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Use of an Analogue Method to Examine Children's Appraisals of Threat
and Emotion in Response to Stressful Events

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Abstract

An analogue methodology was used to present a set of realistic, salient stressors to children in grades 3, 5, and 7. Children ($N = 146$) viewed eight videotaped vignettes depicting interpersonal and non-interpersonal stressors; these were expected to differentially threaten psychological needs for relatedness, competence and autonomy and provoke different emotional reactions. Analyses showed that scenarios portrayed stressors that were commonly experienced by children and that evoked a differentiated profile of appraisals and emotions. When tenets of the Motivational Theory of Stress and Coping were tested, scenarios more threatening to needs were more distressing, sadness was linked to relatedness and competence threat appraisals, and fear was a more common reaction to parent stressors that involved dyadic conflict. After accounting for threat appraisals and previous experience of stressors, younger children and girls appraised events as more distressing than older children and boys. Future research could use the analogue procedure to focus on children's development of regulation and coping with stress.

Use of an Analogue Method to Examine Children's Appraisals of Threat
and Emotion in Response to Stressful Events

"Children are not strangers to stress." (Garmezy, 1983, p. 49)

Children and adolescents are exposed to a wide array of stressful events, ranging from major traumatic life events to daily hassles. Although some events are so serious that it would be best to shield children from them, the effects of everyday stressors largely depend on how children (and their social partners) appraise them, react to them emotionally, and cope with them. In some cases, deleterious effects can be avoided, deflected, or mitigated. In fact, dealing with problems and annoyances can potentially facilitate development; they present children and youth with opportunities to develop coping skills and strategies, strengthening their resources and confidence for dealing with future events (Losoya, Eisenberg, & Fabes, 1998; Skinner & Zimmer-Gembeck, 2007). As a result, researchers have been interested in capturing children's reactions to stressful events, including, for example, their emotional reactions, appraisals of threat, and ways of coping.

Among the many challenges facing researchers who wish to study children's reactions to stressful events, this study addressed two issues, one methodological and one theoretical. The methodological issue focused on how to present stressful events to children in ways that are salient and personally involving but at the same time are carefully controlled and comparable across children. The theoretical issue focused on how to conceptualise the features of events that make them stressful. In addition, age and gender differences were examined because children's reactions to stressors change with age (Skinner & Zimmer-Gembeck, 2007) and there are known gender differences in stress appraisals and reactions (Brody, Lovas, & Hay et al., 1995; Gullone & King, 1992; Muldoon, 1993; Yamamoto et al., 1987).

Methods of Assessing Reactions to Stress

An analogue procedure with videotape scenarios was used to present standardized, vivid and salient stressful cues to children. This procedure involves the presentation of either live or videotaped hypothetical scenarios followed by responses from participants (Hintze, Stoner, & Bull, 2000). The selection of the topics for these images was guided by research on the kinds of events children and adolescents find distressing. Of the many significant and daily stressful events that can occur, interpersonal stressors are some of the most frequent and are among the most salient to children and adolescents (Donaldson, Prinstein, Danovsky, & Spirito, 2000; Spirito, Stark, Grace, & Stamoulis, 1991). Children are also exposed to many other hassles such as school-related failures, exclusion from important events, and medical procedures. In one study (Spirito et al.), the four most commonly experienced problems were parent/child relations (e.g., groundings and punishments, disagreements, parent in a bad mood, pressure about school performance), friends (e.g., fight with a friend, friend moving away), school (e.g., bad grades, too much schoolwork), and siblings (e.g., fighting, teasing). In an interview study of children and adolescents (aged 8 to 18; Rudolph & Hammen, 1999), interpersonal stressors (i.e., events involving an interaction between the child and another person) were more common than non-interpersonal stressors such as events involving academic work. In the current study, we selected six interpersonal stressors that involved parents or peers and two non-interpersonal stressors commonly encountered by children. This allowed contrasts between interpersonal and non-interpersonal stressors, and between stressors involving parents and those involving peers.

This technique overcame some of the limitations of the other ways to present children with stressful events, which are (1) to ask children to self-select a stressor; and (2) to present children with a standard description of a hypothetical stressful event (see Skinner & Zimmer-Gembeck, 2007 for a review). The limitation of the first method is the lack of standardization

of the stressor across participants, which cannot control for differential stress exposure (Eaton & Bradley, 2008). The limitation of the second method is its reliance on a stimulus that might be dry, unfamiliar, and difficult for children to relate to. For example, in previous research children have been provided a standard set of stems or brief descriptions of stressful events to control for differential exposure. Some children (e.g., younger children) have a harder time converting text to vivid images.

The Motivational Theory of Stress and Coping: Threat Appraisals and Emotional Reactions

Stressors have been defined as “environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society” (Grant et al., 2003, p. 449). This definition highlights how well-being can be linked to objectively stressful events and their subjective experience. As described by Lazarus (1991), stress-coping-mental health processes are better explained by examining stressful events and stress appraisals, which are individuals’ evaluations of the potential impact or threat of stressors. Appraisals can help to explain individuals’ emotional reactions and coping responses and children’s stress appraisals have been shown to be important correlates of mental health (e.g., Compas et al. 2001; Lengua & Long, 2002).

The central theoretical question under investigation concerned the links between threat appraisals and experiences of emotional distress. To conceptualize the features of events that result in greater appraisals of threat, we relied on the Motivational Theory of Stress and Coping (Skinner & Wellborn, 1994; Skinner et al., 2003), which specifies that experiences will be distressing to the extent they are appraised as threatening to the fundamental psychological needs of relatedness, competence, and autonomy (see also Deci & Ryan, 1995, 2000). The existence of these needs has been supported by research on the attachment system and belongingness (relatedness; Baumeister & Leary, 1995), studies of effectance and control (competence; Skinner, 1995), and theory and investigations focused on self-determination and

intrinsic motivation (autonomy: Deci & Ryan, 2000). Environmental experiences are expected to be more distressing when they are appraised as being more threatening to relatedness, competence, or autonomy. One aim of the current study was to examine children's appraisals of relatedness, competence and autonomy threat and to test theoretically identified links between each threat and the corresponding emotional reactions of sadness, fear and anger.

The importance of the first psychological need, *relatedness*, is supported by research on the attachment system (Bowlby, 1973) and also has been referred to as the basic human need to belong (Baumeister & Leary, 1995); it assumes that individuals have an innate need to feel securely connected to others. According to the belongingness hypothesis of Baumeister and Leary, humans have an innate desire to “form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships” (p. 497). When relatedness is threatened, that is, when individuals do not feel cared for, feel abandoned or rejected, sadness is expected to be the dominant emotional reaction (Skinner & Wellborn, 1994).

