Understanding the Roles of Appraisal and Coping in the Presence of Cumulative Risk: Tests of Mediating and Moderating Effects

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Abstract

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Concurrent and longitudinal relations among appraisal, coping, cumulative risk, and adjustment were examined using a community sample (N=316) of children in preadolescence (8-12 years old) representing the full range of income. Path analyses were used to test direct effects of appraisal and coping on adjustment and mediating and moderating effects of appraisal and coping of the relation of cumulative risk to adjustment. Threat appraisal and avoidant coping were hypothesized to mediate the effects of cumulative risk on child adjustment, whereas positive appraisal and active coping were hypothesized to moderate the relation of cumulative risk with adjustment. Rank order changes in appraisal and coping predicted rank order changes in adjustment. Concurrent cumulative risk was related to higher threat appraisal and avoidant coping at each time point. Threat appraisal and avoidant coping mediated the relations of cumulative risk to adjustment. There was little support for moderation. The development of appraisal and coping and their significance to children's adjustment within the context of cumulative risk are discussed.

Child development occurs within multiple contexts and is effected by factors at many levels, including individual, interpersonal, and environmental domains (Bronfenbrenner, 1979). Risk factors can emerge from any domain and adjustment has been found to be a function of the number of risk factors present (Sameroff & Seifer, 1990). The conceptualization of risk as being dose dependent maps onto the concept of multiple or "cumulative" risk, which proposes an additive effect of risk factors, that is, the greater the number of risk factors present, the greater the likelihood children will demonstrate adjustment problems. Simultaneously, the bioecological model contends that individual characteristics filter the experience of risk. Children's appraisal and coping may be important avenues through which children may mitigate the impact of ecological stressors. Associations of appraisal and coping with child adjustment have been established (e.g. Eisenberg et al., 2000; Gamble, 1994), and studies have investigated their effects in relation to stressors such as parental divorce (Sandler, Kim-Bae, & MacKinnon, 2000) and poverty related stresses of economic strain and family conflict (Wadsworth & Berger, 1996).

However, the roles of appraisal and coping in the relation between cumulative risk and adjustment have not been studied. Further, little is known about how the experiences of risk, or cumulative risk in particular, might shape children's appraisal and coping styles. This study sought to examine the roles of appraisal and coping in children's experiences of cumulative risk, testing whether they operated as mediators or moderators of risk. Further, the study tested whether exposure to cumulative risk predicted changes in appraisal and coping over time. These relations were tested using longitudinal data and a developmental model to determine whether a) cumulative risk shapes appraisal and coping to be more or less adaptive, and b) appraisal and coping mitigate the effects of cumulative risk on children's adjustment (see Figures 1). Such research is important given that child positive appraisals and adaptive forms of coping are

promotable processes that can be the target of preventive interventions for children experiencing multiple-risk contexts, potentially mitigating the detrimental effects of such contexts. Maladaptive appraisal and coping styles, on the other hand, may engender adjustment problems, and therefore, reflect targets for corrective intervention.

Cumulative risk

Studies of multiple risk factors indicate that an increase in the number of risk factors experienced by a child results in an increased likelihood of that child developing adjustment problems (Rutter, 1979). Therefore, in predicting children's psychological adjustment, it is important to consider the effects of multiple risk factors within a theoretical model. Several studies have affirmed the need to consider risk factors across demographic, psychosocial, and environmental arenas, as multi-factor risk indexes are able to better predict child adjustment and reflect effects that could not be accounted for by any particular subset of the risk factors (Greenberg et al., 1999; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). The present study conceptualized risk in a cumulative fashion, including measures of single parent status, adolescent parenthood, number of children in the family, number of family moves in the previous three years, parental depression and history of mental health, substance use, and legal problems within a cumulative risk composite. Given that poverty and low-income status are often associated with many of these risk factors (e.g. Deater-Deckard, Dodge, Bates, & Pettit, 1998; Duncan, Brooks-Gunn, & Klebanov, 1994; Evans, 2004) we sampled evenly across all income groups to obtain a range of number of risk factors experienced and afford a robust test of the effects of cumulative risk.

Appraisal & Coping

A crucial component of a stressful event is an individual's appraisal that the event is in fact stressful or in the words of Lazarus and Folkman (1984, p. 19), that the event is "taxing or exceeding his or her resources and endangering his or her wellbeing." A stressful event may be a loss, where a stressful event has already occurred, a threat, where there is an anticipation of harm in the future, or a challenge, where an event, although stressful, presents the possibility of positive outcome. In addition, individuals evaluate whether they have the resources to deal with a stressor. Therefore, in this study, we examined threat appraisals, assessed as critical self-judgments, rejection, and criticism appraisals, and positive appraisals, which included viewing the stressor as a challenge and viewing oneself as having the resources to deal with it. Positive appraisal was expected to build a sense of agency, mastery, and personal growth.

Appraisal has been linked with a myriad of positive and negative adjustment outcomes. The tendency to appraise events negatively or as threats has been related to increased child adjustment difficulties including psychological distress, depression, anxiety, and conduct and adjustment problems (e.g. Gamble, 1994; Grych & Finchman, 1990; Lengua, Sandler, West, Wolchik, & Curran, 1999; Sheets, Sandler, & West, 1996). Children who have higher threat appraisals are more likely to have heightened cardiovascular reactivity (El Sheikh & Harger, 2001). In contrast, children who report life events as positive or endorse positive appraisals have been found to have fewer internalizing and externalizing problems (Jackson & Warren, 2000; Lengua & Long, 2002). Relatedly, lower self-efficacy has been found to predict adjustment problems and less positive functioning (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Cowen et al., 1991; Hoeltje, Zubrick, SIlburn, & Garton, 1996). More complex models have found threat appraisals to moderate the relation between children's divorce related stress and adjustment (Mazur, Wolchick, Virdin, Sandler, & West, 1999) and to mediate the relation

between interpersonal conflict and children's internalizing symptoms (Grych, Finchman, Jouriles, & McDonald, 2000). Given the consistent associations observed between children's appraisals and adjustment, we examined threat and positive appraisals as predictors of children's adjustment problems and positive adjustment.

Coping has been generally defined as the "cognitive and behavioral efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984). It has been more recently defined as conscious volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stress (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Coping strategies have been conceptualized in a number of ways, including a delineation between emotion-focused coping and problem-focused forms of coping (Band & Weisz, 1988; Lazarus & Folkman, 1984; Menaghan, 1983) and primary versus secondary control models of coping (Rothbaum, Weisz, & Snyder, 1982). However, across the conceptualizations there is a general consensus that coping can be differentiated between active and avoidant strategies (Compas, 1998). Active coping approaches are problem focused and involve thinking about solving the problem or thinking more positively about the problem. Avoidant coping strategies involve trying to stay away from the problem or repressing thoughts about it. Therefore, the active and avoidant coping distinction encompasses both emotion and problem/cognition based coping strategies. Individuals can approach a stressor with active coping by effortfully seeking to deal with or change a situation or how they think about (cognitive structure) or react to (emotional response) the stressor. Overall, active coping strategies are related to lower levels of psychological symptoms and higher self-esteem (Ayers, Sandler, West, & Roosa, 1996; Eisenberg, et al., 2000; Sandler, Tien, & West, 1994). These relations are consistent with

research linking problem solving strategies and more favorable adjustment (Causey & Dubow, 1992; Compas, Malcarne, & Fondacaro, 1988; Ebata & Moos, 1991). Alternatively, individuals can avoid dealing with a stressor by trying to stay away from a problem, using wishful thinking or repressing thoughts about it. Studies have found avoidant strategies to be related to higher levels of internalizing and externalizing problems (Causey & Dubow, 1992; Eisenberg, et al., 2000). There is some research to support differential relations between coping and adjustment among certain stressors or contexts. Active coping has been found to predict positive adjustment outcomes when coping with controllable but not uncontrollable events among college students (Valentiner, Holahan, & Moos, 1994). Within the context of at-risk urban youth, avoidant coping was found to interact with the level of family stress in predicting adjustment. Avoidant coping was found to be positively associated with depression and poor grades at low levels of stress, conforming to the conventional relationship between higher avoidant coping and greater adjustment problems. However, as the level of stress increased, high levels of avoidant coping predicted fewer adjustment problems and better grades when compared to the adjustment and grades of children employing low levels of avoidant coping (Gonzales, Tein, Sandler, & Friedman, 2002). This finding suggests that at high levels of exposure to certain risk factorss, there may be differential relations between coping strategies and adjustment. The present study examined active and avoidant coping styles as potential mediators and moderators of the relations of cumulative risk to children's positive adjustment and adjustment problems.

