Published in final edited form as:

J Abnorm Child Psychol. 2014 January ; 42(1): 137–148. doi:10.1007/s10802-013-9765-5.

Cognitive Vulnerability to Depressive Symptoms in Children: The Protective Role of Self-efficacy Beliefs in a Multi-Wave Longitudinal Study

P. Steca¹, J. R. Z. Abela[†], D. Monzani¹, A. Greco¹, N. A. Hazel², and B. L. Hankin³

¹ Department of Psychology, University of Milano - Bicocca

² Department of Psychiatry, University of Colorado Denver

³ Department of Psychology, University of Denver

Abstract

The current multi-wave longitudinal study on childhood examined the role that social and academic self-efficacy beliefs and cognitive vulnerabilities play in predicting depressive symptoms in response to elevations in idiographic stressors. Children ($N = 554$; males: 51.4%) attending second and third grade completed measures of depressive symptoms, negative cognitive styles, negative life events, and academic and social self-efficacy beliefs at four time-points over 6 months. Results showed that high levels of academic and social self-efficacy beliefs predicted lower levels of depressive symptoms, whereas negative cognitive styles about consequences predicted higher depression. Furthermore, children reporting higher social self-efficacy beliefs showed a smaller elevation in levels of depressive symptoms when reporting an increase in stress than children with lower social self-efficacy beliefs. Findings point to the role of multiple factors in predicting children's depression in the long term and commend the promotion of self-efficacy beliefs and the modification of cognitive dysfunctional styles as relevant protective factors.

Keywords

Depression; Self-efficacy beliefs; Cognitive styles; Hassles; Childhood

Depression experienced during childhood and adolescence has a profound impact on individual psychosocial functioning and well-being (e.g., Garber, Braafladt, & Weiss, 1995). It also influences subsequent development as it predicts both frequency and severity of depressive symptoms during adulthood (Petersen, Compas, Brooks-Gunn, Stemmler, & Grant, 1993). Understanding the factors and mechanisms underlying the onset, maintenance, and recurrence of this disorder is then a crucial issue among both scholars and practitioners interested in identifying strategies to prevent and to treat depression along the life span. The current longitudinal study examined the potential buffering effects of social and academic self-efficacy beliefs along with the depressogenic effects of individual cognitive

[†]Corresponding Author: Patrizia Steca, Ph.D., Department of Psychology, University of Milano - Bicocca, Piazza dell'Ateneo Nuovo, 1, 20126, Milano, Italy, phone: +39 02 6448 3791 - fax: +39 02 6448 3706, patrizia.steca@unimib.it.

vulnerabilities to depression in predicting depressive symptoms in response to elevations in idiographic stressors in childhood.

The Hopelessness Theory of Depression

A large body of research has accumulated examining cognitive theories of vulnerability to depression since their introduction in the late 1960s (Abramson et al., 2002; Nolen-Hoeksema & Corte, 2004; Zuroff, Santor, & Mongrain, 2004). These theories are primarily concerned with the relationship between human cognitive activity and the experience of depressive symptoms, and cognition is conceptualized to encompass the mental processes of perceiving, recognizing, conceiving, judging, and reasoning. All of these cognitive variables have significant causal implications for the onset and maintenance of depression (Ingram, Miranda, & Segal, 1998). Furthermore, cognitive theories are fundamentally diathesis-stress models in that they posit that depression is produced by the interaction between an individual's cognitive vulnerabilities and certain environmental conditions that serve to trigger this diathesis into operation (Ingram et al., 1998). Whereas during the 1980s and 1990s, when studies based on diathesis-stress models began to accumulate in the literature, the empirical focus was almost exclusively on adults. Recent years have seen a rapid growth in studies testing cognitive theories of vulnerability to depression in child and adolescent samples (Abela & Hankin, 2008).

Among cognitive diathesis-stress theories, the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) has been extensively investigated across several developmental periods. According to hopelessness theory, a series of contributory causes interact with one another to culminate in a sufficient cause of a specific subtype of depression: hopelessness depression (Abramson et al., 1989). The theory specifically postulates that distinct depressogenic inferential styles serve as distal contributory causes of hopelessness depression. In particular, individuals are more likely to become depressed if they: 1) explain negative events in their life with stable and global causes, 2) perceive stressors as leading to other negative consequences, and 3) perceive negative events as implying something negative about the self. These depressogenic inferential styles are considered to be trait-like dimensions, namely general tendencies to make specific kinds of inferences (Abramson et al., 1989) and to habitually explain negative and positive life events (Weiner & Graham, 1999). Research examining stability of such negative cognitive styles among young adults (Hankin, Fraley, & Abela, 2005) and youth (Hankin, 2008a) has supported these assumptions. As regards their specific impact on the onset of depression, whereas the three are clearly distinct depressogenic inferential styles (Abela, McGirr, & Skitch, 2007), it is still unclear to what extent all must be present to induce hopelessness, and thereby depression (e.g., Abela & Hankin, 2008; Abela et al., 2007). Results from factor analytic studies showed that cognitive vulnerability factors are more distinct in children than in adolescents and young adults (e.g., Adams, Abela, & Hankin, 2007; Hankin, Carter, Lakdawalla, Abela, & Adams, 2007; Joiner & Rudd, 1996), suggesting childhood as a more proper age to identify the differential impact of the various inferential styles on the development of depression.

Early research on hopelessness theory in children and adolescents yielded inconsistent findings. While some studies of global and stable causes provided full support for this hypothesis (e.g., Abela, 2002; Abela, Parkinson, Stolorow, & Starrs, 2009; Dixon & Ahrens, 1992; Hankin, 2008b; Hankin, Abramson, & Siler, 2001), others provided only partial or no support (e.g., Abela, 2001; Abela & Sarin, 2002; Bennet & Bates, 1995; Brozina & Abela, 2006; Gibb & Alloy, 2006). Likewise, research on inferences about consequences and self have also obtained inconsistent findings (see Abela & Hankin, 2008). One explanation for these inconsistencies has been found in the scholarly debate on the developmental stage at which cognitive vulnerability factors emerge (Garber, 2000; Gibb & Coles, 2005; Hammen & Rudolph, 2003; Hankin & Abela, 2005). Several researchers (e.g., Turner & Cole, 1994) have hypothesized that cognitive vulnerability factors do not begin to moderate the relationship between stressful events and depression until the transition from childhood to adolescence, parallel to the development of more abstract cognitive processing capacities. However research has not completely supported this hypothesis. In particular, studies failed to confirm the application of the hopelessness theory in early adolescence (Abela & Sarin, 2002; Spence, Sheffield, & Donovan, 2002) and adolescence (Lewinsohn, Joiner, & Rohde, 2001), times when the developmental hypothesis would predict the theory to apply. Furthermore, Conley, Haines, Hilt, and Metalsky (2001) provided support for the theory in 6 year old, but not in 10 year old, children. Finally, a number of more recent studies provided support for the hopelessness theory model in both child and early adolescent samples (Abela, 2001; Abela et al., 2007; Abela & Payne, 2003; Abela, Skitch, Adams, & Hankin, 2006; Brozina & Abela, 2006).