The second psychological need, *competence*, entails the desire to be effective in one's interactions with the environment and to view oneself as competent in achieving desired (and preventing undesired) outcomes (Skinner, 1995). It is posited to underlie processes of control, causal attributions, helplessness, and self-efficacy (Bandura, 1977; Skinner, 1996). Originally described by White (1959) as effectance motivation, this need for competence is expressed in human's sensitivity to action-outcome contingencies and the serious negative consequences of threats to predictability and control. Fear is expected to be the dominant emotion when situations are appraised as threatening to competence.

The third psychological need is *autonomy*. This need is founded in Self-Determination Theory and related research (Deci & Ryan, 1995), with autonomy referring to individuals' desires to be origins of their own actions (Ryan & Deci, 2006). Evidence that contexts threatening to autonomy are stressful comes from research showing that coercive and

excessively restricting social contexts can contribute to the development of psychopathology (Ryan, Deci, Grolnick, & LaGuardia, 2006), whereas social contexts that are autonomy supportive have been found to be associated with greater well-being (Ryan & Deci, 2001). Anger is expected to be the dominant emotion when situations are appraised as more threatening to autonomy.

Age and Gender Differences

Children in grades 3, 5 and 7 participated in the current study. Because this is a developmental period that includes changes in stress responses, regulation of emotion and interpersonal relationships (Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2008), age differences in threat appraisals and emotional reactions were expected. These expectations were founded on research that has shown that younger children report higher ratings of stressfulness than older children (McWhirter, 1984; Muldoon, 2003; Yamamoto et al., 1987). Yet, we also had to consider that peer relationships grow in importance to young people during middle childhood, with friendships becoming more important sources of support during childhood and into adolescence (Bagwell, Schmidt, Newcomb, & Bukowski, 2001; Berndt, 2004), and that there is an age-related increase in children's capacity to regulate their emotions (Diamond & Aspinwall, 2004; Skinner & Zimmer-Gembeck, 2009). When taken together, this evidence suggests that younger children would show more *emotional reactions* to all stressors than older children, but that older children would appraise more *threat* associated with *peer* stressors than younger children. It was not clear whether threat associated with parent and non-interpersonal stressors would differ by age.

Regarding sex differences, girls tend to report more distress than boys when responding to stressful events (Gullone & King, 1992; Muldoon, 1993). For example, 6- to 12-year-old girls reported more fear than boys in response to an emotion story task in one

previous study (Brody et al., 1995). Yet, no difference was found in the relative intensity of anger expressed by boys and girls across multiple situations. No previous study has examined gender differences in threat appraisals. However, we expected that threat appraisals and emotional reactions should show similar differences between boys and girls. In particular, emotions of sadness and fear and the associated appraisals of threats to relatedness and competence should be elevated among girls compared to boys across both interpersonal and non-interpersonal stressors. However, we did not expect gender differences for anger and the associated appraisal of threat to autonomy.

The Current Study Objectives and Hypotheses

In summary, there were three main objectives of the present study. The first was to examine the viability of a new procedure for examining children's appraisals and emotional reactions to stressful events. The second objective was to examine some of the tenets of a motivational theory of stress and coping, which holds that events are stressful to the extent that they are appraised as threatening people's needs for relatedness, competence, and autonomy, and that particular threats are linked to emotional reactions of sadness, fear and anger. To meet this second objective, we examined two theoretically-derived hypotheses related to the motivational theory of coping. These hypotheses had the purpose of examining whether children's differential appraisals of stressful events as threatening to relatedness, competence, and autonomy accounted for individual differences in their emotional reactions of sadness, fear and anger. Finally, the third objective was to examine age and gender differences in threat appraisals and emotional reactions. In total, we had five hypotheses.

(1) As appraisals of stress-related threat increase, so too will emotional reactions to stressors.

(2) Threats to different needs will evoke different emotional responses. Threat to relatedness will yield more sadness than fear or anger. Threat to competence will yield more fear than sadness or anger. Threat to autonomy will yield more anger than sadness or fear.

(3) Emotional reactions to stressors will be weaker among older compared to younger children.

(4) Because emotional reaction will be weaker with age, older compared to younger children also will appraise less threat in response to most stressors. However, because of the increasing importance of peer relationships with age, older children will appraise more threat in response to peer interpersonal stressors than young children.

(5) Girls compared to boys will appraise stressful events as more threatening to relatedness and competence and will report significantly higher levels of sadness and fear.

Method

Participants

Participants were children in grades 3, 5, and 7 ($N = 146$) who attended one public school and had parental consent to participate. Grade 3 participants consisted of 49 children (19 boys) with a mean age of 8 years ($SD = 0.4$), grade 5 participants were 48 children (25 boys) with a mean age of 10 years ($SD = 0.4$), and grade 7 participants were 49 children (33 boys) with a mean age of 12 years ($SD = 0.3$). Although the overall proportion of boys to girls was about equal (53% vs. 47%), the proportion of boys vs. girls in the three grades slightly differed with a lower percentage of boys in Grade 3 and a higher proportion of boys in Grade 7, $\chi^2(2, N = 146) = 8.0, p = .02$.

As part of the consent process, each parent reported on her/his child's birth date, grade level, family structure, ethnicity, and combined family income. Children were predominantly born in Australia (88%) with smaller numbers born in Europe (9.5%), New Zealand (3.4%), South Africa (2.7%) or other countries (7.5%). Most children (66%) were living with both

biological parents, whereas 16% were living with one biological parent in a single-parent household, 15% were living with one biological parent and a step-parent, and 3% of children had an alternative living arrangement. Overall, 43% of participants' parents reported a family income above AUD\$60,000, 31% having an income between AUD\$30,000 - AUD\$60,000 and 21% of participants having a combined family income below AUD\$30,000.

Measures

Video excerpts. A series of eight stressful video excerpts were identified after reviewing approximately 50 children's movies and conducting two pilot studies (see below). Each of the final excerpts was 30 seconds in length and depicted either a young boy or girl, close in age to the participants, as the central figure. To better allow children to personally interpret and react to the event, each scene exhibited limited emotional displays by the central figure. All scenes were in English and were taken from General (G) rated films, as classified by the Australian Office of Film and Literature Classification (2003). The video excerpts were embedded into Microsoft PowerPoint and shown to children on a 12-inch wide-aspect display laptop as part of a slide presentation. The eight stressful scenes depicted were:

1. A girl watching her parents having a verbal argument
2. A boy having a verbal argument with his father
3. A boy being verbally and physically bullied at school
4. A boy watching a friend load his belongings and move to another city
5. A boy who was not picked by one of two captains to be on a sporting team
6. A girl making a mistake and causing her team to lose the game
7. A girl sitting an exam at school
8. A girl getting an injection at a hospital

Two positive scenarios were shown to participants as the fifth and tenth excerpts. These depicted (1) a boy celebrating his birthday and (2) a girl playing with others in the backyard.