Cumulative Risk & Appraisal

Research supports an association between cumulative risk and appraisal. Cumulative risk has been related to lower perceptions of self worth and higher learned helpless behavior among children (Evans, 2003). Evans proposed that the lives of children at high levels of cumulative

risk can be characterized by a quality of uncontrollability, which in turn has been found to threaten feelings of mastery and control and promote helpless behaviors (Landis et al., 2007; Petterson & Albers, 2001; Repetti, Taylor, & Seeman, 2002). Living in undesirable environments increases one's sense of danger, which in turn contributes to children becoming vigilant and predisposed to making threat interpretations, particularly in ambiguous situations (Taylor & Shumaker, 1990; Wandersman & Nation, 1998). In a study of socioeconomic status and stress interpretations in adolescents, Chen and colleagues (2004) found lower SES to be associated with greater threat interpretations in ambiguous situations.

Threat appraisals appear to mediate the relation between risk and adjustment. In a prospective longitudinal study, threat appraisals mediated the relation between interparental conflict and child adjustment (Grych, Harold, & Miles, 2003). Similarly, threat appraisals have been found to partially mediate the relation between SES and heart rate reactivity (Chen, et al., 2004). Thus, we expected that cumulative risk would predict increases in threat appraisals over time, and in turn, threat appraisal would mediate the relation between cumulative risk and adjustment problems.

While we expected threat appraisals would be shaped by cumulative risk exposure and mediate the relation between risk and adjustment, positive appraisals were hypothesized operate differently. There is some research to suggest dispositional self-efficacy drives positive appraisal (Jerusalem & Schwarzer, 1992). Further, it has been theorized that individuals with strong personality hardiness may be so rich in coping resources that they are relatively unaffected by environmental influences that would be overwhelming to others (Hobfoll, 1989) and that individuals high in temperamental positive emotionality might engender consistently higher levels of positive appraisal (Lengua & Long, 2002). Therefore, we hypothesized that positive

appraisal might mitigate the impact of cumulative risk, moderating the relation between risk and adjustment, but not necessarily be shaped by cumulative risk over time.

Cumulative Risk & Coping

Longitudinal relations between cumulative risk and coping have not been previously examined. However, existing studies have examined the relations of risk factors often included in cumulative risk composites to coping. For example, research suggests that, in the face of contextual risk factors such as chronic economic strain, adolescents are less likely to engage in active coping and more likely to rely upon avoidant coping (Wadsworth & Compas, 2002). Chronic family economic stress has been associated with the use of fewer problem solving and emotional regulation strategies (Wadsworth & Berger, 2006) and greater use of avoidant strategies such as withdrawal (Seiffge-Krenke, 2000).

Caregiver characteristics have been found to relate to coping. Adolescents exposed to community violence are more likely to report using problem-focused coping strategies if their caregiver had a higher educational status (Kliewer et al., 2006). Adolescents who endorsed high levels of avoidant coping techniques were more likely to have caregivers who modeled avoidance coping in response to stressful events. Both factors, avoidant coping among adolescents and caregivers that modeled avoidant coping, were correlated with maternal depressive symptoms (Kliewer, et al., 2006).

Parental depression and its correlates have been associated with adolescent's involuntary disengagement (i.e. escape or inaction), similar to avoidance. Further, parental withdrawal was found to relate to the decreased use of primary control and secondary control coping (i.e. problem solving and cognitive restructuring approximating active coping) and increased use of involuntary disengagement. Parental intrusiveness and irritability, behaviors that are often

associated with parental depression, have been found to be negatively associated with adolescent's use of secondary control coping and positively related with the use of disengagement coping such as avoidance and denial (Jaser et al., 2005).

Evidence regarding whether coping operates as a moderator or mediator of the effects of risk has been equivocal, with suggestions that coping is more appropriately conceptualized as a moderator than a mediator (Holmbeck, 1997) as well as the converse (Compas, Connor, Saltzman, Thomsen, & Wadsworth, 1999). Studies with competing models have favored both moderation (Lewis & Kliewer, 1996) and mediation (Wadsworth & Compas, 2002; Wadsworth, Raviv, Compas, & Connor-Smith, 2005). Studies testing a single model have found coping to act as a moderator (Cronkite & Moos, 1984; Rogers & Holmbeck, 1997), while other studies have found coping to mediate the relation between stress and adjustment (Pearlin, Menaghan, Lieberman, & Mullan, 1981; Shapiro & Levendosky, 1999). Given the research that reasoning and logical decision making ability, capacities which underlie problem solving and active coping (Gerard & Buehler, 2004) have been found to moderate the association of cumulative adversity and psychopathology, we expect active coping to moderate the effects of cumulative risk. Simultaneously, stress is known to reduce the attentional resources of an individual. Matthews and Wells (1996) linked this stress induced "attentional dysfunction" to a bias toward the use of ineffective coping strategies such as avoidance. As such, cumulative risk is expected to shape the use of avoidant coping strategies, which in turn, will mediate the relation between risk and adjustment. Therefore, we adopt the conceptualization outlined by Wheaton (1985) and supported in the research of Sandler and colleagues (1994) in which active coping moderates the relation between risk and adjustment and avoidant coping mediates this relation.

Development of Appraisal and Coping

Given hypotheses that cumulative risk would predict increases in threat appraisal and avoidant coping, it is useful to consider evidence regarding the development of appraisal and coping, particularly during the transition from middle childhood to adolescence. Developmental changes in cognitive processing, metacognitive skills, planning, and agency may contribute to developmental changes in appraisal and coping (Band & Weisz, 1990; Kopp, 1989; Seiffge-Krenke, Aunola, & Nurmi, 2009). In particular, developmental increases in the ability to understanding one's internal state coupled with the increased ability to regulate emotions are thought to influence the utilization of coping (Eisenberg, Fabes, & Guthrie, 1997). Although no longitudinal or developmental study of child appraisals was found, appraisals can be expected to be impacted by these same developmental processes. With regard to coping, studies and literature reviews of coping in preadolescence and adolescence point to a general increase in active coping approaches (Ebata & Moos, 1994; Skinner & Zimmer-Gembeck, 2007), with mixed findings about the reliance of avoidant strategies (Ebata & Moos, 1994; Lengua & Long, 2002; Skinner & Zimmer-Gembeck, 2007).