Nomothetic versus Idiographic Approaches

One possible alternative explanation for these inconsistent findings has been identified in the operationalization of what constitutes a “negative event” and “high stress”. From a nomothetic prospective individuals are considered to be experiencing “high stress” when their level of stress is high relative to others in the sample. While this approach has been traditionally adopted in previous research, it may lead to inaccurate predictions at the level of individual participants (Abela et al., 2007). Notably, an individual may experience a marked increase in stress between two time-points and yet still exhibit a level of stress below the sample’s mean. In this case, the hopelessness theory would predict that a vulnerable individual would show an increase in depressive symptoms, but the analytic methods employed by nearly all previous studies could not capture this effect. The most powerful examination of the diathesis-stress component of the hopelessness theory involves the use of a longitudinal design in which negative events and depressive symptoms are assessed at multiple time-points and “high stress” is operationalized from an idiographic perspective. From this perspective, an individual is considered to be experiencing “high stress” when he/she is experiencing a level of stress that is higher than his/her own average level of stress. Using this kind of idiographic approach, several studies have obtained consistent support for the diathesis-stress component of the hopelessness theory during childhood (Abela & McGirr, 2007; Abela et al., 2007; Abela et al., 2006; Abela, Zuroff, Ho, Adams, & Hankin, 2006).

Self-Efficacy Beliefs as Protective Factors

Despite the etiology of depression being widely acknowledged as multifactorial in nature (e.g., Gotlib & Hammen, 2002; Hankin & Abela, 2005; Ingram & Price, 2001), relatively little research has considered possible relationships between the many vulnerability and protective factors proposed across the various cognitive theories of depression. Alongside diathesis-stress models, other so called “risk-buffer” models have posited that certain individual positive characteristics may act as protective factors, counteracting the effects of both stressful events and cognitive vulnerability factors such as depressogenic inferential styles. In Bandura’s social cognitive theory (1977) a pivotal role is attributed to self-efficacy beliefs, or perceived self-efficacy, namely individuals’ perceived capabilities to produce desired actions in order to reach valued goals and attainments in specific life domains. Perceived self-efficacy is more than telling oneself that one can succeed; it is a strong conviction of competence that is based on one’s evaluation of various sources of information about one’s abilities (Bandura, 1997). Self-efficacy beliefs are at the core of Bandura’s “interactional-agentic” model, according to which individuals play a proactive, rather than a merely reactive role, in the continuous, by-directional pattern of influences between individuals and their environments (Bandura, 1997). As stated by Bandura, individuals are not only influenced by environmental stressors that interact with their personal vulnerabilities, but possess positive individual characteristics, such as elevated self-efficacy beliefs, that may operate proactively and protect from negative outcomes.

A large literature has shown that self-efficacy beliefs regarding various life domains and specific tasks strongly contribute to distinct outcomes during childhood and adolescence through their impact on behavior (Bandura, 1997; Pajares & Urdan, 2006). Findings from longitudinal and cross-cultural studies have shown the positive influence that self-efficacy beliefs exert on academic achievement (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bassi, Steca, Delle Fave, & Caprara, 2007) and well-being (Steca, Caprara, Tramontano, Vecchio, & Roth, 2009). Furthermore, self-efficacy beliefs have been shown to play a positive role in counteracting shyness (Caprara, Steca, Cervone, & Artistic, 2003) and violent conduct (Caprara, Regalia, & Bandura, 2002).

Negative association between self-efficacy beliefs and depression has been also hypothesized and tested both among children and adolescents. There seem to be two main pathways through which a low sense of self-efficacy may give rise to symptoms of depression (Bandura, 1997). First, when people face a situation or a task in which they have to meet highly valued standards, as is generally the case in the school and work contexts, a low sense of self-efficacy may produce despondent and discouraged mood. School is the primary context of facing challenging tasks for children and the perception of not being up to the environmental requests (from teachers and parents) or to ambitious personal standards may contribute to the onset of a state of depression. Second, a low sense of self-efficacy in establishing and managing social relationships may impede the formation of positive interpersonal bonds that help in managing stressful events, and thereby may promote a sense of isolation and depressed feelings. Empirical research investigating the contribution of perceived self-efficacy to early depression has then focused on academic and social self-efficacy beliefs, corresponding to children’s and adolescents’ perceived capabilities to

manage school activities and interpersonal relationships with peers. The protective roles of both beliefs have been demonstrated cross-sectionally amongst both children and adolescents (McFarlane, Bellissimo, & Norman 1995; Muris, 2002; Scott et al., 2008), as well as prospectively in a 2 year follow-up study on pre-adolescents (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999).

Overview of Current Study

The current study proposes a longitudinal, multifactorial, and idiographic approach to the study of children's depressive symptoms. From this integrated perspective, we first investigated the potential buffering effects of social and academic self-efficacy beliefs along with the depressogenic effects of individual negative inferential styles about consequences and self to depression. Second, we explored the role that self-efficacy beliefs and inferential styles play in predicting depressive symptoms in response to concurrent elevations in idiographic stressors.

The study is part of a broader program of research that builds on previous work from Abela and colleagues (e.g., Abela & McGirr, 2007; Abela et al., 2007; Abela et al., 2006) and that aimed at expanding it towards novel directions. To our knowledge, no previous research has considered simultaneously in a multi-wave study the detrimental impact of the cognitive vulnerabilities posited by the hopelessness theory and the protective role of self-efficacy beliefs against children's depression. Moreover, none have done so with an idiographic conceptualization of stress. The study was conducted on a community sample of second and third grade children in whom depressive symptoms, academic and social self-efficacy beliefs, negative cognitive styles about consequences and self, and stress were assessed through self-reported questionnaires.

Following previous findings (e.g., Abela, 2002) we hypothesized that children exhibiting highly negative cognitive styles would report higher levels of depressive symptoms than children showing low negative cognitive styles. Moreover, we expected to confirm previous research (Bandura et al., 1999; Caprara, Gerbino, Paciello, Di Giunta, & Pastorelli, 2010; McFarlane et al., 1995; Muris, 2002; Scott et al., 2008) by showing that children reporting high levels of self-efficacy beliefs would have lower levels of depressive symptoms than children with low levels of self-efficacy beliefs. Finally, in order to verify the diathesis-stress hypothesis we expected that children exhibiting highly negative cognitive styles would report higher levels of depressive symptoms when experiencing concurrent elevations in their levels of hassles than children exhibiting less negative cognitive styles. Moreover, we examined whether social and academic self-efficacy beliefs would play a protective role in the relationship between depressive symptoms and elevations in hassles. We expected that children exhibiting high levels of academic and social self-efficacy beliefs would report lower levels of depressive symptoms when experiencing concurrent idiographic elevations in their levels of hassles than children exhibiting low levels of self-efficacy beliefs. Gender and grade were controlled in the tested model.

The study was conducted on a community sample of very young children attending second and third grade. Very few studies focused on the cognitive theories of depression have been

conducted before the third grade (e.g., Abela & McGirr, 2007) and no studies on the protective role of self-efficacy beliefs have been carried out before the fourth grade. We did not expect to find differences in terms of greater or lesser effect from the vulnerability and protective factors but rather to confirm the role they have demonstrated to play with older children. This would be particularly valuable in terms of further contributing to the understanding of the distal mechanisms of the first onset of depression.