Response booklet. Children completed a series of questions following each scenario. Items assessed threat appraisals and emotional responses of sadness, fear and anger.

Threat appraisals. Three items were used to assess children's appraisals of threat, with one item per scenario pertaining to each of relatedness, competence and autonomy threat. For relatedness threat appraisal, children were asked to rate how much they felt they were cared for in each situation ranging from 1 (*not at all*) to 5 (*extremely*). Using the same response options, the competence threat appraisal item assessed how capable they would feel. Autonomy threat appraisal was measured by asking children the degree to which they would or would not feel they could decide what was happening. Items were reverse scored, so that higher scores indicated a greater degree of perceived threat to relatedness, competence and autonomy. In addition to examining each type of threat for each scenario, a general threat index was created by averaging the three threat appraisals within each scenario. A grand total threat appraisal score was calculated by averaging general threat across the eight scenarios.

Emotional reactions. Emotional reactions to events were measured with three items. Children reported how sad, fearful and angry they would feel in response to each scenario ranging from 1 (*not at all*) to 5 (*extremely*). Correlations between sad and fear ranged from $r = .14$ to $.66$, sad and anger from $r = .20$ to $.51$, and anger and fear from $r = .16$ to $.49$ across the eight stressful scenarios. Individual emotional reactions and general emotional distress for each scenario were used in analyses. This general score was obtained by averaging the three emotional reactions for each scenario (i.e., the average of sadness, fear and anger, possible range of 3 to 15), with higher scores indicating greater emotional distress. A grand total emotional distress score was calculated by averaging total distress across the eight scenarios.

Experience with stressful events. Children reported whether they had experienced an event similar to that depicted in each video scenario with response options ranging from 1 (*No, never*) to 5 (*Yes, lots of times*).

Future expectations. To assess beliefs that they would experience each stressor in the future, children reported whether they thought each scenario would happen in the future. Responses ranged from 1 (*No, never*) to 5 (*Yes, lots of times*). For each stressor, scores were recoded either as No (0) if a child responded *no, never* or Yes (1) for all other responses.

Procedure

Pilot study 1. After identifying the types of stressful events that should be included in the assessment (non-interpersonal events such as medical procedures and academic stressors, parent-related, and peer-related stressors), approximately 50 children's movies and educational videos were reviewed. Of these, twelve short depictions of stressful events were selected on the basis of their subject matter, duration, clarity, and age-appropriateness. These were captured using a video conversion and editing system.

To test these selections, 60 undergraduate psychology students (ages 16 to 18) participated in a pilot study to generate ideas about the design and procedures, to determine if the selected video scenarios elicited a range of responses, and to rank order the scenarios according to degree of "stressfulness". Twelve stressful vignettes were included in the pilot study, including the eight final scenarios, as well as scenarios depicting a boy falling over and hurting himself, a girl starting her first day at school, a boy being told that his mother had died, and a girl being hurt playing sport. The aim was to determine if the selected scenarios elicited a range of responses, and to rank order the scenarios according to degree of "stressfulness." Participants watched each video scenario on a standard television screen and then answered the corresponding items in the response booklet. At the completion of all video scenarios, each participant ranked each scenario from least to most distressing.

Results indicated that participants ranked the scenario depicting a boy being told that his mother had died as the most distressing. Feedback from participants suggested that this

scenario was too distressing. Therefore, this situation was not used further. Additionally, the three lowest ranked video scenarios (i.e., least stressful) were not used further.

Pilot study 2. A second pilot study, using a convenience sample of five 8-year-old and five 12-year-old children, was completed to ensure that the chosen scenarios were salient to children and that children within this age range were able to understand and respond to all items in the response booklet. Parental consent, via information sheets and consent forms, and verbal child assent were obtained. Verbal and written feedback from children indicated that the video scenarios were clear, similar to experiences they had in the past, and they were able to understand and respond easily to the questionnaire items. Children also gave feedback about the items that were easiest to understand and most relevant to them. These questions were maintained for the primary study.

Primary study. Ethical approval was received and the principal of one school provided his consent for the study. Parental information sheets and consent forms were disseminated to all students in grades 3, 5 and 7. The parental consent rate was 49%. Only six parents actively denied their children's participation. Verbal child assent was obtained prior to participation.

Children were tested in groups of no more than five to facilitate their understanding of the task and to ensure they had a clear view of the laptop computer. The testing period was approximately 45-minutes to 1-hour. As shown in Appendix 1, a standard set of verbal instructions informed participants that they would be watching a sequence of short videotaped movie clips and that they were to imagine that the situation was actually occurring to them. Apart from presenting the positive scenarios at positions 5 and 10 in the sequence, video sequences were counterbalanced to control for order effects and each set of responses made reference to a particular video scenario to assist children with their responses. Following presentation of each video scenario, children completed all measures. Questions were read aloud to ensure all children completed questionnaire items at the same

time and to facilitate understanding of how to use the scales and record their responses. At completion of the task, children were thanked for their participation, given a gel pen, invited to ask questions, and informed that they could talk to their parents about the task.

Results

Viability of the Analogue Methodology

Threat appraisals and emotional reactions. Analyses to test the viability of the analogue method included testing whether children (1) commonly experienced the portrayed events, (2) believed that they might experience each event in the future, and (3) perceived the events as threatening and distressing (see Table 1). As can be seen, the eight situations portrayed were relatively common in children's experience (M across all scenarios = 75% of children reported previous, similar experience) and most children expected to experience each event in the future (M across all scenarios = 89%). These ratings of past and expected experience did not differ by participant age or gender. On average, each stressor was quite threatening (M across all scenarios = 3.99) and moderately distressing (M across all scenarios = 3.23). The most threatening stressors involved the two least frequently experienced events, not being picked for a team and making a mistake in a team sport. The most emotionally provoking stressors were the most conflictual, being bullied and arguing with a parent.

Differentiated responses to each scenario. To further assess whether children were responding differently to different stressors, we examined correlations between threat appraisals, and between emotional reactions *within* scenarios. The correlations were small to moderate in size, with correlations between relatedness and competence threat appraisals ranging from $r = .01$ to $.45$, relatedness and autonomy appraisals from $r = -.01$ to $.33$, and competence and autonomy appraisals from $r = -.03$ to $.35$. The three items measuring appraisals of threat demonstrated low to moderate internal consistency, with Cronbach's α ranging from $.14$ to $.60$ across the eight scenarios. Emotional responses were more strongly

intercorrelated, $r_{\text{sad,fear}} = .72$, $r_{\text{sad,anger}} = .56$, $r_{\text{fear,anger}} = .55$, all $p < .01$, and Cronbach's α ranged from .40 to .77 across the eight scenarios.

