Published in final edited form as:

J Abnorm Child Psychol. 2014 January ; 42(1): 149–160. doi:10.1007/s10802-013-9769-1.

Linking Peer Victimization to the Development of Depressive Self-Schemas in Children and Adolescents

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Abstract

Previous theory and research suggest that childhood experiences are more likely to generate depressive self-schemas when they focus attention on negative information about oneself, generate strong negative affect, and are repetitive or chronic. Persistent peer victimization meets these criteria. In the current study, 214 youths (112 females) with empirically-validated histories of high or low peer victimization completed self-report measures of negative and positive self-cognitions as well as incidental recall and recognition tests following a self-referent encoding task. Results supported the hypothesis that depressive self-schemas are associated with peer victimization. Specifically, peer victimization was associated with stronger negative self-cognitions, weaker positive self-cognitions, and an elimination of the normative memorial bias for recall of positive self-referential words. Effects were stronger for relational and verbal victimization compared to physical victimization. Support accrues to a model about the social-developmental origins of cognitive diatheses for depression.

Keywords

Depression; Self-schema; Peer victimization; Memory; Information Processing

Chronic or repeated peer victimization contains all the social, emotional, and cognitive ingredients for the creation of depressive self-schemas, especially in middle childhood and early adolescence. Most previous studies on the relation of peer victimization (PV) to the development of cognitive diatheses for depression have focused on self-schema *content* as measured by children's self-reports (Boulton & Smith, 1994; Callaghan & Joseph, 1995; Cole, Maxwell, Dukewich, & Yosick, 2010; Gibb, Abramson, & Alloy, 2004; Sinclair et al., 2012; Tran, Cole, & Weiss, 2012). An important first step, these studies would be substantially strengthened by research that links PV to the effect of depressive self-schemas on information processing. In the current study, we examine the relation of chronic PV to both the content of such schemas (through a battery of self-report measures) and to their functional effect on memory (via an incidental memory paradigm following a self-referent encoding task). Our results support aspects of an emerging theory about the developmental origins of depressive self-schemas.

We begin with the definition of self-schema as an internal representation of the self that is derived from past experience and used to organize and interpret future experiences. Although definitions vary, theorists generally agree that the basic units comprising a schema are not randomly distributed throughout the memory system but are associated with each other via connections of varying strengths (Segal & Ingram, 1994). Highly adaptive and especially salient, the self-schema influences information processing by screening information that is extracted from internal and external sources, and by affecting its encoding and retrieval (Alba & Hasher, 1983; Kihlstrom & Cantor, 1984). A *depressive* self-schema represents a central organizing principle that underlies critical views of oneself, intrusive thoughts, and dysfunctional information processing that places individuals at risk for depression (Lee & Shafran, 2004).

Beck's (1967) cognitive theory of depression states that distorted information processing and an unfavorable view of one's self, world, and future act as cognitive diatheses for depression. According to Beck, these features are manifestations of maladaptive cognitive structures (or depressive schemas) that remain latent in some individuals until activated by certain kinds of stressful life events (Beck, Rush, Shaw, & Emery, 1979). Beck has said little about the origins of depressive self-schemas, except to suggest that they develop during childhood in response to early losses or other negative events and are activated later in life by events reminiscent of those that generated them in the first place (Beck, 1967; see also Williams, Watts, MacLeod, & Matthews, 1997).

Cole's competency-based model of child depression expands upon the development of cognitive diatheses in youth (Cole, 1991a, b; Cole, Jacquez, & Maschman, 2001; Cole, Maxwell, & Martin, 1997). This model reflects the symbolic interactionist position that people construct self-perceptions out of feedback from significant others (Cooley, 1902; Mead, 1934; see also Shrauger & Schoeneman, 1979). The model adds a developmental thread by noting that construction of self-perceptions is a major developmental task of middle childhood and early adolescence (Harter, 1990; Havighurst, 1948). Successful negotiation of this task is associated with global self-worth, a positive view of the world, and a hopeful view of the future. Conversely, trouble with this task is correlated with low self-esteem, a view of one's world as negative or threatening, and hopelessness about the future (Cole, 1991b; Cole, Peeke, & Ingold, 1996; Garber, 1984; Garber, Robinson, & Valentiner, 1997; Harter, 1999). Competence-related feedback from others constitutes the experiential building blocks from which such self-concepts are constructed. Children are highly motivated to emphasize the positive and dismiss the negative as they construct positive self-schemas; however, when negative feedback is pervasive and predominant, children can become cognitively cornered into the construction of depressive self-schemas (Cole, Martin, Peeke, Seroczynski, & Hoffman, 1998; Cole, Peeke, Dolezal, Murray, & Canzoniero, 1999; Cole, Jacquez et al., 2001; Cole, Maxwell et al., 2001; Hoffman, Cole, Martin, Tram, & Seroczynski, 2000; Tram & Cole, 2000).

Other research and theory allow us to build upon the competency-based model to deduce three factors that are especially likely to foster the development of depressive self-schemas in children. The first is *focused attention on negative self-relevant information*. Ingram's (1990) review revealed that excessive, sustained, and rigid self-focused attention constitutes

a risk factor for a wide range of psychological disorders. Mogg and Bradley (2005) noted that the self-focused attentional bias in depression pertains specifically to negative self-relevant information. Accordingly, life events that compel attention to negative self-relevant information should be especially important in the construction of depressive self-schemas. Second, the generative events must be *associated with negative affect*. Two literature reviews (Scher, Ingram, & Segal, 2005; Segal & Ingram, 1994) concluded that depression-related self-schemas are activated by congruent mood (e.g., sadness, dysphoria). From a social-cognitive-developmental perspective, the connection between schema and mood is a learned association that can be “taught” to the child via events that simultaneously evoke negative affect and convey negative self-relevant information (Bell & Wolfe, 2004, p. 366; see also Cole, Martin & Dennis, 2004). Third is *recurrence or chronicity*. Most learning requires repetition, especially the learning of maladaptive associations. Developmental theory notes that children are highly motivated to construct a positive view of themselves as competent (Harter, 1999; Masten, Best, & Garmezy, 1990). Logically, we expect that repeated or chronic negative events are needed to disrupt the typical development of positive self-schemas and to foster the construction of depressive ones (Cole, 1991b).