There is some evidence to suggest that while coping is malleable during childhood, it becomes more stable and trait-like in adulthood (Wadsworth, et al., 2005). Recent models of coping such as the Responses to Stress Model (Compas, et al., 1999) acknowledge stability in coping via stable characteristics of temperament, personality, and stable aspects of the environment. Similarly, stable personality characteristics have been proposed to contribute stability of appraisal processes (Hobfoll, 1989; Jerusalem & Schwarzer, 1992; Lengua & Long, 2002). With regard to stable aspects of the environment, the persistent and pervasive adversity faced by children experiencing high levels of cumulative risk may shape and promote stable coping responses. Research supports stability of appraisal among at-risk children (Grych, et al.,

2003; Sheets, et al., 1996) and continuity in coping responses to poverty related stressors (Wadsworth & Berger, 1996). Given the potential for developmental and environmental influences on coping, age effects and the consistency of coping and appraisal strategies were examined.

This Study

This study sought to test the association of cumulative risk with appraisal and coping, with specific hypotheses about when appraisal and coping would operate as mediators or moderators of the relation between risk and adjustment. Specifically, we hypothesized that positive appraisal and active coping would moderate the effects of cumulative risk, mitigating its relation to adjustment, whereas threat appraisal and avoidant coping would increase in the presence of cumulative risk, predict greater adjustment problems and less positive adjustment, and mediate the association between cumulative risk and adjustment. We tested these associations in community sample of preadolescent children who were recruited to represent the full range of family income and using longitudinal modeling to allow tests of relative changes in appraisal and coping over time.

Method

Participants

Participants were a community-based sample of 316 children and their mothers who were assessed during in-home interviews at three time points, each separated by one year. Time 1 interviews began when child participants were in the 3rd through 5th grades (mean age, M = 9.6 years, range = 7.8 – 12 years). Participants were recruited through children's public school classrooms. Schools were selected to represent a variety of sociodemographic characteristics of the Pacific Northwest urban area. Children with developmental disabilities (except learning

disabilities) and families who were not fluent in English were excluded from the study to ensure adequate comprehension of the questionnaire measures. A female primary caregiver was required to participate. Seventy-two percent of families consisted of two-parent households.

Annual family income was evenly distributed with approximately 12% less than $20,000; 23% $21,000 to $40,000; 18% $41,000 to $60,000; 14% $61,000 to $80,000; 16% $81,000 to $100,000, and 17% over $100,000. Mothers' modal level of educational attainment was college/university graduate, and ranged from 9 individuals with less than a high school diploma to 20 individuals with advanced degrees. The sample included 29% African American, 2% Asian/Pacific Islander, 59% European/White, 2% Hispanic, 1% Native American, and 7% multiple or other ethnicities.

Procedures

Structured 2.5-hour interviews were conducted in the family's home during which questionnaire measures were administered. Home-based interviews were used in order to encourage the participation of difficult-to-recruit families. After confidentiality was explained, mothers signed informed consent forms, and children signed assent forms. The assent forms indicated that children's responses would not be shared with their mothers unless there was concern about child safety (i.e., high level of depression, suicidal ideation, or child abuse). Mother and child participants were individually interviewed (in separate rooms whenever possible) by trained interviewers. During the interviews, questionnaire measures were administered orally, with the interviewers reading instructions and all items on the questionnaires to the participants in order to minimize errors in interpretation and address potential problems with literacy in parents and children. Dyads were scheduled for their subsequent assessments approximately one year after the initial assessment. Families received $40 compensation for participating at Time 1,

with the compensation increasing by $10 each additional year the families participated.

Measures

When both mother and child reports on a measure were available, a cross-reporter measure was created to partially address the impact of shared method variance and reporter bias on the observed associations. This reduced the number of statistical tests conducted. There are some limitations to this approach, including the modest correlations across reports and loss of information about mothers' and children's differing perspectives. Another possible approach would have been to select the ''best'' reporter for each construct. However, in most cases, there was little empirical information to guide such decisions. Thus, taking the benefits and limitations into account, the option of combining reporters was viewed as a reasonable approach. Descriptive statistics for variables included in this study are presented in Table 1.

Cumulative Risk

Cumulative risk consisted of 11 indices designed to represent demographic, psychosocial, and environmental risk factors. Demographic risk factors included educational risk (mother's who had not completed high school), poverty (families at or below the 1998 federal Health and Human Services Poverty Guidelines—a function of income and family size), single-parent status, adolescent parent status (mother less than 19 at the target child's birth), racial or ethnic minority status, and family density (the ratio of number of people in the home to the number of rooms in the home).

Psychosocial risk factors included negative life events, maternal depression, and family history of problems. Negative life events were assessed using mother and child report on the General Life Events Schedule for Children (Sandler, Ramirez, & Reynolds, 1986). Mothers and children reported on the number of negative life events that had occurred over the previous year.

The negative life events score was the average of mother and child report. Mothers reported on their depression over the previous month using the 20-item Center for Epidemiological Studies-Depression Scale (Radloff, 1977). Internal consistency for the depression scale was .84, .82, and .90 across the time points.

Environmental risk factors included the quality of the home environment and the quality of the neighborhood environment. The quality of the home environment was assessed using interview ratings on the Post-Visit Inventory (PVI; Dodge, Bates, & Pettit, 1990). The PVI was completed by both the mother and the child and assesses the cleanliness, safety, amenities, and size of the house. Internal consistency for mother report of quality of the home was .74, .69, and .64 across time points. Internal consistency for child report was .72, .70, and .66 across time points. A scale was calculated as the mean of the items on the scale, and risk scores were the average of both interviewers' scale scores. Neighborhood conditions were assessed by parent report on the Neighborhood Questionnaire (NQ), which assesses neighborhoods safety, social involvement, and services (Conduct Problems Prevention Research Group, 1995), and interviewer ratings on the PVI, which assesses the apparent safety of the neighborhood. Internal consistency for the NQ was .76, .79, and .77. and for the PVI was .76, .69, and .68 across time points. Risk scores were the average of the standardized NQ and PVI Scores (Greenberg, et al., 1999).

While indices of cumulative risk have been organized as demographic, psychosocial, and environmental risk factors, it should be noted that the concept of cumulative risk rests on the additive nature of risk factors. The cumulative risk score was calculated as the sum of the 11 standardized risk indicators with higher scores reflected greater exposure to risk.

Threat appraisal

Threat appraisal style was measured using an adaptation of the 24-item ‘‘What I Felt Scale’’ (Sheets, et al., 1996). The scale assesses six dimensions of negative thoughts about life events (four items each): negative self-evaluation, negative evaluation by others, rejection, criticism of others, harm to others, loss of desired objects or activities. For this study, children were prompted to think about three of the ‘‘biggest problems’’ they have had during the past month and rate how much they thought each of the thoughts when thinking about their problems (0 = not at all to 3 = most of the time). Problems children generated included stressors ranging from moderate (e.g., sibling, family, peer, and school-related problems) to major life events (e.g., move, parents' separation, and death of a loved one). The measure of threat appraisal style was the mean-weighted sum of the items across the six threat dimensions, and the internal consistency reliability was .88, .88, and .83 across time points.

Positive appraisal

Challenge and resource appraisal styles were measured using a scale written for this study. The format of the items and scale is parallel to that of the threat appraisal measure. Seven items assessed challenge appraisals, that is, children's appraisal that they can cope with their problems (e.g. "You thought that you would be able to figure the problem out") and six items assessed resource appraisals, that is, children's appraisal that they had resources to bring to bear on the problem (e.g. "You thought about all the people and things in your life that could help with the situation"). Children rated how much they thought each of the thoughts when thinking about their problems (0 = not at all to 3 = most of the time). The internal consistency for the challenge and resource appraisal subscales were .66, .69, .79 and .74, .73, .78, respectively, for time 1-3. The subscales were correlated .76, .75, and .83 within each time point. A total positive

appraisal style subscale was calculated as the mean-weighted sum of the 13 items on the scale, and the internal consistency was .83, .84, and .89 across time points.