Tests of Hypotheses related to the Motivational Theory of Coping

Associations between threat appraisal and emotion. To test the first hypothesis that children's stronger threat appraisals would covary with greater emotional reactions of sadness, fear and anger, bivariate correlations were estimated. Correlations were between general threat and general emotional reaction to each stressor within each stressful event. Partly supporting this hypothesis, in 3 of the 8 situations children who reported their needs would be more threatened also reported they would be more distressed; arguing with a parent $r = .28$, being bullied $r = .26$, and getting a medical injection $r = .40$, all $p < .01$. For all remaining five situations, the correlations between general threat and general emotional distress were positive, albeit not significantly so. When *each* specific threat appraisal was correlated with general emotional distress for each stressor, at least two threat appraisals were positively correlated with emotion for 5 of the 8 situations; arguing with a parent, being bullied, having a friend move away, making a team mistake, and getting a medical injection (data not shown in a Table), r s ranged from .15 to .39, all $p < .05$.

Differential associations of threat appraisals with emotions. Differentiated predictions of the motivational model were tested by examining whether threat appraisals to different needs evoked different emotional reactions (Hypothesis 2). To reduce reliance on single item measures, we used theory-guided factor analysis to determine if there were scenarios with similar threat value. Stressors were then combined without much loss of information about children's differential reactions to different stressors.

Factor analysis was used to identify groups of scenarios that were similarly threatening to children's need for relatedness. Similar factor analyses were conducted using threats to competence and autonomy scores, but the results were similar so we report results

of analyses using groups of scenarios based on level of threat to relatedness only. Principal axis factoring with oblique rotation was used. An eigenvalue cut-off of 1 was used to determine the number of factors to extract and rotate.

Three factors were found (see Table 2). Factor 1 was composed of threats to relatedness scores in response to three situations (i.e., watching a best friend move, sitting an exam and getting an injection) with factor loadings ranging from .70 to .77. This factor contained the scenarios with very little interpersonal interaction and was labelled *Non-interpersonal scenarios*. The second factor had high loadings for threat to relatedness in response to being bullied at school, not being picked to be on a team and making a mistake in a team sport, with factor loadings ranging from .62 to .78. This factor was labelled *Peer scenarios*. The third factor was composed of ratings of threat to relatedness in response to two situations (i.e., parents having an argument and having an argument with a parent) with factor loadings of .74 and .72, respectively. This factor was labelled *Parent scenarios*.

Scenario group differences in appraisals of threats to all three needs were examined by averaging threat appraisals across stressors within each scenario group and comparing these scores using paired samples *t*-tests. As can be seen in the first column of data in Table 3, children rated peer scenarios as significantly more threatening to relatedness than parent scenarios and non-interpersonal scenarios. Children also rated parent scenarios as significantly more threatening to relatedness than the non-interpersonal scenarios. Scenario groups differed in appraisal of competence and autonomy threat, too. Peer scenarios were most threatening to competence and non-interpersonal scenarios were most threatening to autonomy (see columns of data in Table 3). When differences between scenario groups (the last three rows of Table 3) *and* within scenario groups (the last three columns of Table 3) were considered, non-interpersonal scenarios (medical, test, and friend moving away) were high in threat to autonomy (i.e., coercive and outside decisional control) but lower in threat to

relatedness and competence. In contrast, peer-interpersonal stressors (being bullied, not being picked for a team, making a team mistake) were high in both threat to relatedness and competence, but lower in threat to autonomy. Hence, comparisons of non-interpersonal to peer scenarios contrast stressors higher in autonomy threat with those higher in competence and relatedness threat. Similar to peer stressors, parent-related stressors (watching parent fight, fighting with a parent) were low in threat to autonomy, but were different from peer-related stressors by producing only moderate threat to relatedness and competence.

To test hypothesis 2, emotional reactions to scenario groups were compared. Most generally, reactions did differ between (see the last three rows of Table 4) and within (see the last three columns of Table 4) scenario groups. Partially in support of the expectation that relatedness threat would provoke high levels of sadness, sadness was higher in response to peer stressors than in response to non-interpersonal stressors. However, sadness was expected to be a stronger reaction than anger when children appraised threats to relatedness, and anger was expected to be a more common reaction to events that threaten autonomy. Although relatedness and competence threats were entangled in this analyses, it appears that this was not the case; children reported similar sadness and anger after viewing the peer stressors, and they reported more anger in response to peer stressors than non-interpersonal stressors.

Stronger fear reactions were expected in situations that were threatening to competence. This had some support; children reported more fear in response to parent stressors, which were more threatening to competence, than non-interpersonal situations. Nevertheless, the expected difference in fear between peer and non-interpersonal stressors was not found. In summary, both sadness and anger emotions were linked to relatedness and competence threat appraisals, and fear was a more common reaction to parent stressors, which involved dyadic conflict, than to non-interpersonal or peer stressors.

Grade and Sex Differences

Emotional reactions. Three multiple regression models were estimated to examine grade and sex differences in emotional reactions to the three scenario groups. Multiple regression was used to adjust for individual differences in threat appraisals and past personal experience with stressors. Dependent variables were emotional distress averaged across emotions and stressors in each scenario group. Independent variables included grade level coded to compare children in grade 3 to 5 and children in grade 3 to 7, sex, threat appraisals and children's reports of their past experience with each stressful event. We followed this with models that examined grade and sex differences in the specific emotional reactions of sadness, fear and anger averaged across the scenarios in each group. Although the gender ratio differed by grade level, including both grade and sex as covariates in the models controlled for this potential confound.

As expected (hypothesis 3), younger children had stronger emotional reactions to all scenario groups than older children (see Table 5). This was particularly consistent when comparing children in grade 3 to those in grade 7. Also as expected, girls reported that they would react with more emotion than boys. Follow-up analyses of each emotional reaction showed that the grade level differences extended to the reactions of sadness and fear, but there were no grade differences in angry reactions (data not shown in a Table). Similarly, girls only reported that they would feel more sadness and fear compared to boys. Girls and boys did not differ in their angry responses to any scenario group.

Threat appraisals. There was little support for the hypothesis that older children would appraise less threat from most stressors, but appraise more threat from *peer* stressors than younger children. There were no grade differences in any of the threat appraisals, $F(2,143)$ ranged from .15 to 1.69, all $p > .15$.