Many kinds of negative life events share the above characteristics. In the current paper, we focus on PV for at least five key reasons. First, PV clearly *focuses attention on the self* (Hanish et al., 2004; Juvonen & Graham, 2001; Olweus, 1991; Paul & Cillessen, 2003; Sweeting, Young, West, & Der, 2006) by *conveying negative, personally-relevant information to the victims* (Graham & Juvonen, 1998; Lopez & DuBois, 2005; Mynard, Joseph, & Alexander, 2000; Prinstein, Cheah, & Guyer, 2005; Troop-Gordon & Ladd, 2005). Second, PV *evokes negative affect* (Hawker & Boulton, 2000; Lansford et al., 2007; Lansford et al., 2006; Lochman & Wayland, 1994; Nylund, Bellmore, Nishina, & Graham, 2007; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998). Third, PV is *stable or recurrent*, with up to 30% of children experiencing multiple episodes per year (Kochenderfer-Ladd & Skinner, 2002; Kochenderfer-Ladd & Wardrop, 2001; Paul & Cillessen, 2003; Sweeting et al., 2006). Fourth, PV is disturbingly prevalent during late middle childhood and early adolescence (Nansel, et al., 2001; Turner, Finkelhor, Hamby, Shattuck, & Ormrod, 2011; Wang, Iannotti, & Nansel, 2010). And fifth, PV affects emergence of negative self-cognitions that are often associated with depressive self-schemas (Gibb et al., 2004).

Researchers (e.g., Prinstein, Boergers, & Vernberg, 2001) have distinguished between several kinds of PV, including overt physical victimization, direct verbal victimization, and covert relational victimization (i.e., indirectly working to diminish someone’s social status or reputation). Several studies suggest that verbal and relational victimization are more effective than physical victimization in conveying negative information to the victim (e.g., Cole et al., 2010; Sinclair et al., 2012). Although all types of victimization occur across a wide age range, verbal and relational victimization become more prevalent during early adolescence, especially among girls (Ellis & Zarbatany, 2007; Prinstein et al., 2001; Sullivan, Farrell, & Kliewer, 2006). Accordingly, we expect that depressive self-schemas will be more strongly associated with verbal and relational PV than physical PV.

The Current Study

The overarching goal of the current study was to examine the relation of recurrent PV to the form and function of depressive self-schemas in young people. That is, we expected both the content of children's self-schemas and their biasing effect on memory to distinguish victimized from non-victimized youths in ways that parallel the distinction between depressed and nondepressed individuals. No previous study has examined the effect of PV on incidental memory. We had three specific hypotheses. First, we expected recurrent victimization to be related to increased endorsement of negative statements about oneself (i.e., negative self-cognitions) and to diminished endorsement of positive self-cognitions. Second, we expected these relations to be more strongly supported for verbal and relational victimization than for physical victimization. Third, we hypothesized that incidental recall of positive versus negative personal adjectives (following negative mood induction and a self-referent encoding task) would discriminate between victimized and non-victimized youths. Like nondepressed individuals, non-victimized youths should have better recall for positive than negative words; like depressed individuals, victimized youths should recall negative and positive words equally well (Cole & Jordan, 1995; Gencoz, Voelz, Gencoz, Pettit, & Joiner, 2001; Hammen & Zupan, 1984; Moilanen, 1995; Prieto, Cole, & Tageson, 1992; Timbremont & Braet, 2004; Woolgar & Tranah, 2010).

Methods

Participant Recruitment

In order to obtain participants with verifiable histories of recurrent PV (as well as participants with histories of no victimization), we recruited into the current lab-based study only those students from a larger school-based longitudinal study ($N = 1888$; Bilsky et al., in press; Roeder et al., 2012) for whom we had multi-informant data indicating that they either (a) had been repeatedly subjected to PV or (b) had been subjected to little or no PV in each of two, back-to-back waves of data collection. Peer victimization screening measures included a self-report and a parent-report (described below), as well as a teacher and parent report (described in Bilsky et al., in press; Roeder et al., 2012). Students qualified as victims in the current study if they scored above the median on at least two of these measures for both of two adjacent waves of data collection ($n = 204$). Students qualified as nonvictims if they failed to score above the median on any of the measures at both waves ($n = 216$). Students who did not meet these screening criteria were ineligible for the current study. We scheduled qualified participants in the current study within six months of their recruitment.

Of the 398 families we were able to contact, 217 (110 victims, 107 nonvictims) came to the lab, provided parental consent and child assent, and participated in the IRB-approved study. Equipment malfunction or participant problems (being unable to complete the study tasks) resulted in the loss of three participants (one victim and two non-victims), resulting in a final N of 214. Within the recruitment pool, comparisons of participants to nonparticipants on 15 demographic and screening variables revealed only one significant difference; participants were .31 years younger than nonparticipants, $t_{(396)} = 3.08$ ($p < .003$).

Participants were in grades 3 through 7 at one of four elementary schools or one of the four accompanying middle schools in an urban, middle Tennessee school district. Participants had an average age of 12.2 years ($SD = 1.0$). In total, 112 were girls, and 102 were boys. The sample was ethnically diverse: 58.9% Caucasian, 34.1% African American, 10.7% Hispanic, 3.3% Asian, and 5.2% other (note: categories are not mutually exclusive, so percentages do not sum to 100%). Family size (i.e., the number of children living at home) ranged from one to seven ($M = 2.5$, $SD = 1.2$). Approximately 38% of the participating children were on full or reduced lunch programs at school, a crude indicator of low socioeconomic status. Victims and non-victims were not significantly different on any demographic variable, $ps > .20$.