Coping styles

Coping styles were assessed using the Children's Coping Strategies Checklist (CCSC; Ayers, et al., 1996). Children rated how often they used each coping behavior when they had a problem during the previous month using a four-point Likert scale (0 = *not at all*, 1 = *sometimes*, 2 = often, and 3 = *most of the time*. Previous studies have shown that the coping dimensions factored into four domains: active strategies (cognitive decision making, control, direct problem solving, positive cognitive restructuring, optimism, seeking understanding), avoidant strategies (cognitive avoidance, avoidant actions), distraction strategies (distracting actions, physical release of emotions), and support seeking strategies (problem-focused support, emotion focused support; Ayers et al., 1996; Sandler et al., 1994). The dimensions of active and avoidant coping were used in the present study because of their relation to adjustment symptoms. The reliabilities for time 1 – 3 active and avoidant coping were .88, .89, .92 and .76, .82, .86 respectively.

Child Adjustment

Both mother and child report of adjustment problems and positive adjustment were obtained. Mothers reported on children's adjustment problems using the Child Behavior Checklist (Achenbach, 1991). The total problems score, which combined internalizing and externalizing problems, was used. The internal consistency for the present sample was .85, .88, and .86 for mother's report across time points. Children reported on their own depression and conduct problems. Depression was assessed using the 27-item Child Depression Inventory (CDI; Kovacs, 1981). Child-report conduct problems were assessed using the delinquent and aggressive behavior subscales (28 items) of the Youth Self Report (YSR; Achenbach, 1991). A

child-report total problems score was calculated as the sum of CDI and YSR scores (the items from both measures are scored on 0 to 2 response scale, and both have roughly the same number of items). The α for this composite child-report total problems scale was .84, .83, and .88 across time points.

Positive adjustment included measures of social competence and internal well-being. Social competence was assessed using mother and child report of the 34-item Social Skills Rating Scale (SSRS; Gresham & Elliot, 1980)) which assesses cooperation, assertion, responsibility, empathy, and self-control. The α's for the SSRS were .72, .75, and .76 across time points. Children reported on their own self- worth using the global self-worth subscale of the Perceived Competence Scale for Children (Harter, 1982), which assess the extent to which children are happy with the way they are leading their lives, are generally happy with the way they are, and like themselves. The α's for the scale were .70, .71, and .71 across time points. Children reported on a life satisfaction measure, which was adapted from the 11-item general positive affect scale of the Mental Health Inventory (Veit & Ware, 1983). Items were reworded with age-appropriate language for the use in this study. Questions included, "During the past month, how often have you felt hat the future looks hopeful and promising?" The α's for this sample were .81, .88, and .89, suggesting reasonable reliability for this scale when used with children 8 to 14 years of age. A child self report positive adjustment score was calculated as the sum of the standardized child-report social competence, global self- worth, and life satisfaction scales. The α's for this combined scale were .62, .89, and .92 across time points.

Mother and child reports of the dimensions were combined by averaging the standardized mother- and child-report scores. Mother- and child-report total problems scores were correlated .29, .20, and .30. The composite α for the two measures of total problems combined across

reporter was .63, .59, and .67. Mother- and child-report positive adjustment scores were correlated .30, .37, and .42. The composite α's for the measure of positive adjustment combined across reporter were .63, .63, and .65.

Results

Analytic plan

First, correlations among the study variables were examined to identify covariates and assess the plausibility of the hypothesized associations. Next, path analyses were conducted to test the mediating and moderating effects of appraisal and coping in the relation of cumulative risk to adjustment. We tested whether a) cumulative risk predicted relative changes in appraisal and coping over time, b) whether appraisal and coping mediated the concurrent effects of cumulative risk on adjustment problems and positive adjustment, and c) whether appraisal and coping moderated the concurrent relation between cumulative risk and adjustment. The hypothesized relations among cumulative risk, appraisal, coping, positive adjustment, and adjustment problems were tested via path models with maximum likelihood estimation in Mplus 6.11 (Muthén & Muthén, 2010). Separate models were tested for appraisal and coping, and for positive adjustment and adjustment problems, resulting in four models. For each model, cumulative risk and appraisal/coping were concurrent predictors of adjustment at each time point, and interaction terms between concurrent measures of appraisal/coping and cumulative risk were included as predictors of the adjustment outcomes. To evaluate the appraisal and coping variables as potential mediators, an indirect path between risk, through appraisal/coping, predicting adjustment, was tested. Further, to examine how risk predicted changes in appraisal and coping, we examined if concurrent and prior cumulative risk predicted appraisal/coping

controlling for prior levels of appraisal/coping. See Figure 1 for a visual representation of the model.

Correlations among study variables

Correlations among the study variables are presented in Table 1. First we examined the correlations to identify potential covariates. Children's sex was significantly associated with all adjustment measures, with boys exhibiting higher levels of problems and lower levels of positive adjustment. Sex was included as covariates in models predicting adjustment. Age differences in appraisal and coping were generally not supported. Of the appraisal and coping measures, avoidant coping was the only measure associated with child age. There was a significant correlation between avoidant coping and age at the first and third time points, with older children endorsing less avoidant coping. Age was covaried in the prediction of appraisal and coping.

Appraisal and coping were moderately stable across time points, suggesting the potential to explain rank order changes over time. Cumulative risk was consistently positively associated with threat appraisal and avoidant coping. In turn, threat appraisal and avoidant coping were related to higher adjustment problems and lower positive adjustment, consistent with the possibility that threat appraisal and avoidant coping might mediate the relation between risk and adjustment. Cumulative risk was largely unrelated to positive appraisal and active coping. Positive appraisal and active coping were not related to adjustment problems. However, they were related to higher positive adjustment. This pattern was consistent with the possibility that positive appraisal and active coping might moderate the relation between cumulative risk and adjustment. The pattern of correlations suggested possible specificity in the associations of positive appraisal, threat appraisal, active and avoidant coping with adjustment problems and positive adjustment.

Cumulative risk as a predictor of appraisal and coping

In the path models, we examined if cumulative risk predicted relative changes in children's appraisal and coping by examining both concurrent and prospective effects of cumulative risk on T2 and T3 appraisal and coping after controlling for prior levels of appraisal or coping (see Table 3). Concurrent levels of cumulative risk predicted threat appraisal at T2 and T3 and avoidant coping at T3 above the effects of prior levels of risk and prior levels of appraisal or coping. Cumulative risk was unrelated to changes in positive appraisal and active coping, and prior levels of cumulative risk were unrelated to rank-order changes in appraisal and coping.

Direct effects of cumulative risk, appraisal and coping

At all three time points, cumulative risk was related to higher adjustment problems and lower positive adjustment, after controlling for prior adjustment levels, suggesting that cumulative risk was related to relative changes in adjustment. In addition, at each time point, positive appraisal and active coping predicted lower adjustment problems (except positive appraisal at T2) and higher positive adjustment. Also at each time point, threat appraisal and avoidant coping predicted higher adjustment problems and lower positive adjustment. Note that all of the associations at T2 and T3 involve appraisal and coping variables residualized on prior levels of those variables. Thus, it suggests that rank order changes in appraisal and coping predict rank order changes in adjustment.

