Examining the Effects of Achievement Events on Children’s Positive and Negative Affect

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Abstract

The current study examined the effects of achievement orientation and events (positive and negative) on positive and negative affect in 71 fifth and sixth graders. Participants completed self-report and drawing measures of affect before (T1) and after (T2) playing Connect Four, as well as a measure of achievement orientation (T1). Level of achievement orientation interacted with the outcome (win/lose) to predict T2 proud affect and movement of drawings from T1 to T2. Children with higher levels of achievement orientation reported more proud affect after winning than did children with lower levels of achievement orientation. Moreover, among winners, high achievement orientation participants’ drawings moved more to the right at T2 than did participants with low levels of achievement orientation, indicating greater left hemisphere activation.
Effects of Achievement Events on Children’s Positive and Negative Affect

Depression has become an increasingly prevalent disorder, particularly among school aged children (Locker & Cropley, 2004). Stressors from every facet of life can contribute to childhood onset of depressive symptoms ( Locker & Cropley, 2004). In the past few decades, particularly the severity of academic and achievement stressors have kept steadily increasing in children’s lives ( Locker & Cropley, 2004). Adolescents and young adults have always had to learn how to handle these types of stress, whether in the form of final examinations, standardized tests, college entry exams, or graduate exams. Locker and Cropley (2004) examined the academic stress of standardized tests on secondary school-aged children and found that high school students, in particularly girls, react adversely to the anticipation of an academic stressor, reporting increased levels of negative affect. High school students are not the only students being affected by academic and achievement stressors. Children in primary grades are being made to feel the pressure at much younger ages and are consequently becoming more stressed and showing more signs of depression ( Locker & Cropley, 2004).

Even though many of the new academic requirements are occurring nation-wide and world-wide, only a small minority of children are exhibiting severe depressive symptoms. Many psychologists have theorized that some children are more prone to developing depressive symptoms due to various personality or cognitive vulnerabilities. In particular, Beck (1983) developed a cognitive theory of depression in which an individual’s personality orientation contributes to the onset of depression. Beck proposed two primary orientations, sociality or sociotropy, and individuality or autonomy. Sociotropy refers to an individual’s interaction and dependency with other people, while
autonomy refers to an individual’s independence and self-actions. Autonomous individuals tend to put more emphasis on achievement independence and their own actions separate from societal restraints. They have a tendency to put blame on themselves when their goals are thwarted. On the other hand, sociotropic individuals tend to put more emphasis on social group interactions and view their actions in terms of societal norms. They have a tendency to determine their own self-worth based on other people’s expectations.

Beck’s (1983) theory proposed that when a goal, whether it is educational, social, or personal, is completely thwarted, sociotropic and autonomous individuals would become depressed. In particular, autonomous individuals would become depressed and put blame internally, viewing the failed event as a personal defeat. Beck’s cognitive depression model has been widely supported in the sociotropic domain; that is, sociotropic individuals have been shown to be more likely to exhibit signs of depression after experiencing a negative interpersonal event (see Coyne & Whiffen, 1995, for a review). In contrast very little support has been found for the autonomous domain (Coyne & Whiffen, 1995). This might be due in part to the different facets of the autonomous domain. Bieling and colleagues (2000) factor analyzed the Autonomy Scale of the Sociotropy Autonomy Scale (SAS), initially resulting in a three-factor solution. The three factors were individualistic achievement, freedom from control of others, and preference for solitude (Bieling et al., 2000). Upon further analysis, the autonomy scale was narrowed to independent goal attainment and sensitivity to others’ control. This study focused on the individualistic achievement or independent goal attainment factor of
autonomy since we were interested in examining children’s affective responses to achievement events.

Another reason there has been little statistical support for the autonomous domain may have to do with Beck’s hypotheses about the influence of autonomy and related stressors on individuals’ emotional reactions. He stated that autonomous individuals would become depressed only if all possibilities of achieving a goal were lost; if all possibilities were not lost or stressors were viewed as minor or acute, the autonomous individual would instead show signs of anger (Beck, 1983). To date, only two previous studies have actually examined autonomous individuals’ anger reactions (Little & Garber, 2000, 2004).