Measures in the Current Study

Peer victimization—We measured PV using the Peer Victimization Self-Report (PVSr) and the Peer Victimization Parent Report (PVPR; Cole et al., 2010). These parallel measures consist of items used by Ladd and Kochenderfer-Ladd (2002), modified for use with older children and supplemented to include a wider range of physical, relational, and verbal victimization. For the PVSr, the question stem is, “How often do kids...?” Example items are “Make fun of you” (verbal), “Push or shove you around” (physical), and “Say mean things about you to other kids” (relational). Items were rated on four-point scales, ranging from: 1 (*never*) to 4 (*a lot*). The PVPR asks the same questions, replacing the word “you” with “your child.” Both measures contain four items for each of the victimization subscales plus three positive items (not analyzed), included to interrupt response sets. Cronbach’s alphas were .90 for the PVSr and .94 for the PVPR. Correlations between Relational and Verbal victimization scales were large: .72 for the PVSr and .77 for the PVPR. Furthermore, factor analysis revealed two factors in both measures, a Physical factor and a Relational-Verbal factor. Consequently, we averaged the Relational and Verbal subscales in both measures. Furthermore, as the PVSr and PVPR factors were strongly correlated ($rs = .61$ for relational-verbal and .59 for physical PV), we averaged the parent and child reports to form two parent-child composites.

Depressed mood—Our measure of current depressed mood was the Short Mood and Feelings Questionnaire (SMFQ; Angold, Costello, Messer, & Pickles, 1995). The SMFQ is a 13-item self-report questionnaire of child and adolescent depression. It assesses core depressive symptoms with items such as “I felt miserable or unhappy” and “I felt lonely.” Respondents rate items on three point scales: 0 (*not true*), 1 (*sometimes true*), and 2 (*true*). Items are summed such that high scores indicate more severe levels of depressed mood (Messer, Angold, Costello, & Loeber, 1995). The SMFQ is internally consistent ($\alpha = .85$; Angold et al., 1995) and is suitable for use with children as young as seven (Sharp, Goodyer, & Croudace, 2006). In the current study, Cronbach’s alpha was: .84.

Self-cognition measures—Our measures of self-cognition were subscales of the Children’s Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002), the Self-Perception Profile for Children (SPPC; Harter, 1985), and the Cognitive Triad Inventory for Children (CTIC; Kaslow, Stark, Printz, Livingston, & Tsai, 1992) that had been related to child depression in previous research. The CATS is a 40-item self-report questionnaire that

assesses negative self-cognitions in children and adolescents. Items ask children how often they have had various negative thoughts over the past week. In the current study, we administered items pertaining to only two subscales, Social Threat (e.g., “Kids will think I’m stupid”) and Personal Failure (e.g., “I can’t do anything right”), plus four positive-valence items to interrupt response set (not analyzed). Respondents rate items on five point scales, 1 (*not at all*) to 5 (*all the time*). Schniering and Rapee (2002) reported strong test-retest reliabilities. In the current study, Cronbach’s alphas were .88 for Social Threat and .90 for Personal Failure.

The Self-Perception Profile for Children (SPPC) is a self-report inventory comprised of 36 items that measure five aspects of self-perceived competence plus global self-worth (Harter, 1985). In the current study we only used the social acceptance, physical appearance, and global self-worth subscales (six items each). For each item, respondents choose one of two contrasting statements to describe themselves as good or not good in a domain. Respondents then select whether the selected statement is “sort of” or “really” true for them. Items are converted to four point scales with high scores reflecting greater self-perceived competence. The SPPC has a highly interpretable factor structure and good reliability (Harter, 1982, 1985). In the current study, Cronbach’s alphas were .83 for Social Acceptance, .86 for Physical Attractiveness, and .78 for Global Self-Worth.

The Cognitive Triad Inventory for Children (CTIC) is a 36-item self-report questionnaire that assesses how children perceive themselves (e.g., “I do well at many different things”), the world (e.g., “The world is a very mean place”), and the future (e.g., “My future is too bad to think about”). Half of the items are positive, and half are negative. Items are scored on three point scales, anchored “*no*,” “*maybe*,” and “*yes*.” The CTIC has good construct validity and high internal consistency (Kaslow et al., 1992; LaGrange et al., 2008). In the current study, Cronbach’s alpha was .87 for the Negative subscale and .88 for the Positive subscale.

Mood—Positive and negative mood were assessed using three positive and three negative adjectives (cheerful, lively, joyful, frightened, mad, and upset), taken from the child version of the Positive Affect and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988). The full scale PANAS was not used because it contained many of the words that were part of the self-referent encoding and incidental recall tasks. The measure was administered three times: before the negative mood induction, after the negative mood induction, and after the positive mood induction. On a computer, adjectives were presented in random order. Cronbach’s alphas were .70 – .72 for the Negative Affect scale and .79 – .81 for the Positive Affect scale.

Experimental Protocol

Overview—Our encoding and incidental memory tasks were based on Rogers, Kuiper, and Kirker’s (1977) depth-of-processing protocol, adapted for use with children by Hammen and Zupan (1984) and informed by Symons and Johnson’s meta-analytic review (1997). First, we administered the baseline six-item PANAS and administered practice items. Second, we gave instructions for the encoding task. Third, and immediately before beginning the self-

referent encoding task, we implemented the negative mood induction, followed by a re-administration of the PANAS as a mood manipulation check. Then, we proceeded with the encoding task, followed by the incidental recall and recognition tests. Finally, we initiated a positive mood induction (followed by the six-item PANAS) to ensure that participants' moods had returned to baseline. Each part of this procedure is described below.