Appraisal and coping as mediators of the effects of cumulative risk

In support of mediation and congruent with expectations, there were several significant indirect effect of cumulative risk on adjustment through threat appraisal and avoidant coping. There was an indirect effect of T1 cumulative risk on T2 adjustment problems ($\beta = 0.06$, $p < .001$) and positive adjustment ($\beta = -0.04$, $p < .001$) through T1 and T2 threat appraisal. T1

cumulative risk also predicted T2 adjustment problems through T2 threat appraisal (β = -0.13, *p* = .01). This pattern of indirect effects was repeated at the subsequent time point, in which there was a significant indirect effect of T2 cumulative risk on T3 adjustment problems (β = 0.05, *p* = .01) and a trend toward an effect on positive adjustment (β = -0.03, *p* = .06) through T2 and T3 threat appraisal. The indirect effect of T1 cumulative risk on adjustment problems through T2 cumulative risk and T2 threat appraisal was significant (β = 0.08, *p* = .01), and a significant effect of this same indirect effect on positive adjustment (β = -0.05, *p* = .05). Again, the pattern was consistent across time, with significant indirect effects of T2 cumulative risk on T3 adjustment problems (β = 0.07, *p* = .02) and positive adjustment (β = -0.05, *p* = .05) through T3 cumulative risk and T3 threat appraisal.

There was additional support for mediation of the effect of cumulative risk on adjustment through avoidant coping. The indirect effects of T1 cumulative risk on T2 adjustment problems (β = 0.02, *p* = .02) and positive adjustment (β = -0.04, *p* = .05) through T1 avoidant coping and T2 avoidant coping were significant. There were also significant indirect effects of T2 cumulative risk on T3 adjustment problems (β = 0.05, *p* = .02) and positive adjustment (β = -0.04, *p* = .05) through T3 cumulative risk and T3 avoidant coping. There was no evidence of mediation for positive appraisal or active coping, indicating that these variables were not accounting for the effects of cumulative risk on adjustment.

Appraisal and coping as moderators of the effects of cumulative risk

There were few significant interaction effects, providing little support for the hypotheses that positive appraisal and active coping would moderate the relation between cumulative risk and adjustment. In addition, the significant interactions were not consistent across time. At T2 there was a significant interaction between cumulative risk and threat appraisal in predicating

positive adjustment that was not a hypothesized interaction (see Figure 2). At low levels of threat appraisal, cumulative risk was unrelated to positive adjustment. However, for children high in threat appraisal, cumulative risk was negatively related to positive adjustment, and children high in threat appraisal had lower positive adjustment when cumulative risk was high. At T3 there was a significant interaction between cumulative risk and positive appraisal predicting positive adjustment that was consistent with hypotheses (see Figure 3). Cumulative risk was negatively associated with positive adjustment at all levels of positive appraisal but the association was stronger for children with low positive appraisal, suggesting that low positive appraisal exacerbates the effects of cumulative risk.

Discussion

This study examined the role of appraisal and coping in the relation between cumulative risk and adjustment outcomes among children in preadolescence. It was expected that exposure to cumulative risk might increase children's use of threat appraisal and avoidant coping, which in turn would mediate the effects of cumulative risk on adjustment, whereas children's use of positive appraisal and active coping might mitigate the effects of cumulative risk. This study was unique in examining these associations across three time points to test whether relative changes in appraisal and coping accounted for relative changes in adjustment and to examine whether patterns of associations were consistent over time. There was consistent support for the mediating role of threat appraisal and avoidant coping, but little support for moderation by positive appraisal and active coping.

An important predictor of children's adjustment to risk lies in their appraisal and coping strategies to manage stressors. Our findings align with previous studies' finding that in general, greater use of positive appraisal predicts lower adjustment problems and higher positive

adjustment, whereas greater reliance on threat appraisal predicts higher adjustment problems and lower positive adjustment (e.g. Jackson & Warren, 2000; Lengua & Long, 2002; Sandler, et al., 2000). Again consistent with previous findings (e.g. Causey & Dubow, 1992; Eisenberg, et al., 2000; Sandler, et al., 1994), we found that more use of active coping predicted higher positive adjustment and lower adjustment problems, whereas greater use of avoidant coping predicted higher adjustment problems and lower positive adjustment. These patterns of relations were found longitudinally, when appraisal and coping variables had been residualized on prior levels of these variables. Therefore, rank order changes in children's appraisal and coping predicted rank order changes in adjustment within the one year interval between assessments. This finding underscores how critical appraisal and coping are to adjustment and highlights the potential benefit that may emerge from interventions that reduce maladaptive appraisal and coping in children. Appraisal and coping have a meaningful and immediate relation to adjustment.

While researchers have found cumulative risk to better predict adjustment than any single risk or subset of the risk factors (Greenberg, et al., 1999; Sameroff, et al., 1987), prior studies of appraisal and coping have generally focused on children's response to a single sources of stress (e.g. parental divorce and low income) and have not examined the relations among cumulative risk, appraisal and coping. It is conceivable that the accumulation of multiple risk factors and the burden of stress associated with these factors would have a role in shaping children's styles of coping. If the burden of stress associated with cumulative risk consistently taxes or overwhelms children's coping resources, children might resort to greater reliance on threat appraisals and avoidant coping. Indeed, the findings of this study support this hypothesis. Cumulative risk was related to higher threat appraisal and avoidant coping at each time point, concurrently predicting relative changes in threat appraisal and avoidant coping compared to the prior time point. These

findings support the proposed theories that living in stressful environments leads to a heightened vigilance and sense of danger, which in turn engenders increased threat interpretation (Chen, et al., 2004; Taylor & Shumaker, 1990), and that cumulative risk may lend to increased reliance on avoidant coping strategies in part through stress-induced attentional impairment that promotes a bias towards less cognitively taxing coping strategies such as avoidance (Matthews & Wells, 1996).

Not only did cumulative risk predict levels of threat appraisal and avoidant coping, threat appraisal and avoidant coping mediated the relations between cumulative risk and adjustment. These findings align with prior studies that have found threat appraisals or avoidant coping to mediate the relation between a single stressor and both biological and psychological indicators of adjustment (Chen, et al., 2004; Grych, et al., 2003; Sandler, et al., 1994). It is interesting to note that there were not prospective effects of cumulative risk on appraisal and coping. Rather, threat appraisal and avoidant coping were related to concurrent levels of risk, and their mediation of the relation between cumulative risk and subsequent adjustment was through their relation with subsequent levels of threat appraisal and avoidant coping. This might suggest the emergence of a style of threat appraisal or avoidant coping that is consistent over time and accounts for earlier effects of risk on later adjustment. On the other hand, the finding that prior levels of cumulative risks were unrelated to rank order changes in appraisal and coping could suggest that relative changes in appraisal and coping responses were specific to concurrent experiences of risk, and is inconsistent with the hypothesis that cumulative risk would shape appraisal and coping styles over time. More developmental research examining the factors that contribute to appraisal and coping styles in middle-childhood through early adulthood is needed to clarify the development of appraisal and coping styles.

There was little support for the hypotheses that positive appraisal and active coping would moderate the relation between cumulative risk and adjustment. There were few significant interaction effects, and the significant interactions were not consistent across time. We had proposed these moderated relationships based on research that reasoning and logical decision making, capacities which underlie active coping, have been previously shown to moderate the relation between cumulative risk and adjustment (Gerard & Buehler, 2004), as well as the thinking that positive appraisals are based on more stable, dispositional characteristics such as self-efficacy, hardiness and positive emotionality (Hobfoll, 1989; Jerusalem & Schwarzer, 1992; Lengua & Long, 2002). Given the extremely burdensome and taxing nature of cumulative risk, the relative absence of moderating effects may be explained by cumulative risk overwhelming buffering effects that might be present given exposure to a different risk experience. More research on adaptive appraisal and coping dimensions is needed to understand their potential protective effects.