Method

Participants

The participants were 554 (males: $n = 285$; 51.4%) second (i.e. 7-8 years old; $n = 245$; 44.2%) and third grade children (i.e. 8-9 years old; $n = 309$; 55.8%) from 11 elementary schools of Northern Italy. All the schools were publicly-funded; they were suburban and located in residential areas on the outside of metropolitan areas. Participants ranged in age from 7 to 9 ($M = 7.94$ years; $SD = 0.62$) and 77.2% of them had at least one sibling. Children with significant developmental disabilities or severe learning problems, as reported by class teachers, were excluded from the study.

As shown in Table 1, families varied widely in socioeconomic background, thus adding to the generalizability of the findings.

Procedure

Research received approval from the ethics committee of the University of Milano - Bicocca. Consent forms were sent to the parents of all children in participating classes. Consent rates were greater than 95% in all the classes. Every child whose parent provided consent also provided written assent at the beginning of the first assessment conducted in the child's classroom. During the initial assessment, children completed a demographics form.

Questionnaires were administered verbally in the classrooms every two months for six months, for a total of four waves of data collection. A trained researcher read aloud each question and its response options; then, children individually wrote their answer on their own questionnaire. In the first assessment, children completed a copy of each of the following self-report questionnaires: (1) Children's Cognitive Style Questionnaire (CCSQ; Abela, 2001), (2) Academic Self-Efficacy Beliefs Scale (Bandura et al., 1996; Pastorelli et al., 2001), (3) Social Self-Efficacy Beliefs Scale (Caprara, Gerbino, & Delle Fratte, 2001). Moreover, in all four assessments, children completed the Children Depression Inventory (CDI; Kovacs, 2003) and the Hassles Scale for Children (CHAS; Kanner, Feldman, Weinberger, & Ford, 1987). Attrition rates were low; no participant refused to take part in second to fourth assessment and attrition was entirely attributable to children's sickness absence (Absences: Time 2 = 6.1%; Time 3 = 6.9%; Time 4 = 6.1%). Moreover, 76.9% of children were present at every assessment, 19.1% were absent at one wave, 3.4% at two waves and 0.5% at three waves.

The Italian versions of the CDI, CHAS and CCSQ were developed using the back-translation method. Original English versions were translated into Italian by a bilingual translator from the Psychology Department at the University of Milano - Bicocca; the

translated Italian versions were then back-translated into English by another bilingual translator from the same department. Original versions were compared with the back-translation. If inconsistencies were found in the back-translation, translators worked together to make corrections to the final Italian versions. No items from any of the measures were intentionally altered during the translation process. The Academic and Social Self-Efficacy Beliefs Scale were already available in Italian (Bandura et al., 1996; Caprara et al., 2001; Pastorelli et al., 2001).

Measures

Children's Depression Inventory—The Children's Depression Inventory (CDI; Kovacs, 2003) is a 27-items measure that assesses the cognitive, affective, and behavioral symptoms of depression. As was done in previous research (e.g., Dallaire et al., 2006), the item measuring suicidal ideation was removed to prevent discomfort of parents or school staff members. For each item, children were asked whether it described how they were thinking and feeling in the past week. Total scores range from 0 to 52 with higher scores indicating greater symptom severity. In the current study, Cronbach's alphas at each time point ranged from .81 to .88, indicating high internal consistency.

Children's Cognitive Style Questionnaire—The CCSQ (Abela, 2001) is a two-part questionnaire. Each part contains 12 hypothetical negative events involving the participants. Children were asked to choose the response that would best describe the way they would think about that event. Part 1 measures the tendency to catastrophize the consequences of negative events (Cognitive Style Consequence – CSC). For each item (e.g., “You don't know the answer when the teacher calls on you”), children are given the following four choices: (a) “This won't cause other bad things to happen to me”; (b) “This might cause other bad things to happen to me”; (c) “This will cause other bad things to happen to me” and (d) “This will cause many terrible things to happen to me”. Each response is assigned a value from 0 to 3 with higher scores indicating a greater tendency to catastrophize the consequences of negative events. Part 2 measures the tendency to view oneself as flawed following negative events (Cognitive Style Self – CSS). For each item (e.g., “You are not invited to one of your classmate's birthday parties”), children are given the following three choices: (a) “This does not make me feel bad about myself”; (b) “This makes me feel a little bad about myself” and (c) “This makes me feel very bad about myself”. Each response is assigned a value from 0 to 2 with higher scores indicating more depressogenic inferential style about the self. Abela (2001) found scores of both the consequences and self subscales to be consistent over a 7-week interval in third-graders. In the current study, Cronbach's alpha for the consequences subscale was .78, while Cronbach's alpha for the self subscale was .73.

Hassles Scale for Children—The CHAS (Kanner et al., 1987) is a list of 39 hassles that children may experience (e.g., “Your best friend did not want to be your best friend anymore”). Children rated how often each event happened to them during the last month on a scale of 0 (*never*) to 4 (*all the time*). Levels of total hassles are obtained by summing responses on all items; higher scores indicate a greater number of hassles. We obtained Cronbach's alphas ranging from .90 to .94 indicating high internal consistency.

Academic Self-Efficacy Beliefs Scale—We used a brief version of the Academic Self-Efficacy Beliefs Scale (Bandura et al., 1996; Pastorelli et al., 2001) consisting of 13 items that measure children's perceived capability to successfully master different curricular areas (e.g., "How well can you learn history?") and to self-regulate learning activities, including the ability to structure environments conducive to learning (e.g., "How well can you study when you have other more interesting things to do?"). Children rated the strength of their beliefs on a 5-point scale ranging from 1 (*Not well at all*) to 5 (*Very well*). Cronbach's alpha was .81.

Social Self-Efficacy Beliefs Scale—We adopted a brief 6-item version of the Social Self-Efficacy Beliefs Scale (Caprara et al., 2001) that assesses the perceived capability of expressing personal opinions in groups, sharing personal experiences with others, and helping others in being part of one's circle of friends (e.g., "How well can you actively participate in group activities"). For each item, children rated the strength of their beliefs in their capability on a 5-point scale ranging from 1 (*Not well at all*) to 5 (*Very well*). Cronbach's alpha was .70.

Results

Descriptive Statistics

Descriptive statistics for all measures and administrations are presented in Table 2. As shown, both depressive symptoms and hassles decreased across time. Regarding hassles, the most frequently reported stressors across the four time-points were: "You had to go to bed when didn't feel like it" and "You had to clean up your room". Regarding depression, a small number of participants reported an absence of depressive symptoms (i.e., CDI score = 0): 2.4% at time 1; 6.5% at time 2; 7.1% at time 3; and 8.7% at the last time-point. Considering skewness and kurtosis, in line with West, Finch & Curran (1995), all the scales showed an acceptable distribution (i.e., skewness < |2| and kurtosis < |7|). Specifically, across the four time-points depressive symptoms' skewness ranged from 1.13 to 1.66 and its kurtosis ranged from 1.52 to 4.15. Similarly, hassles' skewness ranged from 0.45 to 0.57 and kurtosis from -0.16 to 0.05. Between-subject predictor variables' skewness and kurtosis were very low in absolute value (i.e., Cognitive Style – Consequences: skewness = 0.03; kurtosis = 0.13; Cognitive Style – Self: skewness = 0.11; kurtosis = -0.16; Academic Self-efficacy Beliefs: skewness = -0.15; kurtosis = -0.26; Academic Self-efficacy Beliefs: skewness = -0.24; kurtosis = -0.06).