The results of comparing the threat appraisals of girls to boys did reveal partial support for hypothesis 5, however. Girls appraised more threat to competence than boys in response to parent and peer scenarios, $t(1,142) = 3.11$ and 2.24 , respectively, both $p < .05$. These gender differences remained significant even after accounting for grade level and past experience in multiple regression analyses (data not shown in a Table). No gender differences were found in competence threat for non-interpersonal scenarios, or in relatedness and autonomy threat for any of the scenarios.

Discussion

Motivational theorists have identified experiences that meet or threaten psychological needs for relatedness, competence and autonomy as important for understanding emotional, behavioral and cognitive responses of children (e.g., Connell & Wellborn, 1991; Deci & Ryan, 2000). In our application of this theory to the study of stress, events were expected to evoke stronger emotions when they were more threatening to these needs. This is consistent with propositions of the Motivational Theory of Stress and Coping (Skinner & Edge, 1999; Skinner & Wellborn, 1994; Skinner & Zimmer-Gembeck, 2007), in which events are expected to be distressing, provoking more sadness, fear and anger, to the extent that they are appraised as threatening psychological needs for relatedness, competence and autonomy.

Deci and Ryan (2000) suggest that specifying relatedness, competence, and autonomy needs allows a diverse set of seemingly disparate phenomena across a wide range of human endeavours and developmental periods to be drawn together in a parsimonious way. Consistent with this, children's appraisals of threat across different stressful situations revealed that there were groups of stressors that were similarly threatening and differed from other stressors. All the sets of vignettes, whether non-interpersonal, parent-related conflict or peer-related, were seen as threatening needs in patterns that made sense given the events depicted. Gathering three different threat appraisals identified individual differences in how

children appraise stressful events, how stressful events may differ, and how emotional reactions may be linked to these appraisals. By relying on a technique that presented many events that have been identified as stressful during childhood and adolescence, such as witnessing parents argue, being bullied by a peer, undergoing a medical procedure and sitting for an examination (Donaldson et al., 2000; Spirito et al., 1991), this study is the first to show that children do have differential appraisals of threat to relatedness, competence and autonomy both within and across stressful events, and report different emotional reactions that tend to be associated with these threat appraisals.

Our first study aim was to examine whether children's emotional reactions to stressors are products of their appraisals of threats to relatedness, competence and autonomy. Some evidence supported the first two hypotheses of this study. As predicted in hypothesis 1, scenarios rated as more threatening tended to evoke stronger emotional reactions from children. This was found when threat was correlated with general emotional reactions and when regression was used to examine associations of general emotional distress with each threat along with grade, gender and past experience.

The connections between threat and emotional reactions were not as consistent or specific as predicted in our second hypothesis. For some particular stressful events and one group of events (peer stressors), threat and emotion were not associated. Nevertheless, there was some evidence of specific associations, as predicted; threats to relatedness produced feelings of sadness. The saddest events were those that were peer-related and these also were the most threatening to relatedness. However, there was less clear evidence that threats to competence produced fear and threats to autonomy produced anger. The most fear-inducing stressors (parent-related) were not the ones most threatening to competence (peer scenarios), and the most anger producing events (peer scenarios) were not those that were most threatening to autonomy (non-interpersonal events).

Grade Differences

Hypotheses 3 and 4 were concerned with grade level (i.e., age) differences in threat appraisal and emotional reactions. As predicted, older children (grades 5 and 7) found all scenario groups to be less distressing than younger children (grade 3), but the results were much more consistent when grade 7 children were compared to children in grade 3. These findings are consistent with previous research that has found younger children to report higher ratings of stressfulness than older children, regardless of the stressful situation (e.g., Yamamoto et al., 1987). However, our findings extend this knowledge by suggesting that these age differences apply to different types of stressors, even after accounting for threat appraisals, gender, and personal experience with similar stressful events.

We also expected that threat appraisals might differ by grade level, with older children less threatened by most stressors, but more threatened by peer stressors than younger children. The older children in the study were age 11-12, when they are transitioning to adolescence. At this time, peer relationships increase in importance, begin to be a more focal source of support and intimacy, and strivings for autonomy are on the increase (Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2008; Zimmer-Gembeck & Collins, 2003). Despite these known changes, these expectations about differences in threat appraisal by age/grade were not supported. No threat appraisals differed by grade.

Overall, these findings show that older children compared to younger children were less emotionally reactive to all included types of stressors, but older and younger children did not show different threat appraisals. This suggests an inconsistency in the pattern of threat appraisal and emotion, which may suggest age-related changes in the reporting of threat or emotion. It also suggests that there could be a decreasing association between threat appraisal and emotional reactions with age, so that a third factor, such as regulation of emotion or coping responses, may be implicated in this stress-appraisal-emotion process.

Age differences in reporting and children's regulation were not examined in this study, but we did account for children's personal experience with each group of stressors when examining emotional reactions as correlates of grade, gender, and threat appraisal. These analyses showed that age differences in reactions are not due solely to differences in prior experience. At the same time, an unexpected connection was uncovered: children who had more past experience with the peer-related stressors (a combination of being bullied, not being picked for a team, and making a mistake in team sports) also reported more emotional distress in response to them. It is possible that children who have directly experienced these events have more realistic judgments of how stressful they actually are. It is also possible that experiences of exclusion and threats with peers make children more vulnerable to stress and more reactive to peer stressors. Of course, it is also possible that children who are more emotionally reactive end up being the recipients of more negative peer events. Future studies are needed to tease apart these possibilities, which are not mutually exclusive.

Sex Differences

As predicted in our last hypothesis, the findings were consistent with previous researchers who have found that girls report significantly higher distress than boys when they encounter stressful events (Brody, Lovas, & Hay, 1995; Yamamoto et al., 1987). However, our focus on sadness, fear and anger was revealing of both gender difference and similarity. Girls reported that they would feel greater sadness and fear in response to stressors than boys. However, girls and boys did not differ in angry reactions to the events they observed. These findings complement the work of Brody et al. who found that 6- to 12-year-old girls reported more fear than boys in response to a story task depicting males and females engaging in sex-typed or cross-sex behavior, but they found no difference in the anger expressed by boys and girls. It is likely that sadness and fear are less socially desirable expressions of emotion for boys, with girls often socialised to be more emotionally expressive in these ways. As has

been previously argued, children may censor socially undesirable emotions (Brody & Hall, 1993). This may explain the lower scores of boys on the emotions of sadness and fear, but not anger. Some evidence diverges from this argument, however. Girls appraised more threat to competence from interpersonal stressors, which, along with relatedness threat, was linked to sadness. As has been alluded to in reviews of the peer relationships and stress of girls compared to boys (e.g., Rose & Rudolph, 2006), it is quite possible that girls view interpersonal stressors as more threatening, but it may not be their relatedness that is more threatened than boys. Instead, they may feel more threat to their competence when relationships do not go well, because they feel more responsible and place more importance on them than boys.