In summary, appraisal, coping, and cumulative risk are important predictors of adjustment problems and positive adjustment in preadolescence. Further, relative changes in appraisal and coping accounted for relative changes in adjustment over time. Greater exposure to cumulative risk predicted more threat appraisal and coping. Threat appraisals and avoidant coping, in turn, were found to mediate the relation between cumulative risk and adjustment. Levels of threat appraisal and avoidant coping subsequent to cumulative risk mediated the relation between cumulative risk and subsequent adjustment, raising the possibility that by preadolescence, children in cumulative risk contexts may have developed a style of threat appraisal or avoidant coping that is consistent over time and accounts for earlier effects of risk on

later adjustment. The models did not support predicted moderated relations between positive appraisal, active coping and cumulative risk.

There are several strengths of the present study including the large, diverse community sample. This allowed sufficient power to detect effects, as well as the ability to draw inferences about the effects of risk, appraisal, and coping on preadolescence adjustment within communities. By virtue of being a community sample, severe adjustment problems were not common, as such, we may not be able to extend conclusions about the effects of appraisal and coping to clinical samples. The longitudinal study design allowed for us to explore if cumulative risk might have prospective effects child appraisals and coping over time. It additionally afforded us the ability to explore moderated and mediated relations, with the aim of identifying protective factors that might mitigate the effects of cumulative risk, as well as potential mechanisms shaped by cumulative risk and conferring its detrimental effects to adjustment. The very conceptualization of stress as cumulative, with sensitivity to the additive nature of stress is a particular design strength and a unique contribution to the literature. The focus on a preadolescence sample is an additional study strength, as this time is often recognized as a period in which children develop their resourcefulness, independence, and agency, that they will carry on into adolescence and later life.

There are several meaningful implications of this study, particularly with regard to our understanding of the development of appraisal and coping. This study was among the first to study children's appraisal and coping with cumulative risk longitudinally. Rank order changes in children's appraisal and coping predicted rank order changes in positive adjustment and adjustment problems, highlighting the importance of appraisal and coping to the understanding of adjustment within the context of cumulative risk. With regard to cumulative risk's role in

appraisal and coping processes, higher levels of cumulative risk were found to predict higher levels of threat appraisal and avoidant coping. However, prior levels of cumulative risk were unrelated to rank-order changes in appraisal and coping indicating that, in preadolescence, there was little evidence of risk shaping appraisal and coping style over time. Generally, cumulative risk did not predict children's positive appraisal and active coping, though these appraisal and coping processes were related to adjustment. As such, positive appraisal and active coping may serve as promotable child characteristics that can encourage general well-being, but they aren't specifically relevant to children experiencing cumulative risk.

The current study sought to elucidate the function of appraisal and coping in the context of cumulative risk, hypothesizing that threat appraisals and avoidant coping would be shaped by and confer the mal-effects of cumulative risk whereas positive appraisals and active coping would operate as protective buffers to the effects of cumulative risk. We sought to unpack the processes that confer maladjustment or promote resilience to children living in high-risk environments to point to potential targets for intervention. We found support for threat appraisal and avoidant coping mediating the effects of cumulative risk on adjustment, with the pattern of findings raising the possibility that already in preadolescence, children experiencing cumulative risk might have developed a consistent style of appraisal and coping that accounted for subsequent relations between cumulative risk and adjustment. Future studies should build upon this longitudinal work to identify developmental periods in which appraisal and coping styles might be most susceptible to environmental influences of risk to inform the timing of intervention efforts. The proposed moderated or buffering effects of positive appraisal and active coping were not supported. The general lack of support for these moderated relations may be

due to the burdensome and taxing nature of cumulative risk. Future studies should examine if the patterns of mediation and moderation vary as a function of the risk experienced.

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Table 1.
Descriptive statistics for variables included in this study

	Mean	*SD*	Range	Skew
Age T1	9.63	0.97	8.00 - 12.00	0.14
Positive Appraisal T1	21.21	7.59	0.00 - 37.00	-0.16
Positive Appraisal T2	16.96	6.24	1.00 - 29.00	-0.07
Positive Appraisal T3	15.47	6.90	1.00 - 30.00	0.28
Threat Appraisal T1	9.80	7.10	0.00 - 34.00	1.06
Threat Appraisal T2	6.02	5.89	0.00 - 26.00	1.28
Threat Appraisal T3	4.93	4.71	0.00 - 21.00	1.19
Active Coping T1	39.19	13.40	4.00 - 69.00	-0.11
Active Coping T2	24.01	9.10	0.00 - 45.00	-0.20
Active Coping T3	25.59	9.71	1.00 - 45.00	-0.04
Avoidant Coping T1	18.71	6.50	1.00 - 36.00	-0.12
Avoidant Coping T2	16.99	6.96	2.00 - 36.00	0.16
Avoidant Coping T3	15.93	7.29	0.00 - 36.00	0.39
Cumulative Risk T1	-0.03	5.27	-9.86 - 18.52	0.80
Cumulative Risk T2	0.00	4.20	-6.52 - 20.82	1.37
Cumulative Risk T3	0.00	5.29	-9.94 - 22.16	1.27

Table 2.

Correlations among appraisal and coping variables

	SEX	AP1	AP2	AP3	THT1	THT2	THT3	ACT1	ACT2	ACT3	AVD1	AVD2	AVD3
Age	0.08	-0.08	-0.01	-0.08	-0.08	-0.04	-0.08	-0.03	0.03	-0.03	-0.19*	-0.10	-0.16*
Sex	-	0.05	-0.08	-0.02	-0.04	0.01	-0.04	0.07	-0.05	-0.10	0.06	-0.03	-0.04
PosAp1		-	0.29*	0.29*	0.31*	0.17*	0.08	0.73*	0.25*	0.25*	0.49*	0.10	0.14*
PosAp2			-	0.51*	0.10	0.19*	0.04	0.24*	0.71*	0.47*	0.12	0.42*	0.19*
PosAp3				-	0.07	0.08	0.08	0.27*	0.36*	0.80*	0.18*	0.21*	0.47*
ThtAp1					-	0.38*	0.22*	0.14*	0.05	0.04	0.44*	0.30*	0.24*
ThtAp2						-	0.54*	0.06	0.24*	0.08	0.14*	0.49*	0.23*
ThtAp3							-	-0.06	0.03	0.03	-0.02	0.30*	0.35*
Active1								-	0.26*	0.26*	0.56*	0.08	0.07
Active2									-	0.41*	0.06	0.52*	0.15*
Active3										-	0.07	0.14*	0.52*
Avoid1											-	0.27*	0.24*
Avoid2												-	0.42*
Avoid3													-

Note. * $p < .05$

Table 3.

Correlations of appraisal and coping variables with risk and adjustment

	RISK1	RISK3	RISK2	PROB1	PROB2	PROB3	POS1	POS2	POS3
Age	-0.07	-0.09	-0.05	-0.01	0.06	0.15*	-0.03	-0.10	-0.12
Sex	0.04	-0.03	0.03	0.12	0.13*	0.19*	-0.15*	-0.14*	-0.16*
PosAp1	0.12	0.05	0.01	0.07	0.07	0.04	0.14*	-0.05	0.03
PosAp2	0.07	0.09	0.08	-0.02	0.06	-0.04	0.10	0.14*	0.14*
PosAp3	0.14*	0.10	0.11	-0.03	0.01	-0.10	0.12	0.19*	0.30*
ThtAp1	0.32*	0.24*	0.24*	0.47*	0.26*	0.22*	-0.38*	-0.32*	-0.31*
ThtAp2	0.05	0.14*	0.16*	0.34*	0.55*	0.37*	-0.23*	-0.36*	-0.31*
ThtAp3	0.11	0.22*	0.17*	0.28*	0.32*	0.43*	-0.28*	-0.31*	-0.34*
Active1	0.03	0.00	-0.04	-0.07	-0.01	-0.02	0.26*	0.04	0.13*
Active2	-0.09	-0.04	-0.03	-0.03	0.04	-0.06	0.19*	0.23*	0.19*
Active3	0.04	0.04	0.01	-0.06	0.03	-0.10	0.19*	0.27*	0.36*
Avoid1	0.23*	0.17*	0.17*	0.18*	0.11	0.04	-0.03	-0.10	-0.02
Avoid2	0.16*	0.13*	0.18*	0.16*	0.28*	0.21*	-0.09	-0.15*	-0.15*
Avoid3	0.27*	0.28*	0.20*	0.18*	0.22*	0.17*	-0.05	-0.06	0.00

Note. * $p < .05$

Table 4.