Two repeated mixed analyses of variance (ANOVA) tested for mean level differences in depressive symptoms and hassles by gender. Girls reported lower levels of depression ($F(1, 422) = 8.72, p = .003$), whereas no difference between boys and girls was found for hassles ($F(1, 366) = 3.56, p = .060$). Independent t-tests were performed to test for mean level differences between gender in academic and social self-efficacy beliefs, and cognitive negative styles at baseline. Girls reported higher levels of social self-efficacy beliefs ($t(519) = -2.94, p = .003$) than boys. No differences were found between boys and girls in CSC ($t(490) = -.05, p = .959$), CSS ($t(502) = -.37, p = .417$), and academic self-efficacy beliefs ($t(517) = -1.49, p = .138$).

Third graders reported higher levels of hassles ($F(1, 388) = 22.35, p < .001$); no difference between second and third graders was found for depressive symptoms ($F(1, 445) = 3.86, p = .050$). Independent t-tests were performed to test for mean level differences between grade in academic and social self-efficacy beliefs, and cognitive negative styles at baseline. Third graders reported higher levels of CSS ($t(536) = -3.23, p = .001$), and lower levels of academic ($t(552) = 4.76, p < .001$) and social self-efficacy beliefs ($t(554) = 2.23, p = .026$) than second graders. No differences were found between second and third graders in CSC ($t(524) = -1.63, p = .103$).

Relationships among Variables

Table 3 reports bivariate correlations among negative cognitive styles and self-efficacy beliefs at time 1, and hassles and depression at all time-points.

As shown, there were positive correlations between CSC and CSS ($r = .44, p < .001$) and between academic and social self-efficacy beliefs ($r = .58, p < .001$). Moreover, academic self-efficacy beliefs were weakly and negatively correlated with both CSC ($r = -.11, p = .014$) and CSS ($r = -.14, p = .001$), and social self-efficacy beliefs were not significantly correlated with both CSC ($r = -.07, p = .087$) and CSS ($r = -.01, p = .754$). Also, regarding the relationships among negative cognitive styles, depression and hassles, CSC is moderately correlated with depression and lowly correlated with hassles; CSC is weakly to moderately correlated with both depression and hassles. Academic self-efficacy beliefs are negatively and moderately correlated with depression and hassles, similarly to social self-efficacy beliefs that are negatively and moderately to weakly correlated with depression and with hassles.

Self-Efficacy Beliefs and Cognitive Vulnerability to Depressive Symptoms

Hassles scores were centered at each participant's mean prior to analyses such that they reflect upwards or downwards fluctuations in a child's level of stress compared to his/her mean level of stress. Afterwards, all continuous predictors (i.e., CSC, CSS, academic and social self-efficacy beliefs) were standardized as Z-scores prior to the analysis.

Multilevel modeling was used to test our hypotheses that: (a) higher levels of negative cognitive styles about consequences and self would be associated with higher levels of depression symptoms; (b) higher levels of self-efficacy beliefs would be associated with lower depressive symptoms; (c) elevations in stress would be associated with concurrent higher levels of depressive symptoms; (d) children with highly negative cognitive styles would report higher levels of depressive symptoms when experiencing concurrent elevations in their levels of hassles than children exhibiting less negative cognitive styles; (e) children with higher levels of academic and social self-efficacy beliefs would report lower levels of depressive symptoms when experiencing concurrent idiographic elevations in their levels of hassles than children exhibiting lower levels of self-efficacy beliefs.

Analyses were carried out using the PASW Statistics (version 18.0) MIXED procedure with maximum likelihood estimation. For each analysis, the criterion variable was raw CDI scores. Between-subject predictor variables were the cognitive styles and self-efficacy

beliefs Z-scores at Time 1. Within-subject fluctuation in hassles from time 1 to time 4 (i.e., hassles scores were person-centered such that they reflect upwards or downwards fluctuations in a child's level of stress compared to his/her mean level of stress) was entered in the model as a time-varying covariate. As recommended by Hoffman and Stawski (2009), to control for the between-subject effect of hassles, the model also included the average of hassles scores across the four time-points. Moreover, to test for moderating effects of both cognitive styles and self-efficacy beliefs on the association between hassles and depression, we introduced in the model the four two-way interactions of fluctuations in hassles with each of the cognitive style and self-efficacy predictors measured at Time 1. Grade and gender were also controlled in the model. As previously underlined, descriptive statistics showed a decrease of depressive symptoms across time; subsequently, the model included the effect of time reflecting months since baseline in order to control for change of depressive symptoms over the six-months course of the study (time was coded as 0 for time 1, 2 for time 2, 4 for time 3, and 6 for time 4). It was beyond the scope of this study to test for the effect of the between-subject predictor variables in predicting change of depression over time; consequently, we did not include in the model the interactions between these variables and time.

When fitting multilevel models, one must specify appropriate mean and covariance structures. An appropriate covariance structure is essential in order to obtain valid inferences for the parameters in the mean structure. Commonly used covariance structures in multi-wave studies include compound symmetry, autoregressive and banded Toeplitz. Based on Akaike information criterion (AIC and AICC) and Schwarz Bayesian criterion (BIC), the best fit was a heterogeneous autoregressive structure (AR1). Such a covariance structure indicates two general patterns in CDI scores during the six-months course of the study. Specifically, the AR1 diagonal represents the Level-1 residuals variance. Furthermore, the AR1 ρ indicates that the degree of correlation between CDI scores is higher for adjacent time-points than for distant assessments. Model specification was achieved using a sequential strategy which involved first examining random effects and then examining fixed effects (Snijders & Bosker, 1999). The model included random effects for intercept, fluctuations in hassles and time. All random effects were significant and thus retained in the model (intercept: $p < .001$, fluctuations in hassles: $p < .01$; time: $p < .01$). Moreover, the covariance structure parameters were significant (AR1 diagonal: $p < .001$; AR1 ρ : $p < .01$).

The model is presented in Table 4. As expected, higher depressive symptoms were predicted by high negative cognitive style about consequences ($b = 1.03$; $p < .001$) and by elevations in hassles ($b = 0.66$, $p < .001$). Also as predicted, opposite effects were found for self-efficacy beliefs: lower depressive symptoms were predicted by high academic self-efficacy ($b = -1.03$; $p < .001$) and high social self-efficacy ($b = -0.68$; $p < .05$) beliefs at baseline. No significant main effect was found for cognitive style about the self at baseline. Also the between-subject effect of hassles (i.e., individual's average level of hassles across time-points) positively predicted depressive symptoms ($b = 1.84$; $p < .001$). Moreover, the significant main effect of time ($b = -0.33$; $p < .001$) indicated that depression decreased over the six-months course of this study.