Methodological Implications

The findings of the current study also illustrate that an analogue procedure is a viable method for presenting children and youth with salient everyday stressors in a systematic and controlled setting. The events depicted in the videotaped vignettes were commonly experienced, anticipated in the future, and perceived as distressing by the participants. Consistent with previous research, children rated interpersonal events as the most stressful, with interpersonal conflict (being bullied and parental arguments) experienced as the most distressing. Even the least commonly experienced events (not being picked for a team and making a mistake in a team sport) were rated as threatening and distressing, suggesting that the video vignettes were effective in enabling children to imagine (or recall) their psychological and emotional consequences. Although we cannot determine whether this vicarious experience of stress is similar to using real life experiences because we did not include direct comparison with them, it does suggest that this method is useful when some standardization across stressful events is desired.

There has been a long-standing tradition in psychological research of using vignettes and other simulations to compare human responses. Our findings suggest that this also is a viable method for presenting children with salient and vivid depictions of commonly experienced and stressful events. When stressors were presented in this way, they resulted in differentiated and appropriate threat reactions, and evoked distinctive emotional reactions. At the same time, researchers should defer to children and youths' own perspectives on the meanings of the events, including their potential to threaten multiple needs across different domains of functioning. It also is worth noting that children showed enthusiasm for the video method and displayed absorption and interest in the vignettes, suggesting that the method captured children's attention and cooperation. Although future research is needed, we expect that this also increased accuracy.

Study Limitations and Future Research Directions

In addition to those mentioned in previous sections, there are four other study limitations that are important to acknowledge. First, while the newly devised analogue method was designed to be an engaging and easy to use measure of children's appraisals and emotions in response to stressful events, its limitations were also apparent. The video vignettes shown to children were chosen from popular children's movies and, as such, did not always allow for exact matching of the age and sex of the central character to characteristics of the study participants. This may have subsequently influenced children's appraisals, with previous findings suggesting that children appraise situations differently depending on the sex of the child displayed in the video stimulus (Brody et al., 1995). However, age was matched as closely as possible to study participants, sex was balanced across the scenarios presented, and sex differences found here were not dependent on the sex of the central character displayed in the video scenarios; girls reported significantly greater sadness and fear regardless of the sex of the central character.

Second, children's emotions following exposure to stressful events are much more complex than the three emotional responses of sadness, fear, and anger. Future research should include a broader range of emotional distress reactions, including emotions such as embarrassment, guilt, or shame. In addition, simply summing across the different emotional reactions may not provide a good indicator of an event's stressfulness. An event that is very sad (e.g., friend moving away) may end up with a lower rating of overall distress because it does not also provoke much fear or anger. It might be better in future studies to request that children provide an overall global rating of how "bad" or "upsetting" an event is to more directly capture its "distressingness."

Third, future research could improve the assessment of threat appraisals and test other threat appraisals (Skinner & Wellborn, 1997). For example, some hypotheses might be supported if the interitem correlations of measures were improved. Also, the most surprising finding of the current study was that, in one instance, threat to autonomy made a unique *negative* contribution to distress, meaning that, after controlling for threats to relatedness and competence, as well as sex, grade, and past experience, children who rated the scenarios as more threatening reported that they would experience *less* distress. A possible explanation for this finding could be based on the way threat to autonomy was assessed, namely, by asking children to rate the degree to which they would or would not feel they could decide what was happening. This appraisal might overlap with control, so that when the effect of threats to competence was removed, the net perception that one was not able to decide had positive implications - because children did not feel as responsible for the stressful event. If, in future studies, threats to autonomy are assessed through appraisals of coercion or pressure, they might not have a positive unique connection with distress reactions. In general, improvements in the assessments of threat appraisals and emotional reactions would provide

a more complete picture of children's reactions to stressful events, as well as provide a more stringent test of theoretical predictions.

Fourth, the sample size limited some of the analyses. In particular, although we conducted three factor analyses with three different threat appraisals (threat to relatedness, competence and autonomy) and found that the factor structures were similar, the factor analysis of relatedness threat used to combine stressors into groups might be unique to this study. When this assessment is used in future research, this should be re-examined. Also, despite the medium-sized sample of children, the findings often were quite clear and consistent; they revealed differences between stressor groups and between children. Nevertheless, these findings deserve replication and extension in a larger study before firm conclusions can be drawn about how different stressors provoke different threats and emotions, and how children's age and gender may be associated with threat appraisals and emotional reactions.

Implications and Conclusion

While acknowledging these limitations, the findings provide important avenues for future research aimed at examining children's responses to stressful events, including their self-regulation and coping. Although not measured in the current study, coping strategies are important outcomes of children's stress appraisals and emotional reactions. The analogue method used here could be expanded to assess children's coping and regulation, and to examine how threat and challenge appraisal processes, emotions, and coping follow from a range of stressors and may vary between and within children. This procedure could also begin to explore predictors of individual differences in these processes, including social-psychological status (i.e., internalising and externalising behavior problems, social competence), family environment factors, and attachment to primary caregivers, child self-worth and cognitive functioning.

The results of the current study can assist with future research on children's stress and coping, with a goal of developing interventions aimed at assisting children with appraisals, reactions, regulation and coping strategies when dealing with major stressful life events and daily hassles. Developing children's capacities to effectively manage and cope with exposure to familiar and novel stressful life events is one way to facilitate resilience, while also mitigating the negative effects of stress on children's well-being.