Negative mood induction—Following Segal and Ingram's (1994) recommendations, we used a negative mood induction to activate any existing depressive self-schemas. In order to help the child recreate the relevant affective state (Scher et al., 2005) and in keeping with Beck's conception of priming as any event reminiscent of the schema-generating event (Beck, 1967), our mood induction consisted of a five-minute video containing four to six movie clips about children being relationally, physically, or verbally victimized by peers. Prior to watching the video, participants received instructions to "Imagine what it would be like to be the person in the video who is being picked on. Imagine what they would feel. Imagine what they might think. If you have ever been picked on, try to remember what you felt and what you thought."

Encoding tasks—Stimuli for the encoding tasks were 24 positive and 24 negative words, selected for their common usage and readability by children. Positive words were *friendly, smart, winner, clean, fast, strong, great, sweet, honest, loyal, kind, clever, hopeful, cute, happy, nice, brave, loved, liked, leader, polite, quick, helpful*, and *buddy*. Negative words were *failure, fool, weak, idiot, dumb, stupid, ugly, dirty, slow, boring, rude, lazy, sad, unhappy, wimp, scared, lonely, alone, hated, loser, unloved, helpless, hopeless*, and *wrong*. Prior research has been criticized for failing to control for word valence effects and significant person effects (Symons & Johnson, 1997). In other words, incidental recall of negative self-referential words could reflect memorial bias due to a word valence schema or a significant other schema, not a depressive self-schema. In the current study, we controlled for these possibilities. For each participant, the 48 words were randomly divided into three groupings, each of which contained eight positive and eight negative words, randomly selected and randomly arranged. For a given participant, each word appeared in only one of the three groupings. The task consisted of three conditions: (1) a SELF condition in which items from the first word-grouping were paired with the question "Does this word describe you?" (2) a SIGNIFICANT OTHER condition in which the second group of words was paired with the question "Does this word describe your best friend?" and (3) a VALENCE condition in which the third group of words was paired with the question "Does this word describe something good?" All 48 question-word pairs were randomly arranged for each participant. (Note: during the initial instructions, participants were asked to provide the name of their best friend, so they could have someone particular in mind when they responded to the SIGNIFICANT OTHER questions.)

All 48 question-word trials (plus three unused initial trials to control for primacy effects and three unused final trials to control for recency effects) were presented via a Dell computer using E-prime software. For each trial, the experimenter read the question aloud when it appeared on the computer screen. Upon a keystroke by the experimenter, the associated word also appeared on the screen. Following a 500 ms delay (to encourage participants to

read the word), participants answered the question by pressing keys marked “yes” or “no” on a serial response box. Immediately after a response, the next question-word pair appeared (thus encouraging participants to stay on task).

Incidental recall and recognition tests—After the encoding task, participants completed an incidental recall test. The experimenter asked participants to report all words that they could recall from the computer task. After the first and second time the child stopped generating words, the experimenter prompted the child to try some more. (Participants were not previously told that they would be asked to remember the words.) After the incidental recall test, the experimenter administered a paper-and-pencil word recognition and reading test. The test was a list of all words featured in the encoding task as well as filler words that did not appear in the task. The experimenter asked participants to read each word aloud and to circle those they recognized from the computer task. The experimenter recorded all word-reading difficulties. Such words were discarded from that particular participant’s recall and recognition tests and were not reflected in the participant’s proportion-based test scores. Also, the words used to control for recency and primacy effects were excluded from the recall and recognition testing and scoring protocols.

From these responses, we computed six difference scores. The three incidental recall scores corresponded to the SELF, SIGNIFICANT OTHER, and VALENCE conditions, and consisted of the proportion of negative words recalled minus the portion of positive words recalled in each condition. Likewise, the three recognition scores were the proportion of negative words recognized minus the portion of positive words recognized in each condition. Higher scores reflected a more depression-like memorial bias.

Positive mood induction—Prior to leaving the laboratory, each participant viewed a five-minute positive mood video. This video consisted of two movie clips about positive social interactions that involved laughing, dancing, and having fun.

Procedure

The study began with our review of the procedures and explanation of the consent and assent forms with the parent and child together. We then separated child from parent. The child received instructions for the self-referent encoding task and completed the baseline PANAS, followed by the experimental protocol (described above). Finally, the child completed the self-report measures of the SMFQ, PVSF, CATS, CTIC, and SPPC. For participating in the current study, each participant (and a parent or guardian) received \$50 plus an offer of cab fare.

Manipulation checks tested whether positive and negative mood changed as a result of the mood inductions. Positive affect dropped significantly from 3.88 ($SD = 0.85$) before the negative mood induction to 2.86 ($SD = 1.05$) afterwards, $t_{(213)} = 15.56$ ($p < .001$). Over the same time, negative mood rose significantly from 1.17 ($SD = 0.32$) to 1.94 ($SD = 0.87$), $t_{(213)} = -13.48$ ($p < .001$). After the positive mood induction at the end of the study, PA was higher than it was at baseline ($M = 4.10$, $SD = 0.89$, $t_{(211)} = 2.99$, $p < .003$), and NA dropped to below its baseline level ($M = 1.04$, $SD = 0.20$, $t_{(211)} = 4.97$, $p < .001$). To test the possibility that the negative mood induction differentially affected victimized versus

nonvictimized participants, we conducted two multiple regressions. One tested the effect of PV on post-induction positive mood, controlling for pre-induction positive mood. The other tested the same effect on negative mood. In both tests the effect of PV was very small, $F^2 < .01$, and nonsignificant, $ps > .70$.