The estimation of the effects of fluctuations in hassles on CDI scores was extended by testing interactions between fluctuations in hassles and both cognitive styles and self-efficacy beliefs at baseline. Only one interaction was statistically significant; in particular, it appeared that the association of fluctuations in hassles and depressive symptoms varied by levels of social self-efficacy measured at baseline ($b = -0.25, p < .05$)¹. Subsequently, following instructions by Shaw and Liang (2012), a simple slope analysis was performed to examine the form of this interaction; the model was used to calculate predicted CDI scores for children exhibiting either high or low levels of social self-efficacy at baseline ($\pm 1 SD$) who experienced either high or low levels of hassles in comparison to their own average level of stress ($\pm 1 \times \text{mean within-subject } SD$). The result is presented in Figure 1.

There was a positive relationship between fluctuations in hassles and depressive symptoms for both children with a social self-efficacy score 1 *SD* above the mean ($b = 0.41; p < .05$) and 1 *SD* below the mean ($b = 0.91; p < .001$). A planned comparison (Paternoster, Brame, Mazerolle, & Piquero, 1998) revealed that these two coefficients were significantly different, with the effect being stronger in children with a social self-efficacy score 1 *SD* below the mean than in children with a social self-efficacy score 1 *SD* above the mean ($z = 2.08; p < .05$). In other words, these results suggested that the concurrent positive relation between hassles and depressive symptoms was stronger for children with low social self-efficacy, whereas the relation was weaker for children with high social self-efficacy.

Discussion

The present study investigated the buffering effects of social and academic self-efficacy beliefs along with the depressogenic effects of negative cognitive styles to children's depression, and did so in a novel manner. First, it adopted a multi-wave design which allowed for an idiographic approach to quantifying hassles and a multilevel modeling to account for within- and between-subjects variation. Second, differently from previous research (e.g., Abela & McGirr, 2007), it was conducted on a community sample of very young children. Third, it examined the effects of both vulnerability and protective factors, providing a multi-factorial investigation. In particular, the current research for the first time linked the influential yet separate literatures regarding self-efficacy beliefs (Bandura, 1997) and hopelessness theory of depression (Abramson et al., 1989), suggesting that both are useful for understanding risk for depressive symptoms in youth.

Results confirmed the importance of integrating the two cognitive perspectives: self-efficacy beliefs and negative cognitive styles were shown to be uncorrelated factors that independently contributed to children's depression. As expected, children exhibiting high negative cognitive style about consequences, namely a tendency to catastrophize the consequences of negative events, reported higher levels of depressive symptoms than

¹Across the four time-points the correlations between fluctuations in hassles and raw score of hassles were positive but moderate, ranging from .55 to .66. Therefore, we specified a second model with raw scores of hassles instead of fluctuations in hassles; this latter model yielded similar results. The only reported difference was a significant interaction of cognitive style about consequences and hassles in predicting depressive symptoms ($b = .38; p < .05$). Moreover, in order to better distinguish between the effect of within-subject and between-subject effect of hassles, we specified a third model including also an interaction of individual average of hassles score across the four time-points; this model yielded similar results: the interaction between change in hassles and social self-efficacy beliefs was significant, whereas the interaction between average score of hassles and social self-efficacy beliefs was not.

children showing less negative cognitive styles. No significant association was found regarding the tendency to view oneself as flawed following negative events. This may find an explanation in the young age of the children participating in the study, for whom it could be more difficult to see the impact of events on self-characteristics.

Also in line with our hypothesis, children reporting high levels of academic self-efficacy beliefs reported lower levels of depressive symptoms than children with low levels of self-efficacy beliefs. These findings confirm previous cross-sectional (Muris, 2002; Scott et al., 2008) and longitudinal studies (Bandura et al., 1999), attesting to the important role of efficacy beliefs in managing school activities in contrasting depression in childhood and adolescence. Present findings also attest to the centrality of school as a primary context where children are asked to face tasks and situations in which they have to meet highly valued standards and external requests; as theorized by Bandura (1997) a low sense of self-efficacy in managing these demands may produce despondent and discouraged moods that might prefigure depression.

Our hypotheses were also confirmed as regards the role of stress. In line with previous research (Abela et al., 2007; Abela, Webb, Wagner, Ho, & Adams, 2006; Abela et al., 2006), elevations in idiographic hassles and average of hassles significantly added in predicting children's depressive symptoms. However, differently from our expectations, individual fluctuations in stress did not interact with the negative cognitive styles, nor with academic self-efficacy beliefs, in predicting depression. The diathesis-stress hypothesis was only confirmed for social self-efficacy beliefs, for which a modest but significant main effect was also detected. Results showed higher levels of depressive symptoms when experiencing concurrent idiographic elevations in levels of hassles in both children exhibiting high and low levels of self-efficacy beliefs in managing their relationships with peers. However, slope comparison demonstrated that children with lower social self-efficacy beliefs had a greater elevation in depression than children with higher self-efficacy beliefs. These findings are in line with previous research showing the pivotal role of social self-efficacy beliefs in protecting against early depression (Bandura et al., 1999; McFarlane et al., 1995) and point to the importance of extending future research on depression to the analysis of a variety of factors, both individual and environmental.

The extension of future research should also include the evaluation of more complex analyses and models of interpretation investigating the possibility that cognitive factors, both negative and positive, may predict subsequent hassles, in addition to the prediction of depression. This was beyond the scope of our study but we undoubtedly recognize the need of testing additional mediational models that should also aim at explaining differences in rate of change of depression across time. Beyond the scope of our study was also the test of the bidirectionality of influence between depressive symptoms and cognitive factors, as well as the investigation of models of stress-generation. Cognitive theories on depression hypothesizing that negatively biased cognitive styles have a causal role in depression are contradicted by studies supporting the hypothesis that cognitions are a symptom or a consequence of depressed affect, suggesting that the relationship between negative cognitive styles and depression may be bidirectional (Oei, Hibbert, & O'Brien, 2005; Rude, Valdez, Odom, & Ebrahimi, 2003). Other findings demonstrated that diagnosed clinical depression

negatively impacts on self-efficacy beliefs, also suggesting the possibility of a bidirectional relationship (Greenfield, Venner, Kelly, Slaymaker, & Bryan, 2012). The hypothesis of a bidirectional relationship has been mainly tested on adults as is the case of the transactional models of depression, that posit that certain individual and enduring vulnerability factors may also predict stress, in addition to depression. According to these models, individuals are not passive recipients of their environmental stressors but they both contribute to and react to their environment through a set of intrapersonal variables and maladaptive skills that may contribute to dependent stressors (Hammen & Shih, 2008, 2010). Future research effort, specifically focused on childhood, should be invested in comparing these different models and their related hypotheses, in order to shed light on the early processes involved in the depression onset.

Our study also showed sex differences in self-efficacy beliefs and depression that do not confirm previous findings (e.g., Bandura et al., 1999). These differences may be explained by the very young age of our participants and call for confirmation in future research.