References

- Australian Office of Film and Literature Classification. (2003). *Guidelines for the classification of films and computer games*. Retrieved April 15, 2004, from <http://www.oflc.gov.au/resource.html?resource=62&filename=62.pdf>
- Bagwell, C. L., Schmidt, M. E., Newcomb, A. F., & Bukowski, W. M. (2001). Friendship and peer rejection as predictors of adult adjustment. *New Directions for Child & Adolescent Development, 91*, 25-49.
- Bandura, A. (1977). Self-efficacy: Toward a unified theory of behavioral change. *Psychological Review, 84*, 191-215.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.
- Berndt, T. J. (2004). Children's friendships: Shifts over a half-century in perspectives on their development and their effects. *Merrill-Palmer Quarterly, 50*, 206-233.
- Bowlby, J. (1973). *Attachment and loss* (Vol. Vol. 2). New York: Basic.
- Brody, L. R., & Hall, J. A. (1993). Gender and emotion. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 447-460). New York: Guilford Press.
- Brody, L. R., Lovas, G. S., & Hay, D. H. (1995). Gender differences in anger and fear as a function of situational context. *Sex Roles, 32*, 47-78.
- Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Minnesota symposium on child psychology: Vol. 23. Self processes in development* (pp. 43-77). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.
- Donaldson, D., Prinstein, M. J., Danovsky, M., & Spirito, A. (2000). Patterns of children’s coping with life stress: Implications for clinicians. *American Journal of Orthopsychiatry, 70*, 351-359.
- Eaton, R. J., & Bradley, G. (2008). The role of gender and negative affectivity in stressor appraisal and coping selection. *International Journal of Stress Management, 15*, 94-115.
- Garmezy, N. (1983). Stressors in childhood. In N. Garmezy & M. Rutter (Eds.), *Stress, coping and development in children* (pp. 43-84). New York: McGraw-Hill Book Company.
- Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thurm, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin, 129*, 447-466.
- Hintze, J. M., Stoner, G., & Bull, M. H. (2000). Analogue assessment: Research and practice in evaluating emotional and behavioral problems. In E. S. Shapiro & T. R. Kratochwil (Eds.), *Behavioral assessment in the schools: Theory, research, and clinical foundations* (2nd ed., pp. 104–138). New York: Guilford Press.
- Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist, 46*, 352-367.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lengua, L. J., & Long, A. C. (2002). The role of emotionality and self-regulation in the appraisal-coping process: Tests of direct and moderating effects. *Applied Developmental Psychology, 23*, 471-493.
- Losoya, S., Eisenberg, N., & Fabes, R. A. (1998). Developmental issues in the study of coping. *International Journal of Behavioral Development, 22*, 287-313.

- Muldoon, O. T. (2003). Perceptions of stressful life events in Northern Irish school children: A longitudinal study. *Journal of Child Psychology and Psychiatry*, *44*, 193-201.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, *132*, 98-131.
- Rudolph, K. D., & Hammen, C. (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transactional perspective. *Child Development*, *70*, 660-677.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*, 141-166.
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination and will? *Journal of Personality*, *74*, 1557-1586.
- Ryan, R. M., Deci, E. L., Grolnick, W. S., & LaGuardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 1: Theory and methods* (2nd ed., 795-849). New York: Wiley.
- Skinner, E. A. (1995). *Perceived control, motivation, & coping*. Thousand Oaks: Sage Publications.
- Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, *71*, 549-570.
- Skinner, E. A., & Edge, K. (1998). Reflections on coping and development across the lifespan. *International Journal of Behavioral Development*, *22*, 357-366.

- Skinner, E. A., & Wellborn, J. G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. Featherman & R. M. Lerner & M. Perlmutter (Eds.), *Life-span development and behavior* (pp. 91-133). Hillsdale: Erlbaum.
- Skinner, E. A., & Wellborn, J. G. (1997). Children's coping in the academic domain. In S. A. Wolchik & I. N. Sandler (Eds.), *Handbook of children's coping with common stressors: Linking theory and intervention* (pp. 387 - 422). New York: Plenum.
- Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology*, 58, 119-144.
- Spirito, A., Stark, L. J., Grace, N., & Stamoulis, D. (1991). Common problems and coping strategies reported in childhood and early adolescence. *Journal of Youth and Adolescence*, 20, 531-544.
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297-233.
- Yamamoto, K., Soliman, A., Parsons, J., & Davies, O. L. Jr. (1987). Voices in unison: Stressful life events in the lives of children in six countries. *Journal of Child Psychology and Psychiatry*, 28, 855-864.

Table 1

*Children's Experience with the Eight Scenarios and Appraisals of Threat and Emotional**Distress for Each Scenario (N = 146)*

Videotaped scenario	Past Experience %	Happen to you in the future?	General Threat <i>M (SD)</i>	General Emotional Distress <i>M (SD)</i>
Parents arguing	73%	83%	4.07 (.73)	3.54 (1.15)
Arguing with parent	75%	90%	3.94 (.86)	3.61 (1.02)
Being bullied at school	73%	84%	3.90 (.95)	3.86 (.92)
Friend moving away	84%	92%	4.04 (.77)	3.13 (.93)
Not being picked for team	46%	79%	4.50 (.75)	3.46 (.76)
Mistake in a team sport	57%	88%	4.32 (.75)	3.34 (1.19)
Sitting an exam	100%	99%	3.65 (.79)	2.33 (1.05)
Medical injection	93%	93%	3.47 (.98)	2.56 (1.27)
All scenarios	---	---	3.99	3.23

Note. General threat was the average of the three threats. General emotional distress was the average of the three emotional reactions. Threat and emotional distress scores could range from 1 to 5.

Table 2

Factor Loadings for Appraisals of the Eight Stressful Scenarios (N = 146)

Stressful scenario	Relatedness Threat Appraisal Factor loadings		
	Factor 1: Non- interpersonal	Factor 2: Peer	Factor 3: Parent
Friend moving away	.71	.48	.30
Sitting an exam	.70	.13	.05
Medical injection	.77	.11	.20
Being bullied at school	.35	.62	.25
Not being picked for a team	-.05	.78	.19
Mistake in a team sport	.43	.62	-.31
Parents arguing	.47	.18	.74
Arguing with a parent	.11	.23	.72
Eigenvalue	2.6	1.1	1.0
% variance explained	32%	14%	13%

Table 3

Comparisons of Threat Appraisals Within Each Stressful Scenario Group and Between Different Scenario Groups (N = 146)

Stressful scenario	<i>M (SD)</i>			Paired comparisons of threats <i>within</i> each scenario group, <i>t</i> (145)		
	Threat to Relatedness (R)	Threat to Competence (C)	Threat to Autonomy (A)	R vs. C	R vs. A	C vs. A
1. Non-interpersonal scenarios	3.23 (1.05)	3.54 (.97)	4.40 (.94)	-3.30**	-10.59**	-9.54**
2. Parent scenarios	3.89 (1.00)	4.11 (.98)	3.53 (1.02)	-4.64**	-8.92**	-5.04**
3. Peer scenarios	4.41 (.74)	4.34 (.80)	3.97 (.85)	.96	4.97**	4.49**
Paired comparisons <i>between</i> scenario groups, <i>t</i> (145)						
Non-interpersonal vs. Parent	-7.09**	-6.18**	4.94**			
Non-interpersonal vs. Peer	-13.99**	-9.56**	5.75**			
Parent vs. Peer	-5.67**	-3.08**	.44			

Note. Threat appraisal scores could range from 1 to 5.

