance was significantly related to the CDI intercept, $t(97) = -3.75, p < .001, r_{\text{effect size}} = .36$, but not the linear, $t(97) = 1.63, p = .12, r_{\text{effect size}} = .16$ or the quadratic Time slope, $t(97) = -1.51, p = .14, r_{\text{effect size}} = .15$. Although we also examined whether children's sex moderated any of these relations, none of these effects was significant (lowest $p = .25$). To determine the form of these relations, the HLM equations were solved substituting values 1 standard deviation above and below the mean on the SPPC-SA subscale (cf. Aiken & West, 1991). As can be seen in Figure 1, despite an overall decrease in depressive symptoms across the follow-up for all participants, which is typical in multi-wave studies using the CDI (for a review, see Twenge & Nolen-Hoeksema, 2002), low self-perceived social acceptance was associated with higher levels of depressive symptoms at the initial assessment and this effect was maintained across the follow-up.

Self-perceived scholastic competence was significantly related to the CDI intercept, $t(97) = -3.61, p = .001, r_{\text{effect size}} = .34$, and the linear Time slope, $t(97) = 2.28, p = .03, r_{\text{effect size}} = .23$, but not the quadratic Time slope, $t(97) = -1.34, p = .18, r_{\text{effect size}} = .13$. Again, sex did not significantly moderate any of these relations (lowest $p = .19$). As can be seen in Figure 2, low self-perceived scholastic competence was associated with higher levels of depressive symptoms at the initial assessment, but this difference decreased over time.

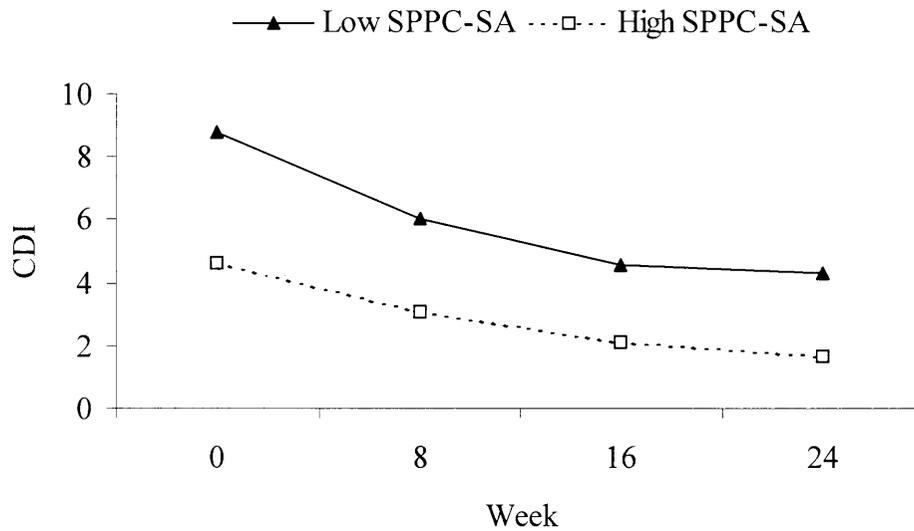


FIGURE 1. Main Effect of Self-Perceived Social Acceptance on Children's Depressive Symptom Trajectories. CDI = Children's Depression Inventory. SPPC-SA = Self-Perception Profile for Children – Social Acceptance Subscale.

We next tested the sex-specific vulnerability-stress hypothesis that initial levels of self-perceived competence in the social, but not the scholastic, domain would moderate the link between relational victimization and depressive symptoms across the follow-up and that this effect would be stronger for girls than boys. The Level 1 (within subject) model focused on the link between relational victimization and depressive symptoms at each assessment point across the follow-up for each participant individually, and the Level 2 (between subjects) model allowed us to examine whether self-perceived competence, alone or interacting with sex, moderated any of the relations specified in the Level 1 model.

The Level 1 model used to test the vulnerability-stress hypothesis was:

$$CDI_{ij} = \pi_{0j} + \pi_{1j}(SEQ-RV_{ij}) + e_{ij}$$

where CDI_{ij} represents the CDI score at week i for participant j , π_{0j} is the intercept, π_{1j} is the slope for the link between relational victimization and CDI scores at each time point, and e_{ij} represents the error term.