Results

Descriptive Statistics

Table 1 contains all correlations, means, and standard deviations. Both relational and verbal victimization were significantly correlated with all of the cognitive questionnaires as well as the incidental recall difference variable. One of our hypotheses was that relational-verbal PV would be more highly correlated with the cognitive variables than would physical PV. We tested these differences using Steiger's Z (1980) for dependent correlations. Correlations of the cognitive variables with relational victimization were significantly stronger than correlations with physical victimization for 6 out of 10 variables: SMFQ ($z = 2.17, p < .02$), CATS Personal Failure ($z = 1.80, p < .04$), SPPC Social Acceptance ($z = 2.07, p < .02$), SPPC Global Self-Worth ($z = 2.95, p < .002$), CTI Positive ($z = 2.35, p < .01$), and CTI Negative ($z = 2.49, p < .007$). This pattern provided partial support for our hypothesis.

General Linear Model

We tested four multivariate general linear models (GLM). Dependent variables were the CATS subscales in the first analysis, the SPPC subscales in the second analysis, the CTI subscales in the third analysis, and the two memory variables (recall and recognition) in the fourth. In each test, independent variables were Sex, Age, Relational-Verbal PV, and Physical PV. (In separate analyses we tested the interactions of age and sex with the two PV variable; none were significant.) We conducted these analyses twice, once ignoring and once controlling for the SMFQ. Multivariate results of these analyses appear in Table 2.

First, in the multivariate prediction of the CATS subscales, Relational-Verbal PV was significant ($p < .001$). Univariate tests were significant for both the Social Threat subscale, $B = 0.71, \beta = 0.32$ ($p < .001$), and the Personal Failure subscale, $B = 0.42, b = 0.22$ ($p < .01$). After statistically controlling for the SMFQ, the multivariate effect was still significant ($p < .028$). The Social Threat subscale was primarily responsible for this effect, $B = 0.42, b = 0.19$ ($p < .008$). On average, participants with higher levels of Relational-Verbal PV reported higher levels of perceived social threat.

Second, in the multivariate prediction of the SPPC subscales, significant effects emerged for both Relational-Verbal PV ($p < .001$) and for Physical PV ($p < .034$). Univariate effects of Relational-Verbal PV were significant for Social Acceptance, $B = -0.70, b = -0.41$ ($p < .001$) and Global Self-Worth, $B = -0.39, b = -0.32$ ($p < .001$). The univariate effect of Physical PV was significant for Social Acceptance, $B = -0.52, b = -0.17$ ($p < .024$). After controlling for the SMFQ, the multivariate effects were still significant for both Relational-Verbal PV ($p < .001$) and for Physical PV ($p < .028$). The Social Acceptance subscale was primarily responsible for both of these effects: Relational-Verbal PV, $B = -0.58, b = -0.34$ ($p < .001$) and Physical PV, $B = -0.51, b = -0.17$ ($p < .024$). Participants with higher levels

of Relational-Verbal and Physical PV tended to perceive themselves as being disliked by others.

Third, in the multivariate prediction of the CTI subscales, Relational-Verbal PV was significant ($p < .001$). Univariate tests were significant for both the Positive subscale, Positive ($B = -0.59$, $b = -0.33$ ($p < .001$) and the Negative subscale, $B = 0.78$, $b = 0.34$ ($p < .001$). After statistically controlling for the SMFQ, the multivariate effect was still significant ($p < .016$), as were the univariate tests for both variables: Positive, $B = 0.34$, $b = -0.19$ ($p < .012$) and Negative, $B = 0.45$, $b = 0.20$ ($p < .01$). Given the direction of these effects, participants who had been exposed to higher levels of Relational-Verbal PV tended to harbor more negative and fewer positive thoughts about themselves, the world, and the future.

Fourth, in the multivariate prediction of incidental recall and recognition of negative versus positive words that were initially presented in the SELF encoding condition, the effect of Relational-Verbal PV was significant ($p < .043$). Univariate tests were significant for incidental recall, $B = 0.014$, $b = 0.20$ ($p < .024$) but not recognition. After statistically controlling for the SMFQ, the multivariate effect was still significant ($p < .048$), as was the univariate test for incidental recall, $B = 0.013$, $b = 0.18$ ($p < .039$). This effect is plotted in the top panel of Figure 1 (along with the effect on the recognition task). At low levels of Relational-Verbal PV, the incidental recall variable was negative. Given the coding of this variable as the proportion of negative words recalled minus the proportion of positive words recalled, this finding means that non-victimized youths recalled more positive than negative words, reflecting a positive memorial bias. Conversely, at high levels of Relational-Verbal PV, the incidental recall variable was very close to zero, reflecting the absence of the normative positive memorial bias. Results for the recognition task were similar but weaker and not statistically significant (see Figure 2).

Finally, we examined whether the effects of PV on incidental memory were specific to the self-referent encoding condition. Toward this end, we repeated the preceding multivariate tests for words presented in the VALENCE (good-bad semantic) encoding condition and again for words presented in the SIGNIFICANT OTHER (like-my-friend/not-like-my-friend) encoding condition. Neither of the multivariate tests was significant ($ps > .30$). Further examination of the univariate tests revealed that these were nonsignificant as well ($ps > .20$). The only significant effects of PV pertained to the self-referent encoding condition (described above). The information processing bias for victimized youth was specific to self-referential information.

Discussion

Results of the current study supported our overarching goal: to show that key indicators of depressive self-schemas are associated with PV in middle childhood and early adolescence. Three specific results emerged providing either full or partial support for our hypotheses. First, relational-verbal PV was positively correlated with children's self-reported negative self-cognitions and negatively correlated with children's positive self-cognitions. A similar pattern of correlations emerged for physical PV, but the effects were smaller and less often

significant. Second, the unique statistical effects of relational-verbal PV remained significant even after statistically controlling for physical PV. The same was not true for physical PV after controlling for relational-verbal PV. Statistically controlling for current depressed mood (SMFQ) eliminated some but not all of the relational-verbal PV significant effects. Third, relational-verbal PV was associated with a reduction in or elimination of the positive memorial bias that was evident in our non-victimized youths and is normative for children in general. These results build upon the enormous research generated by Beck's cognitive model of depression by anticipating the kinds of social-cognitive-emotional events in childhood that might generate the cognitive diatheses for depression. We elaborate on each of these findings below.