Future effort is also needed to overcome the limitations of the current study. First, a self-report measure of depressive symptoms was used as the outcome measure; although this measure has high reliability and validity, it is not possible to draw conclusions about clinically diagnosed childhood depression.

Self-report instruments were also used to measure the other variables under study, contributing to a sort of mono-method reporter bias that could have influenced our findings. To overcome this limitation, more sophisticated methods and instruments of assessment, such as interview or procedures that assess contextual threats, could be used to provide a more powerful evaluation of stressors. Similarly, teachers' rating of children school performance and indicators of children's social functioning judged by peers (e.g., peer nomination or peer rating scales) could be used to evaluate their convergence with self-efficacy beliefs and their additional power in predicting children's depression.

Finally, our study was confined to children's beliefs in their capabilities to manage academic demands and interpersonal relationships. An extension of efforts to articulate the different ways in which beliefs of personal efficacy may contribute to depression may focus on perceived efficacy for the self-regulation of affect. A recent four year longitudinal study has shown the significant role of self-efficacy beliefs in managing positive and negative affect in buffering against depression among adolescents (Caprara et al., 2010). Broadening the self-efficacy analysis to affect regulation would likely account for additional variance in depression also among children and serve to better explicate the mechanisms underlying findings from the present study.

References

- Abela JRZ. 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*. 2001; 29:241–254. [PubMed: 11411786]
- Abela JRZ. Depressive mood reactions to failure in the achievement domain: A test of the integration of the hopelessness and self-esteem theories of depression. *Cognitive Therapy and Research*. 2002; 26:531–552.

- Abela, JRZ.; Hankin, BL. Cognitive vulnerability to depression in children and adolescents: A developmental psychopathology perspective. In: Abela, JRZ.; Hankin, BL., editors. *Handbook of child and adolescent depression*. The Guilford Press; New York: 2008. p. 35-78.
- Abela JRZ, McGirr A. Operationalizing “cognitive vulnerability” and “stress” from the perspective of the hopelessness theory: A multi-wave longitudinal study of children of affectively ill parents. *British Journal of Clinical Psychology*. 2007; 46:377–395. doi: 0.1348/014466507X192023. [PubMed: 17535532]
- Abela JRZ, McGirr A, Skitch SA. Depressogenic inferential styles, negative events, and depressive symptoms in youth: An attempt to reconcile past inconsistent findings. *Behaviour Research and Therapy*. 2007; 45:2397–2406. doi:10.1016/j.brat.2007.03.012. [PubMed: 17475210]
- Abela JRZ, Parkinson CC, Stolorow DD, Starrs CC. A test of the integration of the hopelessness and response styles theories of depression in middle adolescence. *Journal of Clinical Child and Adolescent*. 2009; 38(3):354–364. doi: 10.1080/15374410902851630.
- Abela JRZ, Payne AVL. A test of the integration of the hopelessness and self-esteem theories of depression in schoolchildren. *Cognitive Therapy and Research*. 2003; 27:519–535.
- Abela JRZ, Sarin S. Cognitive vulnerability to hopelessness depression: A chain is only as strong as its weakest link. *Cognitive Therapy and Research*. 2002; 26:811–829. doi: 10.1023/A:1021245618183.
- Abela JRZ, Skitch SA, Adams P, Hankin BL. The timing of parent and child depression: A hopelessness theory perspective. *Journal of Clinical Child and Adolescent Psychology*. 2006; 35:253–263.
- Abela JRZ, Webb CA, Ho M, Wagner C, Adams P. The role of self-criticism, dependency, and hassles in the course of depressive illness: A multi-wave longitudinal study of vulnerability and resiliency. *Personality and Social Psychology Bulletin*. 2006; 32:328–338. doi: 10.1177/0146167205280911. [PubMed: 16455860]
- Abela JRZ, Zuroff DC, Ho R, Adams P, Hankin BL. Excessive reassurance seeking, hassles, and depressive symptoms in children of affectively ill parents: A multi-wave longitudinal study. *Journal of Abnormal Child Psychology*. 2006; 34:171–187. doi: 10.1007/s10802-005-9011-x. [PubMed: 16555142]
- Abramson, LY.; Alloy, LB.; Hankin, BL.; Haeffel, JG.; MacCoon, DG.; Gibb, BE. Cognitive vulnerability–stress models of depression in a self-regulatory and psychobiological context. In: Gotlib, IH.; Hammen, CL., editors. *Handbook of depression*. Guilford Press; New York: 2002. p. 268-294.
- Abramson LY, Metalsky GI, Alloy LB. Hopelessness depression: A theory-based subtype of depression. *Psychological Review*. 1989; 96:358–372.
- Adams P, Abela JRZ, Hankin BL. Factorial categorization of depression related constructs in children and early adolescents. *Journal of Cognitive Psychotherapy*. 2007; 21:123–139. doi: 10.1891/088983907780851540.
- Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*. 1977; 84:191–215. [PubMed: 847061]
- Bandura, A. *Self-efficacy: The exercise of control*. Freeman; New York, NY: 1997.
- Bandura A, Barbaranelli C, Caprara GV, Pastorelli C. Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*. 1996; 67:1206–1222. doi: 10.1111/1467-8624.ep9704150192. [PubMed: 8706518]
- Bandura A, Pastorelli C, Barbaranelli C, Caprara GV. Self-efficacy pathways to child depression. *Journal of Personality and Social Psychology*. 1999; 76:258–269. [PubMed: 10074708]
- Bassi M, Steca P, Delle Fave A, Caprara GV. Self-efficacy beliefs and quality of experience in learning. *Journal of Youth and Adolescence*. 2007; 36:301–312. doi: 10.1007/s10964-006-9069-y.
- Bennett DS, Bates JE. Prospective models of depressive symptoms in early adolescence: Attributional style, stress, and support. *Journal of Early Adolescence*. 1995; 15:299–315.
- Brozina K, Abela JRZ. Symptoms of hopelessness depression and anxiety in children: Specificity of the hopelessness theory. *Journal of Clinical Child and Adolescent Psychology*. 2006; 35:515–527. doi: 0.1207/s15374424jccp3504_3. [PubMed: 17007597]
- Caprara, GV.; Gerbino, M.; Delle Fratte, A. *Self-efficacy assessment*. Edizioni Erickson; Trento: 2001. Perceived interpersonal self-efficacy; p. 51-61.