The Level 2 model was:

$$\pi_{0j} = \beta_{00} + \beta_{01}(\text{Mother MD}) + \beta_{02}(\text{Sex}) + \beta_{03}(\text{Self-perceived competence}) + \beta_{04}(\text{Sex} \times \text{Self-perceived competence}) + r_{0j}$$

$$\pi_{1j} = \beta_{10} + \beta_{11}(\text{Mother MD}) + \beta_{12}(\text{Sex}) + \beta_{13}(\text{Self-perceived competence}) + \beta_{14}(\text{Sex} \times \text{Self-perceived competence}) + r_{1j}$$

In these equations, the primary effects of interest are β_{13} , which represents the cross-level interaction of self-perceived competence upon the link between reports of re-

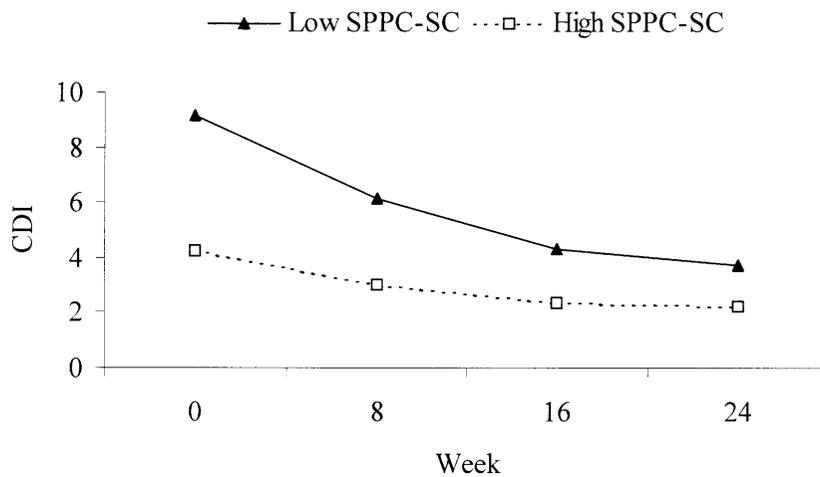


FIGURE 2. Main Effect of Self-Perceived Scholastic Competence Children's Depressive Symptom Trajectories Over Time. CDI = Children's Depression Inventory. SPPC-SC = Self-Perception Profile for Children – Scholastic Competence Subscale.

lational victimization and depressive symptoms at each time point, and β_{1d} which represents the sex moderation of this effect.

Testing our vulnerability-stress hypothesis for self-perceived competence, we found a significant SPPC-SA \times Sex interaction for the slope of the relation between SEQ-RV and CDI scores at each time point, $t(95) = -2.05$, $p = .04$, $r_{\text{effect size}} = .21$. Conducting the analyses separately in girls and boys, we found that self-perceived social acceptance moderated the link between relational victimization and depressive symptoms for girls, $t(56) = -3.05$, $p = .004$, $r_{\text{effect size}} = .38$, but not boys, $t(38) = 1.09$, $p = .28$, $r_{\text{effect size}} = .22$. Therefore, as hypothesized, relational victimization was more strongly related to depressive symptom elevations among girls with low, compared to high, self-perceived social acceptance (see Figure 3). In terms of the vulnerability-stress model for self-perceived scholastic competence, SPPC-SC did not significantly moderate the slope of the relation between SEQ-RV and CDI scores, $t(95) = -1.25$, $p = .22$, $r_{\text{effect size}} = .13$, nor was there a significant Sex \times SPPC-SC \times SEQ-RV effect on CDI scores, $t(95) = -0.30$, $p = .76$, $r_{\text{effect size}} = .09$. Finally, although we also examined the opposite direction of effect--that self-perceived competence, alone or interacting with sex, would moderate the effect of depressive symptoms at each time point on levels of relational victimization--none of these analyses was significant (lowest $p = .12$).