Path coefficients predicting appraisal, coping, and adjustment

	Positive Appraisal	Threat Appraisal	Active Coping	Avoidant Coping	Adjustment Problems	Positive Adjustment
Time 1						
Sex	-	-	-	-	0.13**	-0.17**
Age	-0.07	-0.05	-	-	0.02	-0.02
Cumulative Risk 1	0.11*	0.32***	-	-	0.27***	-0.16**
Positive Appraisal 1	-	-	-	-	-0.11*	0.29***
Threat Appraisal 1	-	-	-	-	0.37***	-0.32***
Positive Appraisal 1X	-	-	-	-	-0.04	0.02
Threat Appraisal 1X	-	-	-	-	0.04	-0.00
OR						
Sex	-	-	-	-	0.10*	-0.15**
Age	-	-	-0.03	-0.18***	0.04	-0.05
Cumulative Risk 1	-	-	0.03	0.21***	0.35***	-0.21***
Active Coping 1	-	-	-	-	-0.21***	0.35***
Avoidant Coping 1	-	-	-	-	0.20***	-0.16**
Active Coping 1X	-	-	-	-	0.01	-0.02
Avoidant Coping1X	-	-	-	-	-0.05	0.02
Time 2						
Sex	-	-	-	-	0.12*	-0.13*
Age	-0.01	-0.08	-	-	0.08	-0.10^{t}
Cumulative Risk 1	0.01	-0.15	-	-	-	-
Positive Appraisal 1	0.27***	-	-	-	-	-
Threat Appraisal 1	-	0.40***	-	-	-	-
Cumulative Risk 2	0.07	0.20*	-	-	0.23***	-0.14**
Positive Appraisal 2	-	-	-	-	-0.03	0.13**
Threat Appraisal 2	-	-	-	-	0.42***	-0.33***
Positive Appraisal 2X	-	-	-	-	0.03	0.07
Threat Appraisal 2X	-	-	-	-	-0.06	0.12*
OR						
Sex	-	-	-	-	0.11*	-0.12*
Age	-	-	0.01	-0.07	0.08	-0.13*
Cumulative Risk 1	-	-	-0.11	0.07	-	-
Active Coping 1	-	-	0.27***	-	-	-
Avoidant Coping 1	-	-	-	0.23***	-	-
Cumulative Risk 2	-	-	0.08	0.10	0.24***	-0.13**
Active Coping 2	-	-	-	-	-0.17**	0.28***
Avoidant Coping 2	-	-	-	-	0.26***	-0.24***
Active Coping 2X	-	-	-	-	-0.01	0.01
Avoidant Coping 2X	-	-	-	-	-0.02	0.11^{t}
Time 3						
Sex	-	-	-	-	0.20***	-0.17**
Age	-0.09	-0.03	-	-	0.16**	-0.11^{t}
Cumulative Risk 2	0.09	-0.10	-	-	-	-
Positive Appraisal 2	0.49***	-	-	-	-	-
Threat Appraisal 2	-	0.50***	-	-	-	-
Cumulative Risk 3	-0.04	0.24*	-	-	0.23***	-0.20***
Positive Appraisal 3	-	-	-	-	-0.12*	0.26***
Threat Appraisal 3	-	-	-	-	0.37***	-0.28***
Positive Appraisal 3X	-	-	-	-	-0.02	0.12**
Threat Appraisal 3X	-	-	-	-	-0.10	0.08

Table 4. (continued)

	Positive Appraisal	Threat Appraisal	Active Coping	Avoidant Coping	Adjustment Problems	Positive Adjustment
Time 3 (continued) OR						
Sex	-	-	-	-	0.17**	-0.13*
Age	-	-	-0.07	-0.12	0.16**	-0.13*
Cumulative Risk2	-	-	-0.04	-0.12	-	-
Active Coping 2	-	-	0.39***	-	-	-
Avoidant Coping 2	-	-	-	0.38***	-	-
Cumulative Risk 3	-	-	0.08	0.30**	0.21***	-0.22***
Active Coping 3	-	-	-	-	-0.27***	0.32***
Avoidant Coping 3	-	-	-	-	0.23***	-0.16**
Active Coping 3X	-	-	-	-	-0.11	0.03
Avoidant Coping 3X	-	-	-	-	0.07	0.09

Note. *$p < .05$, ***$p < .01$, *** $p < .001$.

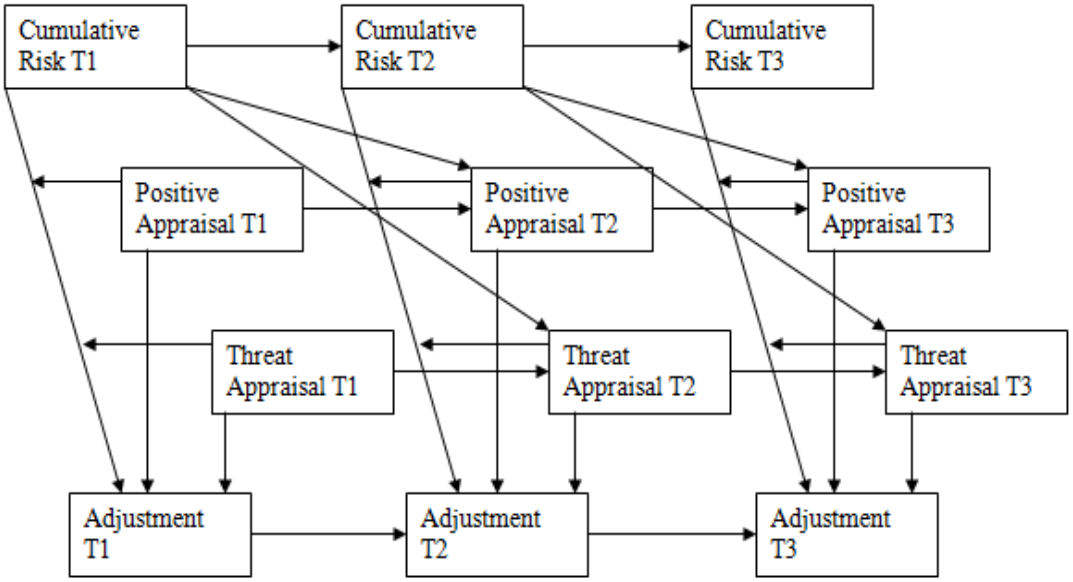

Figure 1. Path model of the relations among cumulative risk, appraisal, and adjustment.
Note: Positive and threat appraisal were replaced by active and avoidant coping in testing the effects of coping.