- Caprara GV, Gerbino M, Paciello M, Di Giunta L, Pastorelli C. Counteracting depression and delinquency in late adolescence: The role of regulatory emotional and interpersonal self-efficacy beliefs. *European Psychologist*. 2010; 15:34–48. doi: 10.1027/1016-9040/a000004.
- Caprara GV, Regalia C, Bandura A. Longitudinal impact of perceived self-regulatory efficacy on violent conduct. *European Psychologist*. 2002; 7:63–69. doi: 10.1027/1016-9040.7.1.63.
- Caprara GV, Steca P, Cervone D, Artistic D. The contribution of self-efficacy beliefs to dispositional shyness: On social-cognitive systems and the development of personality dispositions. *Journal of Personality*. 2003; 71:943–970. doi: 10.1111/1467-6494.7106003. [PubMed: 14633054]
- Conley CS, Haines BA, Hilt LM, Metalsky GI. The children's attributional style interview: Developmental tests of cognitive diathesis–stress theories of depression. *Journal of Abnormal Child Psychology*. 2001; 29:445–463. doi: 10.1023/A:1010451604161. [PubMed: 11695545]
- Dallaire DH, Pineda AQ, Cole DA, Ciesla JA, Jacquez F, LaGrange B, Bruce AE. Relation of positive and negative parenting to children's depressive symptoms. *Journal of Clinical Child and Adolescent Psychology*. 2006; 35:313–322. doi: 10.1207/s15374424jccp3502_15. [PubMed: 16597227]
- Dixon JF, Ahrens AH. Stress and attributional styles as predictors of self-reported depression in children. *Cognitive Therapy and Research*. 1992; 16:623–634.
- Garber, J. Development and depression. In: Sameroff, AJ.; Lewis, M.; Miller, SM., editors. *Handbook of developmental psychopathology*. Kluwer; New York: 2000. p. 467–490.
- Garber J, Braafladt N, Weiss B. Affect regulation in depressed and nondepressed children and young adolescents. *Development and Psychopathology*. 1995; 7:93–115. doi: 10.1017/S0954579400006362.
- Gibb BE, Alloy LB. A prospective test of the hopelessness theory of depression in children. *Journal of Clinical Child and Adolescent Psychology*. 2006; 35:264–274. doi: 10.1207/s15374424jccp3502_10. [PubMed: 16597222]
- Gibb, BE.; Coles, M. Cognitive vulnerability–stress models of psychopathology: A developmental perspective. In: Hankin, BL.; Abela, JRZ., editors. *Development of psychopathology: A vulnerability–stress perspective*. Sage; Thousand Oaks, CA: 2005. p. 104–135.
- Gotlib, IH.; Hammen, CL. *Handbook of depression*. Guilford Press; New York: 2002.
- Greenfield BL, Venner KL, Kelly JF, Slaymaker V, Bryan AD. The impact of depression on abstinence self-efficacy and substance use outcomes among emerging adults in residential treatment. *Psychology of Addictive Behaviors*. 2012; 26:246–254. doi: 10.1037/a0026917. [PubMed: 22288980]
- Hammen, C.; Shih, J. Stress generation and depression. In: Dobson, KS.; Dozois, DJA., editors. *Risk factors in depression*. Elsevier; London: 2008. p. 409–428.
- Hammen C, Shih J. Stress generation: A special section. *International Journal of Cognitive Therapy*. 2010; 3:313–317.
- Hammen, C.; Rudolph, KD. Childhood mood disorders. In: Mash, EJ.; Barkley, RA., editors. *Child psychopathology*. 2nd. Guilford Press; New York: 2003. p. 233–278.
- Hankin BL. Stability of cognitive vulnerabilities to depression: A short-term prospective multiwave study. *Journal of Abnormal Psychology*. 2008a; 117:324–333. doi: 10.1037/0021-843X.117.2.324. [PubMed: 18489208]
- Hankin BL. Cognitive vulnerability–stress model of depression during adolescence: Investigating depressive symptom specificity in a multi-wave prospective study. *Journal of Abnormal Child Psychology*. 2008b; 36:999–1014. doi: 10.1007/s10802-008-9228-6. [PubMed: 18437551]
- Hankin BL, Abramson LY, Siler M. A prospective test of the hopelessness theory of depression in adolescence. *Cognitive Therapy and Research*. 2001; 25:607–632. doi: 10.1023/A:1005561616506.
- Hankin BL, Carter I, Lakdawalla Z, Abela JRZ, Adams P. Are neuroticism, cognitive vulnerability and self-esteem overlapping or distinct risks for depression? Evidence from exploratory and confirmatory factor analyses. *Journal of Social and Clinical Psychology*. 2007; 26:29–63.
- Hankin BL, Fraley RC, Abela JRZ. Daily depression and cognitions about stress: Evidence for a trait-like depressogenic cognitive style and the prediction of depressive symptoms trajectories in a

- prospective daily diary study. *Journal of Personality and Social Psychology*. 2005; 88:673–685. doi: 10.1037/0022-3514.88.4.673. [PubMed: 15796667]
- Hoffman L, Stawski RS. Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development*. 2009; 6:97–120. doi: 10.1080/15427600902911189.
- Ingram, RE.; Miranda, J.; Segal, ZV. *Cognitive vulnerability to depression*. Guilford Press; New York: 1998.
- Ingram, RE.; Price, JM. *Vulnerability to psychopathology*. Guilford Press; New York: 2001.
- Joiner TE Jr. Rudd MD. Toward a categorization of depression-related psychological constructs. *Cognitive Therapy and Research*. 1996; 20:51–68. doi: 10.1007/BF02229243.
- Kanner AD, Feldman SS, Weinberger DA, Ford ME. Uplifts, hassles, and adaptational outcomes in early adolescents. *Journal of Early Adolescence*. 1987; 7:371–394.
- Kovacs, M. *Children's depression inventory: Technical manual*. Multi-Health Systems; Toronto: 2003.
- Lewinsohn PM, Joiner TE, Rohde P. Evaluation of cognitive diathesis–stress models in predicting major depressive disorder in adolescents. *Journal of Abnormal Psychology*. 2001; 110:203–215. doi: 10.1037//0021-843X.110.2.203. [PubMed: 11368074]
- McFarlane AH, Bellissimo A, Norman GR. The role of family and peers in social self-efficacy: Links to depression in adolescence. *American Journal of Orthopsychiatry*. 1995; 65:402–410. doi: 10.1037/h0079655. [PubMed: 7485425]
- Muris P. Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences*. 2002; 32:337–348. doi: 10.1016/S0191-8869(01)00027-7.
- Nolen-Hoeksema, S.; Corte, C. Gender and self-regulation. In: Baumeister, RF.; Vohs, KD., editors. *Handbook of self-regulation: Research, theory, and applications*. Guilford Press; New York: 2004. p. 411–421.
- Oei TPS, Hibbert E, O'Brien AJ. Study of the integrated cognitive model of depression among Latin-Americans. *Australian and New Zealand Journal of Psychiatry*. 2005; 39:932–939. doi: 10.1080/j.1440-1614.2005.01661.x. [PubMed: 16168021]
- Pajares, F.; Urdan, T. *Self-efficacy beliefs of adolescents*. Information Age; Greenwich, CT: 2006.
- Pastorelli C, Caprara GV, Barbaranelli C, Rola J, Rozsa S, Bandura A. The structure of children's perceived self-efficacy: A cross-national study. *European Journal of Psychological Assessment*. 2001; 17:87–97. doi: 10.1027//1015-5759.17.2.87.
- Paternoster R, Brame R, Mazerolle P, Piquero A. Using the correct statistical test for the equality of regression coefficients. *Criminology*. 1998; 36:859–866. doi: 10.1111/j.1745-9125.1998.tb01268.x.
- Petersen AC, Compas BE, Brooks-Gunn J, Stemmler M, Ey S, Grant KE. Depression in adolescence. *American Psychologist*. 1993; 48:155–168. [PubMed: 8442570]
- Rude SS, Valdez CR, Odom S, Ebrahimi A. Negative cognitive biases predict subsequent depression. *Cognitive Therapy and Research*. 2003; 27:415–429. doi: 10.1023/A:1025472413805.
- Scott WD, Dearing E, Reynolds WR, Lindsay JE, Baird GL, Hamill S. Cognitive self-regulation and depression: Examining academic self-efficacy and goal characteristics in youth of a northern plains tribe. *Journal of Research on Adolescence*. 2008; 18:379–394. doi: 10.1111/j.1532-7795.2008.00564.x.
- Shaw, BA.; Liang, J. Growth models with multilevel regression. In: Newsom, JT.; Jones, RN.; Hofer, SM., editors. *Longitudinal Data Analysis*. Routledge; New York: 2012. p. 217–242.
- Snijders, TAB.; Bosker, RJ. *Multilevel analysis*. Sage Publications; London: 1999.
- Spence SH, Sheffield J, Donovan C. Problem-solving orientation and attributional style: Moderators of the impact of negative life events on the development of depressives in adolescence? *Journal of Clinical Child Psychology*. 2002; 31:219–229. doi: 10.1207/S15374424JCCP3102_07.
- Steca P, Caprara GV, Tramontano C, Vecchio G, Roth E. Young adults' life satisfaction: The role of self-regulatory efficacy beliefs in managing affects and relationships across time and across cultures. *Journal of Social and Clinical Psychology*. 2009; 28:824–861. doi: 10.1521/jscp.2009.28.7.824.