Our first hypothesis, that PV would be positively related to negative self-cognitions and negatively related to positive self-cognitions garnered initial support insofar as being subjected to persistent relational-verbal PV (and to a lesser extent physical PV) was correlated with increased negative self-cognitions and diminished positive self-cognitions in a manner the pattern often associated with depressive self-schemas in both youths and adults (e.g., Abela & Sullivan, 2003; Cole et al., 1998; Cole, Martin, Powers, & Truglio, 1996; Cole et al., 1999; Lakdawalla, Hankin, & Mermelstein, 2007; Lewinsohn, Joiner, & Rohde, 2001; Reinherz et al., 1989). In the current study, the specific kinds of beliefs endorsed by victims included thinking of oneself as a failure, perceiving one's social world as threatening, seeing oneself as unpopular, unlikable, unattractive, and generally holding a negative view of oneself, the world, and the future. These cross-sectional findings pave the way for longitudinal studies. To date, only Sinclair et al. (2012) have examined the prospective effects of verbal, relational, and physical PV on children's depressive cognitions, although several studies have addressed related questions (e.g., Barchia & Bussey, 2010; Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004; Gibb & Abela, 2008). Studies designed to identify factors that exacerbate and mitigate such effects (e.g., harsh vs. supportive parenting) would inform programmatic efforts to prevent depression in youths who are at risk because of PV (Bilsky et al., in press; Kopala-Sibley, Zuroff, Leybman, & Hope, 2012).

Second, we tested this hypothesis more rigorously using regression analyses in which we statistically controlled for one type of PV while testing the other. These analyses revealed a stronger pattern of results for relational-verbal PV than for physical PV in a manner commensurate with our second hypothesis. This finding reflects the results of previous work in PV (Cole et al., 2010; Sinclair et al., 2012). We speculate that relational-verbal PV conveys negative self-relevant information either in a more direct way or in a way that more directly pertains to particularly important aspects of oneself, compared to physical PV. Contrary to popular wisdom (or at least the childhood "sticks and stones" rhyme), verbal and relational PV appear to be more toxic than physical PV, at least insofar as depression-related outcomes are concerned. This finding also reflects results from the parental child abuse literature that suggests psychological or emotional abuse has more devastating effects on child development than does the physical aspect of child abuse (Garbarino & Garbarino, 1980). Part of this process may be due to the effect of highly self-relevant negative information (implied by both psychological child abuse and relational-verbal PV) on the child's construction of self-cognitions.

We followed these tests with even more rigorous analyses in which we statistically controlled for concurrent depressive symptoms (i.e., SMFQ scores). Some investigators have suggested that such analyses rule out the rival hypothesis that a correlation with a putative diathesis for depression is the result of current depressive mood. Most of our results were robust, whereas one was not. Specifically, controlling for current depression eliminated the effect of PV on the CATS personal failure subscale. Effects on the other five variables remained significant: CATS social threat, SPPC social acceptance, SPPC global self-worth, CTI positive, and CTI negative.

Our third major finding was that non-victimized youths evinced biased recall of positive self-referential words, whereas youths who experienced relational-verbal PV recalled positive and negative self-referential words equally well. These results mirror those of the depression literature, in which nondepressed individuals show a very similar positive memorial bias that is not evident in depressed individuals (Cole & Jordan, 1995; Gencoz et al., 2001; Hammen & Zupan, 1984; Moilanen, 1995; Prieto et al., 1992; Timbremont & Braet, 2004; Woolgar & Tranah, 2010). Our results also extend the previous literature in that we implemented two control conditions (VALENCE and SIGNIFICANT OTHER) to clarify that our incidental-recall results truly reflect a depressive self-schema and not the effect of word valence or significant other. We take this finding as support for our hypothesis that relational and verbal PV represent major pathway for the construction of depressive self-schemas in young people. Like Beck (1967), we believe that depressive self-schemas are frequently born from negative life events in childhood. Unlike Beck, who speculated that loss events are particularly important in this process, we reasoned that especially important childhood events would (a) focus attention on the self and convey negative self-relevant information to the self, (b) be associated with strong negative affect, and (c) be repetitive or chronic. Although some of these things might be true about certain loss events, they better characterize other kinds of childhood experiences (e.g., PV, parental child abuse). The current study provides initial support for PV as one such set of experiences.

Several clinical implications arise from the current results. First, in the depression literature, simple remission of depression without cognitive intervention does not diminish the cognitive diathesis for future depression. In the current study, statistically controlling for current depressed mood did not eliminate the relation between cognitive diatheses and PV. Even if interventions successfully diminish PV and/or depression, individual-level cognitive intervention may also be needed to dismantle the depressive self-schemas to which PV may have already given rise. Second, PV is not the only social-cognitive mechanism through which cognitive diatheses for depression can be forged. Harsh, critical parenting affects depressive cognitions over-and-above PV, and warm, supportive parenting can counterbalance the adverse effects of PV (e.g., Bilsky et al., in press; Kopala-Sibley et al., 2012). Collectively, this work suggests that a comprehensive approach to depression risk-reduction would include efforts to diminish PV, reduce harsh-critical parenting, and foster warm-supportive parenting.

At least three shortcomings and limitations of the current study should be addressed via additional research. The first is that the current study is partially cross-sectional. The study is longitudinal in the sense that we based participant selection on victimization data from two

prior waves of a larger longitudinal study, in order to focus on youths with or without empirically validated histories of PV. That said, the primary analyses focus on concurrent, lab-based measures of incidental memory, self-cognitions, and PV. Longitudinal analyses are needed to examine the prospective effects of victimization on depressive self-schema development over time. Second, implications of these results for depression rest on an implicit mediational process that has not been tested here. The underlying model is that PV generates depressive self-schemas (and degrades positive self-schemas), which, in turn, convey risk for depression. Tests of this mediational model are not possible with the current data and require additional research. Finally, the developmental origins of cognitive diatheses for depression are no doubt multifarious. Future research should examine the concomitant effects of not just PV but positive and negative relationships with parents, other adults (teachers, coaches, etc.), and peers outside the context of school.