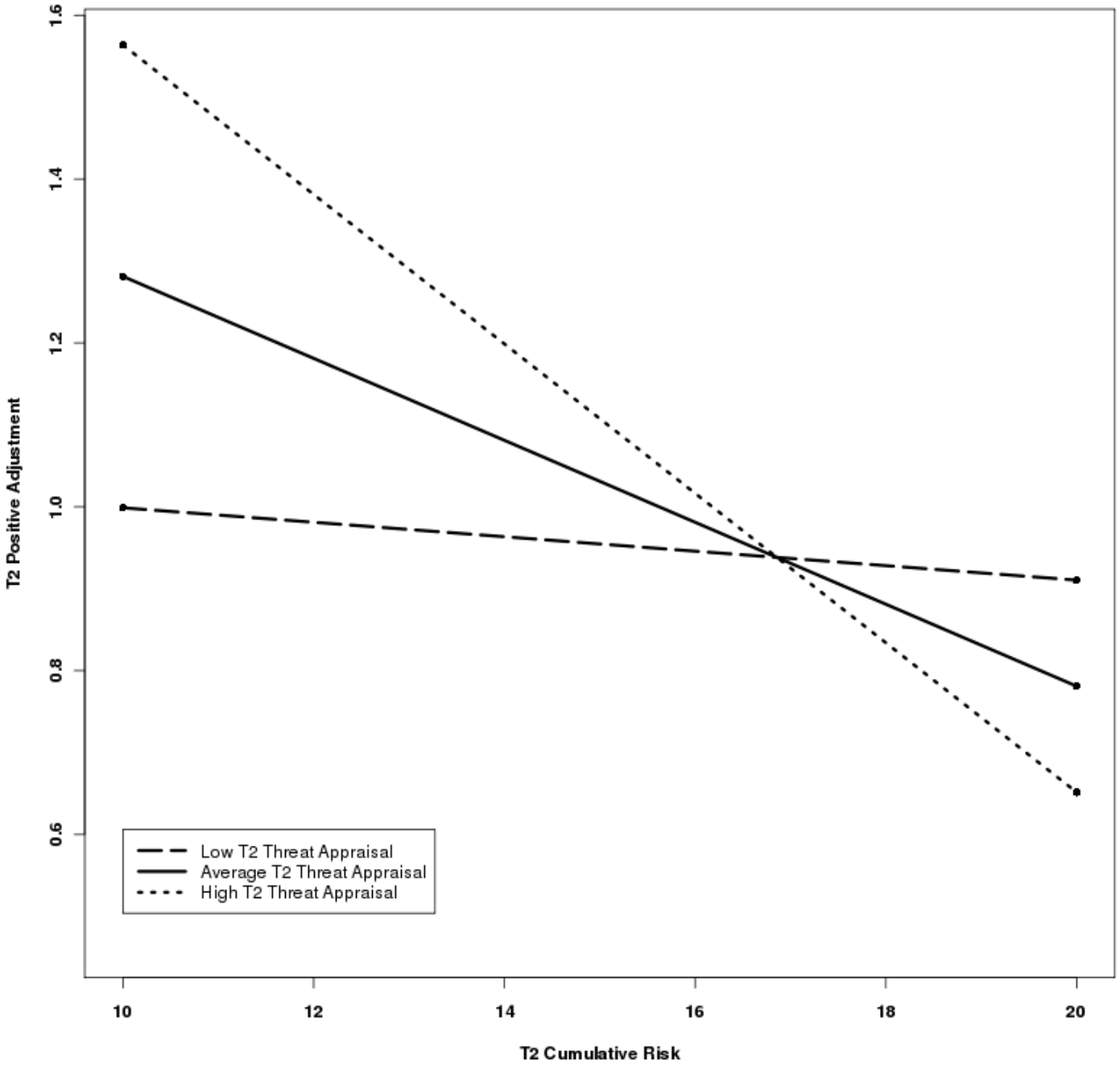

Figure 2. Time 2 Cumulative Risk and Threat Appraisal Interaction

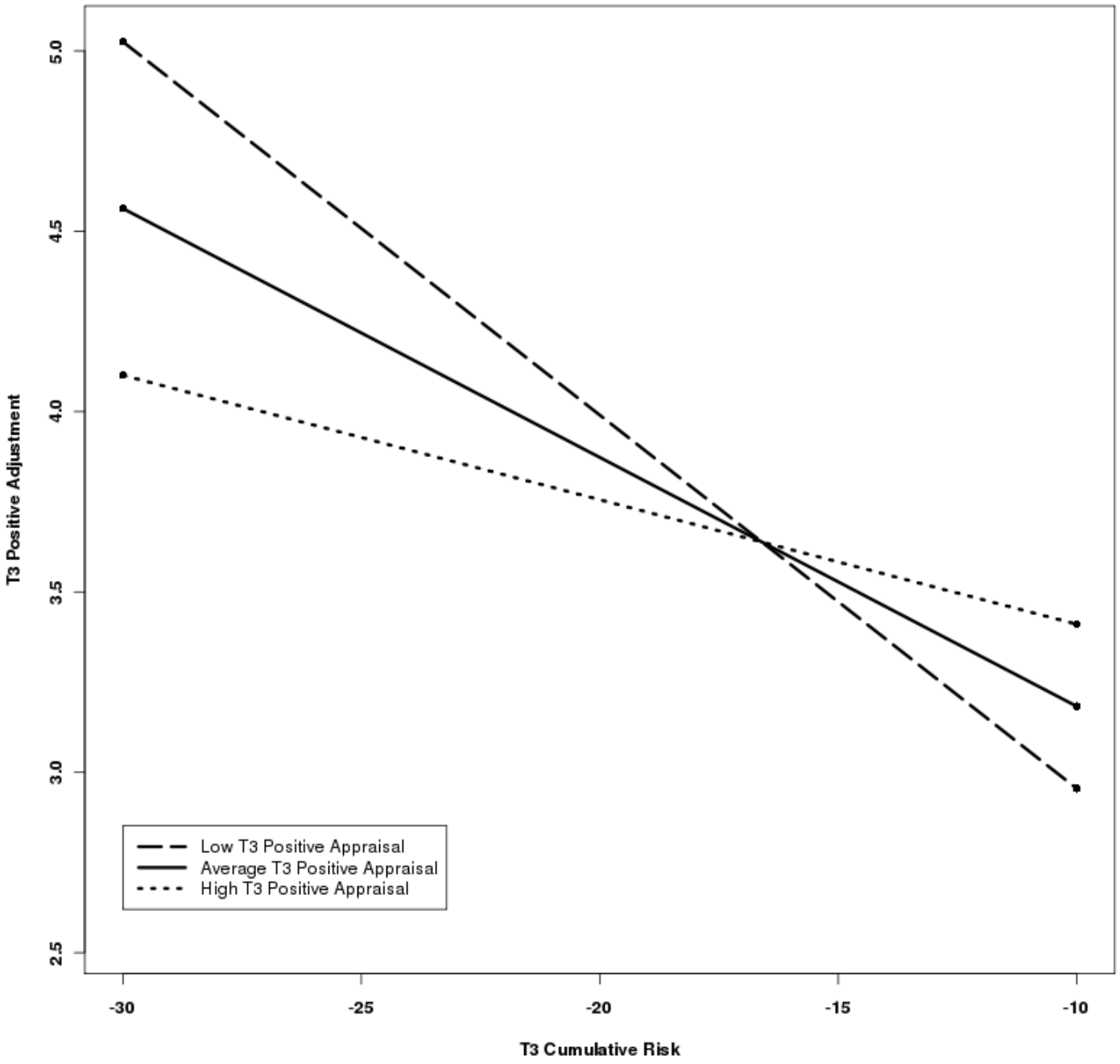

Figure 3. Time 3 Cumulative Risk and Positive Appraisal Interaction