DISCUSSION

The primary aim of this study was to evaluate the effects of two forms of self-perceived competence--social acceptance and scholastic competence--on children's prospective changes in depressive symptoms. Supporting our hypotheses regarding the main effects of self-perceived competence, low self-perceived social acceptance and scholastic competence were both associated with higher levels of depressive symptoms at the

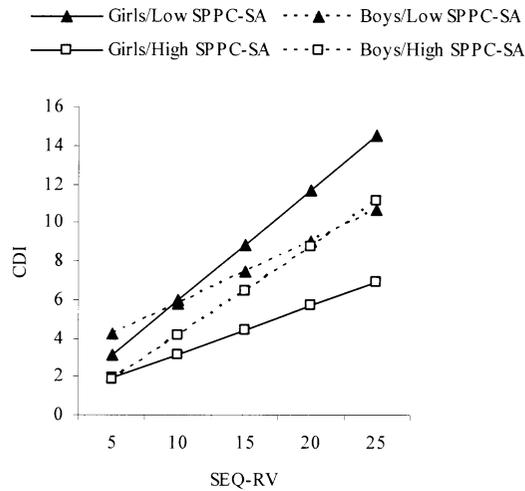


FIGURE 3. The Moderation Effect of Self-Perceived Social Acceptance Sex in the Link Between Relational Victimization and Depressive Symptoms Across the Follow-Up. CDI = Children's Depression Inventory. SEQ-RV = Social Experiences Questionnaire – Relational Victimization Subscale. SPPC-SA = Self-Perception Profile for Children – Social Acceptance subscale.

initial assessment. However, only the effect of low self-perceived social acceptance was maintained over time. In finding that self-perceived social acceptance might have a more enduring effect on depressive symptoms than self-perceived scholastic competence, our findings differ from those of previous studies, which have found equivalent predictive validity for both forms of self-perceived competence (e.g., Cole, Jacquez, & Maschman, 2001; Cole, Martin, Peeke, Seroczynski, & Hoffman, 1998; Epkins, 1998). One possible reason for the discrepant finding is the age range of our sample. Specifically, whereas our sample was 8–12 years old, previous studies that have provided stronger support for role of perceived scholastic competence have focused on older samples (e.g., Jacquez, Cole, & Searle, 2004). It is possible that scholastic competence is a less salient concern for younger children. Another difference is that the majority of previous studies examining perceived competence have focused on samples recruited from schools, with all assessments taking place within the school day (e.g., Cole et al., 2001; Cole et al., 1998), whereas our study was conducted outside of school and throughout the calendar year. It is possible, therefore, that perceptions of academic competence are more salient when the research is conducted within the school setting. To address both of these possibilities, future research should incorporate importance rating for the different domains of competence so that individual variability in the importance assigned to each domain can be taken into account. It would be expected that low levels of self-perceived competence in a given domain would contribute greater risk for depression only if the child placed great importance on that domain.

In terms of our cognitive vulnerability-stress model, as hypothesized, low self-perceived social acceptance, but not scholastic competence, moderated the link between relational victimization and depressive symptoms in girls, but not boys. These results suggest that when testing vulnerability-stress models of depression in children, it is important to focus on events specific to the type of cognitive vulnerability assessed

and to focus on developmentally relevant negative life events (e.g., relational victimization). Indeed, we chose to focus specifically on relational victimization in this study because it is hypothesized to be a particularly salient stressor for girls in this age range (for a review, see Crick et al., 2002).