- Turner JE, Cole DA. Developmental differences in cognitive diatheses for child depression. *Journal of Abnormal Child Psychology*. 1994; 22:15–32. [PubMed: 8163773]
- Weiner, B.; Graham, S. Attribution and personality psychology. In: Pervin, LA.; Oliver, JP., editors. *Handbook of personality: Theory and research*. 2nd. Guilford Press; New York: 1999. p. 605-628.
- West, SG.; Finch, JF.; Curran, PJ. Structural equation models with nonnormal variables: problems and remedies. In: Hoyle, RH., editor. *Structural equation modeling: issues, concepts, and applications*. Sage; Thousand Oaks, CA: 1995. p. 56-75.
- Zuroff, DC.; Santor, DA.; Mongrain, M. Dependency, self-criticism, and maladjustment. In: Auerbach, JS.; Levy, KJ.; Schaffer, CE., editors. *Relatedness, self-definition and mental representation: Essays in honor of Sidney J. Blatt*. Brunner-Routledge; London: 2004. p. 75-90.

Figure 1.
Predicted effects of fluctuations in hassles on depressive symptoms as a function of social self-efficacy beliefs

Table 1

Percentages of Parental Education and Parental Occupation

Parental Education			Parental Occupation		
	Fathers	Mothers		Fathers	Mothers
No schooling completed	1.5%	1.8%	Blue-collar workers	46.3%	18.9%
5 th grade degree (10-11 years old)	2.2%	0.9%	White-collar workers	26.1%	36.3%
8 th grade degree (13-14 years old)	37.7%	24.6%	Freelance workers	19.1%	8.4%
High school degree	48.4%	59.5%	Teachers or professors	0.9%	5.3%
University degree	10.2%	13.2%	Managers	3.5%	0.5%
			Housewives	-	19.0%
			Unemployed	0.8%	2.4%
			Other jobs	3.3%	9.2%

Table 2

Descriptive Statistics by Time-Point

Measure	Time 1		Time 2		Time 3		Time 4	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Depressive symptoms	9.55	(6.40)	8.09	(6.44)	7.82	(7.05)	7.49	(6.94)
Hassles	35.25	(18.55)	32.67	(19.65)	31.95	(20.55)	30.23	(19.28)
Cognitive Style - Consequences	17.18	(6.81)						
Cognitive Style - Self	10.91	(4.61)						
Academic Self-efficacy Beliefs	49.14	(8.78)						
Social Self-efficacy Beliefs	22.22	(4.36)						

Note: *M* = mean; *SD* = Standard Deviation

Table 3
Bivariate Correlations among Cognitive Style and Self-Efficacy Beliefs at Time 1, and Hassles and Depression at all Time-Point

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Cognitive Style - Consequences	.44***	-.11*	-.07	.25***	.26***	.22***	.24***	.16**	.16***	.15**	.19***
2. Cognitive Style - Self		-.14***	-.01	.26***	.23***	.19***	.19***	.29***	.24***	.18***	.18***
3. Academic Self-Efficacy Beliefs			.58***	-.37***	-.25***	-.23***	-.23***	-.24***	-.17***	-.15**	-.11*
4. Social Self-Efficacy Beliefs				-.32***	-.23***	-.15**	-.15**	-.12**	-.10*	.01	-.02
5. Depressive symptoms at Time 1					.59***	.42***	.49***	.38***	.26***	.18***	.16***
6. Depressive symptoms at Time 2						.67***	.62***	.36***	.39***	.29***	.26***
7. Depressive symptoms at Time 3							.70***	.31***	.28***	.34***	.24***
8. Depressive symptoms at Time 4								.29***	.27***	.31***	.29***
9. Hassles at Time 1									.61***	.44***	.35***
10. Hassles at Time 2										.59***	.50***
11. Hassles at Time 3											.61***
12. Hassles at Time 4											

Note:

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 4

Model Predicting Depression Scores

Fixed Effects	<i>b</i>	<i>SE</i>	<i>F</i>
Intercept	9.48	0.40	555.18***
Between-subject			
Male	−0.65	0.42	2.39
In second grade	−0.38	0.44	0.77
CSC at baseline	1.03	0.23	19.83***
CSS at baseline	0.23	0.24	0.96
Average of Hassles score	1.84	0.23	65.90***
ASEB at baseline	−1.03	0.26	15.45***
SSEB at baseline	−0.68	0.26	6.74*
Time-varying			
Fluctuations in Hassles	0.66	0.11	35.22***
Time	−0.33	0.05	43.02***
Between-subject by Time-varying interactions			
CSC at baseline × Fluctuations in Hassles	0.17	0.12	1.99
CSS at baseline × Fluctuations in Hassles	0.06	0.12	0.20
ASEB at baseline × Fluctuations in Hassles	0.00	0.13	0.00
SSEB at baseline × Fluctuations in Hassles	−0.25	0.13	4.04*
Random Effects			
	<i>Parameter</i>	<i>SE</i>	<i>Z</i>
Intercept	13.70	1.53	8.95***
Fluctuations in Hassles	0.69	0.25	2.76**
Time	0.23	0.07	3.36**
Covariance Structure Parameters			
	<i>Parameter</i>	<i>SE</i>	<i>Z</i>
AR1 diagonal	13.96	1.23	11.33***
AR1 p	0.18	0.07	2.73**

Note: CSC: Cognitive Style - Consequences; CSS: Cognitive Style - Self; ASEB: Academic Self-Efficacy Beliefs; SSEB: Social Self-Efficacy Beliefs. AR1: first-order autoregressive.

*
 $p < .05$;

**
 $p < .01$;

 $p < .001$