***p* < .01.

Table 4

Comparisons of Emotional Reactions Within Each Stressful Scenario Group and Between Different Scenario Groups (N = 146)

Stressful scenario	<i>M (SD)</i>			Paired comparisons of emotions <i>within</i> each scenario group, <i>t</i> (145)		
	Sadness	Fear	Anger	Sad vs. Fear	Sad vs. Anger	Fear vs. Anger
Non-interpersonal scenarios (Threat to autonomy)	2.95 (.91)	2.48 (.99)	2.49 (1.03)	6.23**	5.31**	-.12
Parent scenarios (Moderate balanced threat)	3.71 (1.10)	3.25 (1.17)	3.77 (1.09)	3.83**	3.74**	.47
Peer scenarios (Threat to relatedness and competence)	3.95 (1.01)	2.63 (.90)	4.09 (.80)	18.54**	-1.78	-20.39**
Paired comparisons <i>between</i> scenario groups, <i>t</i> (145)						
Non-interpersonal vs. Parent	-8.26**	-7.82**	-12.95**			
Non-interpersonal vs. Peer	-12.33**	-1.82	-19.66**			
Parent vs. Peer	-3.18**	6.44**	-4.12**			

Note. Emotion scores could range from 1 to 5.

***p* < .01.

Table 5

Results of Regressing General Emotional Distress on Grade, Sex, Threat Appraisals, and Experience with the Portrayed Stressful Events (N = 146)

Stressful scenario	Dependent variables		
	Model 1: General emotional distress to non-interpersonal scenarios, β	Model 2: General emotional distress to parent scenarios, β	Model 3: General emotional distress to peer scenarios, β
R^2	.22**	.19**	.17**
Independent variables			
Grade 3 vs. 5	.19*	.05	.22*
Grade 3 vs. 7	.35**	.22*	.30**
Girl vs. boy	.23**	.23**	.20**
Threat to relatedness	.07	.17*	-.02
Threat to competence	.21*	.16*	.05
Threat to autonomy	.03	-.16*	.01
Past experience	.09	-.06	.25**

Note. General emotional distress was an average of sad, fear and angry reactions, which were then averaged across scenarios in each group

* $p < .05$. ** $p < .01$.

APPENDIX 1

STANDARDIZED INSTRUCTIONS^a

Hi Everyone! Thank you all for coming and helping me out. We're going to be doing a couple of things today because I am really interested in finding out more about how you feel and what you'd do in some situations that kids your age are sometimes faced with. So before we start lets fill out the first page of our booklet because I need to know your age, and your teacher's name.

Okay, so now I am going to show you a number of short video clips that come from movies that you might have seen. In each scene there will be either a boy or a girl and I want you to imagine that you are the child in the video. That means I want you to imagine that you are in the situation and then answer some questions about how you would feel if you were the child in the video and the situation was happening to you. So are there any questions before we begin? Okay, let's get to it.

Situation 1: Being Bullied

In the first video, I want you to imagine you are this boy (point to boy). In the scene the boy is being bullied at school. After you have watched the video, I am going to ask you some questions such as how sad you would feel if you were being bullied, ..., and how much you would want to leave the situation and escape. Now remember, I want you to imagine you are the person being bullied and then we are going to answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 2 and 3 of your booklet. So, if you were being bullied at school, how... (Read each question aloud to children).

Situation 2: Your Parents Having a Fight

The next video shows a scene of a girl who is watching her parents have a fight at home. So I want you to imagine that you are the person in the video and you are watching your parents having a fight. We'll then answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 4 and 5 of your booklet. So, if you were watching your parents having a fight, how... (Read each question aloud to children).

Situation 3: Not Being Picked on a Team

In the next video, you will see a boy who is wearing glasses and two captains who are picking teams to play a game. In the scene, the boy doesn't get picked to be on either of the teams. Now I want you to imagine that you are the person who doesn't get picked to be on a team to play a game. We'll then answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 6 and 7 of your booklet. So, if you were not picked to be on a team, how ... (Read each question aloud to children).

Situation 4: Getting a Needle

The next video shows a girl who is getting a needle at the hospital. So, I want you to imagine that you are the person in the video and you are getting a needle. We'll then answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 8 and 9 of your booklet. So, if you were getting a needle, how... (Read each question aloud to children).

Situation 5: Having a Birthday Party

The next video is of a birthday party. In the scene, it is a boy's birthday and his family is having a party for him with presents and a birthday cake. So I want you to imagine that you are the person in the video and your family is having a birthday party for you. We'll then answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 10 and 11 of your booklet. So, if it was your birthday, and your family was having a party for you, how... (Read each question aloud to children).

Situation 6: Having a Fight with a Parent

The next video shows a boy who is having a fight with his dad. So I want you to imagine that you are the person in the video and you are having a fight with one of your parents. We'll then answer some questions about how you would feel if this was happening to you. *Play video.* Okay, now let's fill in pages 12 and 13 of your booklet. So, if you were having a fight with one of your parents, how... (Read each question aloud to children).

Situation 7: Doing a Test at School

The next scene shows a boy who is doing a really hard test at school. I want you to imagine that you are the person in the video and you are doing a really hard test. We'll then answer some questions about how you would feel if this was happening to you. *Play video*. Okay, now let's fill in pages 14 and 15 of your booklet. So, if you were doing a really hard test at school, how... (Read each question aloud to children).

Situation 8: Having your Best Friend Move Away

In the next video, you will see a girl who is moving away with his family to a new city. His best friend comes over to say goodbye. I want you to imagine that you are the person in the video who has come to say goodbye to their best friend. We'll then answer some questions about how you would feel if this was happening to you. *Play video*. Okay, now let's fill in pages 16 and 17 of your booklet. So, if you were the girl in the video and your best friend was moving away, how... (Read each question aloud to children).

Situation 9: Doing Something that Causes the Team to Lose

In the next scene, you will see a group of kids playing softball. In the scene, the batter hits the ball high into the sky. I want you to imagine that you are the girl in the video who drops the ball and knocks another player to the ground. We'll then answer some questions about how you would feel if this was happening to you. *Play video*. Okay, now let's fill in pages 18 and 19 of your booklet. So, if you were the girl in the video and you did something that caused your team to lose, how... (Read each question aloud to children).

Situation 10: Having Fun Playing in the Yard with Friends

In the last scene you will see a group of kids having fun playing in the backyard. I want you to imagine that you are one of the kids in the video having fun playing. We'll then answer some questions about how you would feel if this was happening to you. *Play video*. Okay, now let's fill in pages 20 and 21 of your booklet. So, if you were one of the children in the video and you were having fun playing in the back yard with friends, how... (Read each question aloud to children).

^aVersion 1 (With the exception of the positive situations, ordering of situations was varied)