The vulnerability-stress findings from the current study may also help to explain the development of sex differences in depression. Specifically, one of the most consistent findings within the depression literature is that women are twice as likely as men to be diagnosed with major depression (for reviews, see Hankin and Abramson, 2001; Nolen-Hoeksema, 2002). This gender difference begins to emerge around age 13 and reaches the 2:1 ratio by approximately age 15 (for a review, see Hankin & Abramson, 2001). Despite consistent evidence for this sex difference, the reasons for it remain unclear. Within the framework of a cognitive vulnerability-stress theory, Hankin & Abramson (2001) proposed three factors that may contribute to the development of sex differences in depression. Specifically, Hankin and Abramson suggested that, compared to boys, girls may (a) exhibit greater cognitive vulnerability, (b) experience higher levels of negative events (particularly negative interpersonal events), and/or (c) be more likely to exhibit the hypothesized cognitive vulnerability-stress relation. Although we did not observe significant sex differences in perceived competence or reports of relational victimization in the current study, this may have been due to the age of our sample, and stronger sex differences may emerge as children enter adolescence. We did find support for Hankin and Abramson's third proposed pathway--girls, but not boys, in our study exhibited the hypothesized cognitive vulnerability-stress relation. This latter finding extends the results of previous research demonstrating that relational victimization may be more deleterious for girls than boys (for a review, see Crick et al., 2002) in suggesting that girls with low, but not high, self-perceived social acceptance may be particularly vulnerable to the depressogenic effects of relational victimization. That we did not find support for the vulnerability-stress hypothesis in boys does not imply that cognitive models of depression are less applicable to boys than girls. Indeed, there is a growing body of research supporting cognitive vulnerability-stress models of depression in both girls and boys (for a review, see Abela & Hankin, 2008). However, the current results do suggest that different forms of cognitive vulnerability and stress may be more salient for girls than for boys. Thus, as alluded to above, although we found no evidence for sex differences in perceived competence or relational victimization, there may have been sex differences in the importance attached to these factors. Specifically, there is evidence that girls place greater importance on interpersonal relations than do boys (for a review, see Rudolph, 2002). Future studies that explicitly assess the degree of importance attached to various forms of cognitive vulnerability and domains of negative events are needed to more fully test this hypothesis.

Although there were several strengths of this study, including its prospective, multi-wave design, there were also some limitations that should be acknowledged. First, all measures relied on individuals' self-report, which may have been subject to response or recall biases. That is, depressed individuals might be more likely to respond negatively on all measures. Future studies, therefore, should seek to include multi-method assessments of these constructs (e.g., observational methods, teacher and parent reports, and interview-based assessments). Second, because of our focus on relational victimization, we were unable to test the vulnerability event-congruency hypothesis in the academic or achievement domain. To provide a more comprehensive test of the vulnerability event-congruency hypothesis, future studies should include a

measure of negative achievement-related events as well. Finally, because we focused exclusively on children's levels of depressive symptoms, it is unclear whether the current results will generalize to predictions of actual diagnoses of depression. There is evidence that even when not meeting criteria for a diagnosable episode of depression, elevated depressive symptoms in early adolescence confer risk for the development of major depressive disorder in young adulthood (Lewinsohn, Rohde, Klein, & Seeley, 1999). Therefore, research focusing on factors contributing to the development of depressive symptoms during childhood may help to explain risk for major depression later in life. Supporting this hypothesis, there is evidence that various forms of cognitive vulnerability contribute to the development of both symptoms and diagnoses of depression (e.g., Alloy et al., 2006; Hankin, Abramson, Miller, & Haeffel, 2004).

In conclusion, these results support the hypothesis that girls with low self-perceived social acceptance might be especially vulnerable to develop depression in the face of relational victimization. Future research examining cognitive vulnerability-stress models of depression in children should continue to evaluate potential vulnerability-event congruent interactions. If these matching vulnerability-stress combinations were more clearly specified, it could lead to better identification of those children at greatest risk for depression, as well as the potential for more targeted interventions to reduce this risk. Based on the current findings, one potentially promising area of intervention with girls would be to focus on improving self-perceived social acceptance and providing girls with ways to minimize the effects of relational victimization.