In Little and Garber’s (2000) first study, they found a three-way interaction between sex, the Individualistic Achievement subscale of the Sociotropy-Autonomy Scale for Children, and achievement hassles when predicting anger/aggression but not depressive symptoms. That is, they found an increase in achievement stressors resulted in an increase in anger/aggression, but not depressive symptoms, among girls, not boys, who reported high levels of achievement orientation. Although the interaction of achievement orientation did not predict depressive symptoms that may have been due to the time lag between data collections (~3 months) and/or between the time 2 data collection and the occurrence of the stressor (up to 1 month). It might also be because the children did not experience achievement stressors that blocked the obtainment of major goals.

In the second study, Little and Garber (2004) found that, in congruence with Beck’s (1983) theory, girls who reported higher levels of achievement orientation also
had greater reports of aggressive behaviors with increased exposure to academic stressors. It was also found that boys, regardless of level of achievement orientation, had greater reports of aggressive behaviors with increased academic stressors. That is, both high achievement oriented girls and all boys reported signs of anger and aggressive behavior, rather than depressive symptoms, when confronted with academic stress. Although Little and Garber’s research added to our knowledge regarding the main and interactive effects of achievement orientation and achievement stress on depressive symptoms, it is still not known if achievement stressors have an immediate effect on a child’s mood which differs by their level of achievement orientation. Thus, one purpose of the present study was to examine the immediate effects of an achievement event on children’s affect.

Many of the previous studies testing Beck’s (1983) theory measured participants’ level of affect using self-report measures. Adults and older children are capable of using self-report measures that can accurately determine affect. However, many affect questionnaires can be socially difficult for young children to fully comprehend. The task for many child psychologists has been to create a measure or different medium that can accurately measure a child’s affect reactions on a more appropriate scale.

A different way in which a child’s affect can be assessed in a visual way is through drawing. Heller’s (1994) research in the field of physiological psychology led her and colleagues to look at the expression of emotion through drawing. She proposed that since the different hemispheres of the brain are associated with different types of emotions and control different sides of the body that the placement of children’s drawings could provide insight into the emotions they were experiencing. Each
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hemisphere of the brain controls the opposite side of the body, such that the right hemisphere controls the left side of the body, including the eyes, while the left hemisphere controls the right side (Kassin, 2004). Visions in the left visual field are processed in the right hemisphere while visions in the right visual field are processed in the left (Kassin, 2004). The hemispheres are connected and communicate through the corpus callosum (Kassin, 2004). Additionally, the left frontal lobe has been linked to feeling positive emotions, while the right frontal lobe has been tied to feeling negative emotions (Heller, 1994). Heller had 200 kindergarten children draw two pictures, the first one of something that made them happy and the second one of something that made them feel sad. Children were not asked to draw happy or sad pictures, but rather things, people, or places that made the child feel that particular emotion. Heller found that because the left hemisphere, which controls the right eye and side of the body responds to positive emotions, children tended to draw positive thoughts, emotions or events on the right side of the paper. Conversely, children tended to draw negative thoughts, emotions or events on the left side of the paper because the left eye and side of the body is controlled by the right hemisphere which is linked to negative emotions (Heller, 1994).

Like both studies done by Little and Garber (2000, 2004), the current study aims to evaluate the effects of achievement stressors in interaction with achievement orientation on children’s affect. However, unlike those studies, the current study will look at the participants’ immediate emotional reactions to achievement events using self-report and drawing measures. Also, the current study will look at positive, as well as negative achievement events. Each child participant filled out questionnaires to assess current affect (positive and negative) and achievement orientation followed by three games of
Connect Four. Prior and right after the game, each child was asked to draw how he was feeling on a piece of blank paper. It was hypothesized that children who reported higher levels of achievement orientation would respond more negatively to losing and more positively to winning. In addition, it was expected that children’s affective reactions would be apparent by where the drawings were placed on the paper. Children with increased negative affect (i.e., who lost and had higher levels of achievement orientation) should place their second drawings further left on the paper than their first drawings indicating increased right hemisphere activation. Conversely, children with increased positive affect (i.e., who won and had higher levels of achievement orientation) should place their second drawings more to the right side of the paper than their first ones indicating increased left hemisphere activation.