Acknowledgments

This research was supported by a gift from Patricia and Rodes Hart, by support from the Warren Family Foundation, and by NICHD grant 1R01HD059891 to David A. Cole. We are especially grateful to Amy Jacky for her managerial support and good cheer throughout this project.

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Figure 1.
Relation of Relational-Verbal Peer Victimization to incidental recall and recognition following a self-referent encoding task.

Table 1

Correlations, Means, and Standard Deviations for Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Relational-Verbal PV	1.00											
2. Physical PV	.59***	1.00										
3. Depressed Mood (SMFQ)	.31***	.18**	1.00									
4. CATS Personal Failure	.24***	.13	.60***	1.00								
5. CATS Social Threat	.44***	.35**	.53***	.52***	1.00							
6. SPPC Social Acceptance	-.53***	-.42**	-.35***	-.31***	-.46***	1.00						
7. SPPC Physical Appearance	-.18**	-.11	-.42***	-.37***	-.42***	.46***	1.00					
8. SPPC Global Self-Worth	-.28***	-.10	-.56***	-.54***	-.44***	.47***	.60***	1.00				
9. CTI Positive	-.34***	-.20**	-.52***	-.50***	-.50***	.51***	.57***	.67***	1.00			
1. CTI Negative	.31***	.16*	.52***	.61***	.44***	-.35***	-.46***	-.62***	-.69***	1.00		
11. Incidental Recall	.18**	.08	.11	.19**	.19**	-.14*	-.06	-.15*	-.18**	.19**	1.00	
12. Incidental Recognition	.08	.01	-.02	.07	.10	.06	.01	-.03	-.07	.12	.22***	1.00
13. Prior victimization status ^a	.76***	.71***	.29***	.21***	.40***	-.47***	-.16*	-.25***	-.29***	.30***	.16*	.10
Mean	6.27	3.64	15.38	12.05	13.08	14.17	13.86	15.93	50.70	23.25	-0.028	-0.034
SD	2.42	1.36	3.28	4.61	5.30	4.10	4.48	2.94	4.34	5.53	0.175	0.190

*
 $p < .05$ **
 $p < .01$ ***
 $p < .001$ ^aHigh (1) or low (0) victimization based on screening measures.

Note. SMFQ = Short Mood and Feelings Questionnaire, CATS = Children's Automatic Thoughts Scale, SPPC = Self-Perception Profile for Children, CTI = Cognitive Triad Inventory for Children.

Multivariate GLM Tests of Relational-Verbal and Physical Peer Victimization, Age, and Sex as Predictors of Cognitive Measures, Controlling and Not Controlling for SMFQ.

Table 2

Effect	Not controlling for SMFQ					Controlling for SMFQ				
	Wilks' Λ	F	hyp df	err df	p	Wilks' Λ	F	hyp df	err df	p
DV's = CATS Subscales (Personal Failure and Social Threat)										
Intercept	.686	46.65	2	204	.000	.487	106.85	2	203	.000
SMFQ (centered)	--	--	--	--	--	.620	62.28	2	203	.000
Sex (female)	.978	2.25	2	204	.108	.983	1.74	2	203	.178
Age (centered)	.995	0.53	2	204	.590	.981	2.00	2	203	.138
Rel-Verbal PV	.920	8.91	2	204	.000	.965	3.66	2	203	.028
Physical PV	.975	2.66	2	204	.073	.974	2.68	2	203	.071
DV's = SPPC Subscales (Social Acceptance, Physical Appearance, Global Self-Worth)										
Intercept	.156	355.75	3	197	.000	.150	371.00	3	196	.000
SMFQ (centered)	--	--	--	--	--	.689	29.44	3	196	.000
Sex (female)	.957	2.96	3	197	.033	.964	2.43	3	196	.066
Age (centered)	.993	0.49	3	197	.691	.993	0.46	3	196	.712
Rel-Verbal PV	.843	12.20	3	197	.000	.889	8.18	3	196	.000
Physical PV	.957	2.95	3	197	.034	.955	3.10	3	196	.028
DV's = CTI Subscales (Positive, Negative)										
Intercept	.353	188.13	2	205	.000	.263	285.63	2	204	.000
SMFQ (centered)	--	--	--	--	--	.733	37.11	2	204	.000
Sex (female)	.996	0.45	2	205	.641	.992	0.78	2	204	.459
Age (centered)	.993	0.71	2	205	.494	.994	0.59	2	204	.558
Rel-Verbal PV	.912	9.87	2	205	.000	.961	4.19	2	204	.016
Physical PV	.998	0.17	2	205	.844	.998	0.21	2	204	.810
DV's = Memory Variables (Incidental Recall, Recognition)										
Intercept	.965	3.77	2	208	.025	.964	3.89	2	207	.022
SMFQ (centered)	--	--	--	--	--	.992	0.87	2	207	.421

Effect	Not controlling for SMFQ					Controlling for SMFQ				
	Wilks' Λ	F	hyp df	err df	p	Wilks' Λ	F	hyp df	err df	p
Sex (female)	.997	0.31	2	208	.732	.997	0.27	2	207	.765
Age (centered)	.980	2.10	2	208	.126	.978	2.36	2	207	.097
Rel-Verbal PV	.970	3.19	2	208	.043	.968	3.09	2	207	.048
Physical PV	.997	0.27	2	208	.764	.998	0.19	2	207	.826