REFERENCES

- Abela, J. R. (2001). The hopelessness theory of depression: A test of the diathesis-stress and causal mediation components in third and seventh grade children. *Journal of Abnormal Child Psychology*, *29*, 241-254.
- Abela, J. R., & Hankin, B. L. (2008). Cognitive vulnerability to depression in children and adolescents: A developmental psychopathology perspective. In J. R. Abela & B. J. Hankin (Eds.), *Handbook of depression in children and adolescents* (pp. 35-78). New York: Guilford.
- Abela, J. R., & Sakellaropoulou, M., & Taxel, E. (2007). Integrating two subtypes of depression: Psychodynamic theory and its relation to hopelessness depression in early adolescence. *Journal of Early Adolescence*, *27*, 363-384.
- Abela, J. R., & Taylor, G. (2003). Specific vulnerability to depressive mood reactions in schoolchildren: The moderating role of self-esteem. *Journal of Clinical Child and Adolescent Psychology*, *32*, 408-418.
- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358-372.
- Aiken, L.S., & West, S.G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Panzarella, C., & Rose, D. T. (2006). Prospective incidence of first onsets and recurrences of depression in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology*, *115*, 145-156.
- Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. Clayton (Ed.), *Treatment of depression: Old controversies and new approaches* (pp. 265-290). New York: Raven.
- Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy*, *1*, 5-37.
- Blatt, S. J., & Zuroff, D. C. (1992). Interpersonal relatedness and self-definition: Two prototypes for depression. *Clinical Psychology Review*, *12*, 527-562.
- Clark, D. A., Beck, A. T., & Alford, B. A. (1999). *Scientific foundations of cognitive theory and therapy of depression*. New York: Wiley.
- Cole, D. A. (1990). Relation of social and academic competence to depressive symptoms in childhood. *Journal of Abnormal Psychology*, *99*, 422-429.
- Cole, D. A., Jacquez, F. M., & Maschman, T. L. (2001). Social origins of depressive cognitions: A longitudinal study of self-perceived competence in children. *Cognitive Therapy and Research*, *25*, 377-395.

- Cole, D. A., Martin, J. M., Peeke, L. G., Seroczynski, A. D., & Hoffman, K. (1998). Are cognitive errors of underestimation predictive or reflective of depressive symptoms in children?: A longitudinal study. *Journal of Abnormal Psychology, 107*, 481-496.
- Cole, D. A., & Turner, J. E. (1993). Models of cognitive mediation and moderation in child depression. *Journal of Abnormal Psychology, 102*, 271-281.
- Crick, N. R., & Bigbee, M. A. (1998). Relational and overt forms of peer victimization: A multi-informant approach. *Journal of Consulting and Clinical Psychology, 66*, 337-347.
- Crick, N. R., Casas, J. F., & Nelson, D. A. (2002). Toward a more comprehensive understanding of peer maltreatment: Studies of relational victimization. *Current Directions in Psychological Science, 11*, 98-101.
- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology, 8*, 367-380.
- Crick, N. R., Nelson, D. A., Morales, J. R., Cullerton-Sen, C., Casas, J. F., & Hickman, S. E. (2001). Relational victimization in childhood and adolescence. In J. Juvonen, & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 196-214). New York: Guilford.
- Cullerton-Sen, C., & Crick, N. R. (2005). Understanding the effects of physical and relational victimization: The utility of multiple perspectives in predicting social-emotional adjustment. *School Psychology Review, 34*, 147-160.
- Endicott, J., & Spitzer, R. L. (1978). A diagnostic interview: The schedule for affective disorders and schizophrenia. *Archives of General Psychiatry, 35*, 837-844.
- Epkins, C. C. (1998). Mother- and father-rated competence, child-perceived competence, and cognitive distortions: Unique relations with children's depressive symptoms. *Journal of Clinical Child Psychology, 27*, 442-451.
- Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin, 127*, 773-796.
- Hankin, B. L., Abramson, L. Y., Miller, N., & Haefffel, G. J. (2004). Cognitive vulnerability-stress theories of depression: Examining affective specificity in the prediction of depression versus anxiety in three prospective studies. *Cognitive Therapy and Research, 28*, 309-345.
- Harter, S. (1985). *The Self-Perception Profile for Children*. Unpublished manuscript. University of Denver.
- Jacquez, E., Cole, D. A., & Searle, B. (2004). Self-perceived competence as a mediator between maternal feedback and depressive symptoms in adolescents. *Journal of Abnormal Child Psychology, 32*, 355-367.
- Kovacs, M. (1981). Rating scales to assess depression in school-aged children. *Acta Paedopsychiatrica, 46*, 305-315.
- Kovacs, M. (1985). The Children's Depression Inventory. *Psychopharmacology Bulletin, 21*, 995-998.
- Lakdawalla, Z., Hankin, B. L., & Mermelstein, R. (2007). Cognitive theories of depression in children and adolescents: A conceptual and qualitative review. *Child Clinical and Family Psychology, 10*, 1-24.
- Leadbeater, B. J., Blatt, S. J., & Quinlin, D. M. (1995). Gender-linked vulnerabilities to depressive symptoms, stress, and problem behaviors in adolescents. *Journal of Research on Adolescence, 5*, 1-29.
- Lewinsohn, P. M., Rohde, P., Klein, D. N., & Seeley, J. R. (1999). Natural course of adolescent major depressive disorder: I. Continuity into young adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 56-63.
- Little, S. A., & Garber, J. (2000). Interpersonal and achievement orientations and specific stressors predicting depressive and aggressive symptoms in children. *Cognitive Therapy and Research, 24*, 651-670.
- Little, S. A., & Garber, J. (2004). Interpersonal and achievement orientations and specific stressors predict depressive and aggressive symptoms. *Journal of Adolescent Research, 19*, 63-84.
- Little, S. A., & Garber, J. (2005). The role of social stressors and interpersonal orientation in explaining the longitudinal relation between externalizing and depressive symptoms. *Journal of Abnormal Psychology, 114*, 432-443.
- Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data*. New York: Wiley.
- Murray-Close, D., Ostrov, J. M., & Crick, N. R. (2007). A short-term longitudinal study of growth of relational aggression during middle childhood: Associations with gender, friendship intimacy, and internalizing problems. *Development and Psychopathology, 19*, 187-203.
- Nolen-Hoeksema, S. (2002). Gender differences in depression. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression* (pp. 492-509). New York: Guilford.
- Prinstein, M. J., & Aikins, J. W. (2004). Cognitive moderators of the longitudinal association between peer rejection and adolescent depressive symptoms. *Journal of Abnormal Child Psychology, 32*, 147-158.
- Raudenbush, S. W., & Byrk, A. S. (2002). *Hierarchical Linear Models: Applications and data*

- analysis methods* (2nd ed). Thousand Oaks, CA: Sage.
- Raudenbush, S. W., Byrk, A. S., Cheong, Y. F., & Congdon, R. (2004). *HLM 6: Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.
- Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health, 30*, 3-13.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.
- Seroczynski, A. D., Cole, D. A., & Maxwell, S. E. (1997). Cumulative and compensatory effects of competence and incompetence on depressive symptoms in children. *Journal of Abnormal Psychology, 106*, 586-597.
- Shahar, G., Blatt, S. J., Zuroff, D. C., Kupermine, G. P., & Leadbeater, B. J. (2004). Reciprocal relations between depressive symptoms and self-criticism (but not dependency) among early adolescent girls (but not boys). *Cognitive Therapy and Research, 28*, 85-103.
- Smucker, M. R., Craighead, W. E., Craighead, L. W., & Green, B. J. (1986). Normative and reliability data for the Children's Depression Inventory. *Journal of Abnormal Child Psychology, 14*, 25-39.
- Storch, E. A., Massia-Warner, C., Crisp, H., & Klein, R. G. (2005). Peer victimization and social anxiety in adolescence: A prospective study. *Aggressive Behavior, 31*, 437-452.
- Storch, E. A., Phil, M., Nock, M. K., Masia-Warner, C., & Barlas, M. E. (2003). Peer victimization and social-psychological adjustment in Hispanic and African-American children. *Journal of Child and Family Studies, 12*, 439-452.
- Storch, E. A., Zelman, E., Sweeney, M., Danner, G., & Dove, S. (2002). Overt and relational victimization and psychosocial adjustment in minority preadolescents. *Child Study Journal, 32*, 73-81.
- Tram, J. M., & Cole, D. A. (2000). Self-perceived competence and the relation between life events and depressive symptoms in adolescence: Mediator or moderator? *Journal of Abnormal Psychology, 109*, 753-760.
- Twenge, J. M., & Nolen-Hoeksema, S. (2002). Age, gender, race, socioeconomic status, and birth cohort differences on the Children's Depression Inventory: A meta-analysis. *Journal of Abnormal Psychology, 111*, 578-588.
- Zuroff, D. C., Mongrain, M., & Santor, D. A. (2004). Conceptualizing and measuring personality vulnerability to depression: Comment on Coyne and Whiffen (1995). *Psychological Bulletin, 130*, 489-511.