Outcome	No control for SMFQ					Controlling for SMFQ				
	Predictor	B	SE(B)	beta	B	SE(B)	beta	B	SE(B)	beta
CATS Personal Failure	Intercept	8.69	1.02		11.06			11.06	0.90	
	SMFQ (centered)	--	--		1.28***			0.14		0.55
	Age (centered)	-0.11	0.32	-0.02	-0.40	0.27	-0.09	-0.09	0.27	-0.09
	Sex (M=0, F=1)	1.12 ⁺	0.62	0.13	0.74	0.52	0.08	0.52	0.52	0.08
	Rel-Verbal PV	0.47**	0.16	0.26	0.13	0.14	0.07	0.13	0.14	0.07
	Physical PV	-0.06	0.29	-0.02	-0.07	0.24	-0.02	-0.07	0.24	-0.02
CATS Social Threat	Intercept	5.47	1.13		7.58	1.07		7.58	1.07	
	SMFQ (centered)	---	---		1.13***			0.17		0.41
	Age (centered)	0.00	0.35	0.00	-0.26	0.32	-0.05	-0.26	0.32	-0.05
	Sex (M=0, F=1)	1.43*	0.68	0.13	1.08 ⁺	0.62	0.10	1.08 ⁺	0.62	0.10
	Rel-Verbal PV	0.75***	0.17	0.35	0.45***	0.16	0.21	0.45***	0.16	0.21
	Physical PV	0.58 ⁺	0.32	0.15	0.57*	0.29	0.14	0.57*	0.29	0.14
SPPC Social Acceptance	Intercept	21.06	0.80		20.30	0.82		20.30	0.82	
	SMFQ (centered)	--	--		-0.41***			0.13		-0.19
	Age (centered)	0.16	0.25	0.04	0.25	0.25	0.06	0.25	0.25	0.06
	Sex (M=0, F=1)	-1.11*	0.48	-0.14	-0.99*	0.47	-0.12	-0.99*	0.47	-0.12
	Rel-Verbal PV	-0.74***	0.12	-0.44	-0.62***	0.13	-0.38	-0.62***	0.13	-0.38
	Physical PV	-0.44 ⁺	0.23	-0.15	-0.44*	0.22	-0.14	-0.44*	0.22	-0.14
SPPC Physical Appearance	Intercept	16.85	1.05		15.10	1.01		15.10	1.01	
	SMFQ (centered)	--	--		-0.95***			0.16		-0.40
	Age (centered)	-0.22	0.33	-0.05	-0.01	0.31	0.00	-0.01	0.31	0.00

Outcome	Predictor	No control for SMFQ			Controlling for SMFQ		
		B	SE(B)	beta	B	SE(B)	beta
SPPC Global Self-Worth	Sex (M=0, F=1)	-1.69**	0.63	-0.19	-1.41*	0.59	-0.16
	Rel-Verbal PV	-0.26	0.16	-0.14	-0.01	0.16	0.00
	Physical PV	-0.13	0.30	-0.04	-0.12	0.27	-0.04
	Intercept	18.26	0.66		16.67	0.58	
	SMFQ (centered)	--	--		-0.85***	0.09	-0.56
	Age (centered)	-0.10	0.21	-0.03	0.10	0.17	0.03
CTI Positive	Sex (M=0, F=1)	-0.64	0.40	-0.11	-0.38	0.34	-0.06
	Rel-Verbal PV	-0.40***	0.10	-0.34	-0.18*	0.09	-0.15
	Physical PV	0.18	0.19	0.08	0.19	0.16	0.09
	Intercept	54.93	0.99		52.90	0.91	
CTI Negative	SMFQ (centered)	--	--	--	-1.09***	0.15	-0.48
	Age (centered)	-0.09	0.31	-0.02	0.16	0.28	0.04
	Sex (M=0, F=1)	-0.36	0.60	-0.04	-0.02	0.53	0.00
	Rel-Verbal PV	-0.58***	0.15	-0.33	-0.29*	0.14	-0.16
	Physical PV	-0.08	0.28	-0.03	-0.07	0.25	-0.02
	Intercept	18.33	1.24		20.91	1.14	
Incidental Recall (Neg-Pos)	SMFQ (centered)	18.33	1.24		1.39***	0.18	0.49
	Age (centered)	0.49	0.39	0.09	0.17	0.34	0.03
	Sex (M=0, F=1)	0.10	0.75	0.01	-0.32	0.66	-0.03
	Rel-Verbal PV	0.77***	0.19	0.35	0.40*	0.17	0.18
	Physical PV	-0.04	0.35	-0.01	-0.05	0.31	-0.01
	Intercept	-0.11	0.04		0.10	0.04	
Incidental Recognition (Neg-Pos)	SMFQ (centered)	--	--	--	0.01	0.01	0.06
	Age (centered)	-0.01	0.01	-0.07	-0.01	0.01	-0.08
	Sex (M=0, F=1)	0.00	0.02	0.00	0.00	0.03	0.00
	Rel-Verbal PV	0.01*	0.01	0.19	0.01*	0.01	0.17
	Physical PV	0.00	0.01	0.00	0.00	0.01	0.00
	Intercept	-0.08	0.05		-0.08	0.05	

Outcome	Predictor	No control for SMFQ			Controlling for SMFQ		
		<i>B</i>	<i>SE(B)</i>	<i>beta</i>	<i>B</i>	<i>SE(B)</i>	<i>beta</i>
	SMFQ (centered)	--	--	--	0.00	0.01	0.03
	Age (centered)	0.02	0.01	0.12	0.02	0.01	0.13
	Sex (M=0, F=1)	-0.03	0.03	-0.07	-0.02	0.03	-0.06
	Rel-Verbal PV	0.01	0.01	0.15	0.01	0.01	0.15
	Physical PV	0.00	0.01	-0.03	0.00	0.01	-0.03

Note: CATS = Children's Automatic Thoughts Scale, SPPC = Self-Perception Profile for Children, CTI = Cognitive Triad Inventory for Children, PV = peer victimization, SMFQ = Short Mood and Feelings Questionnaire.