Method

Participants

Participants consisted of fifth ($n = 35$) and sixth ($n = 36$) graders at two elementary schools. The first school was a private, accelerated elementary school in the Midwest. The school’s demographic population was predominantly middle to upper class families, with over 30% reporting as minorities. Ten children (55.5%) were White, seven (39%) were Asian, and one (5.5%) was African American. The mean age of the children was 10.5 years ($SD = 0.86$).

The second school was a public elementary school in the Northeast. The school’s demographic population was predominantly middle class families, with over 50% reporting as minorities. Twenty-four children (45%) were White, nineteen (36%) were
Asian, and ten (19%) were Hispanic. The mean age of the children was 10.68 years ($SD = 0.61$).

**Measures**

*Positive and Negative Affect Schedule-Children (PANAS-C).* The Positive and Negative Affect Schedule for children (PANAS-C), is a 22-item self-report measure that assesses positive and negative affect in children (Crook, Beaver, & Bell, 1998). Participants are asked to notate how much they experienced each of the 22 descriptive adjectives at the time they were completing the questionnaire. Eleven of the adjectives are positive mood words (e.g., “strong,” “attentive,” “lively”), while the remaining eleven are negative mood words (e.g., “upset,” “jittery,” “angry”). The mood adjectives are rated on a 5-point Likert-Scale with choices, *not at all* (1), *a little* (2), *some* (3), *much* (4), and *very much* (5).

Since Beck (1983) proposed that autonomous individuals would become angry as opposed to sad or depressed when their goals or achievements were thwarted, this study focused specifically on two negative affect words, “angry” and “irritable.” Angry and irritable were combined into a category known as “mad.” The 2-item scale had a moderate level of internal consistency for Time 1 ($\alpha = .59$), and a high level of internal consistency for Time 2 ($\alpha = .89$). This study also looked at the affect word “proud.” Many of the positive words, such as “attentive” and “strong” were difficult for the participants to comprehend and therefore could have confounded the results. The affect word “proud” was thought to be a less difficult and more age-appropriate word choice, as well as the most relevant to a positive, achievement-domain event.
Sociotropy-Autonomy Scale for Children (SASC). The SASC, developed by Little and Garber (2000), was designed to measure interpersonal and achievement orientations, including self-criticism. The original SASC was based on the adult versions of the Sociotropy-Autonomy Scale for Adults (Beck, Epstein, Harrison, & Emery, as cited in Little & Garber, 2000) and the Personal Style Inventory (Robins et al., as cited in Little & Garber, 2000). The original SASC was a self-report measure with 53 items rated on a 5-point Likert-Scale with choices ranging from 1 = totally disagree to 5 = totally agree. For the current study, the SASC was manipulated by adding several academic-oriented questions and removing the self-criticism and sociotropy questions, resulting in a 16-item self-report measure of achievement orientation. Due to low item total correlations, four items were dropped, resulting in a twelve-item scale with an adequate level of internal consistency (α = .63).

Drawing measure. Each child was given a blank piece of paper and asked to draw how they felt both before and after the series of games. The location and position where the child first placed his pen to the paper was recorded and measured in millimeters either left or right from the center of the paper. If the placement was on the left side of the paper, it was given a negative number; a positive number was used if the drawing was placed on the right side. A drawing difference score was created by subtracting the second drawing measurement from the first drawing measurement.

Achievement event. The achievement event in this experiment was the children’s game Connect Four. The object of the game is to form a row of four game chips in either a vertical, horizontal, or diagonal line. Each participant was designated either red or black colored game chips to use during the game. The participants played each other in a best
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two out of three match, resulting in a winner and a loser. Winners were given a score of 1 and losers a score of 0.

Procedure

Children who returned the parental consent form were paired off with each other in groups of two. With the exception of two children, children played someone in their own grade. Working with two children at one session, each child was given both the PANAS-C and the SASC questionnaires. After completing both questionnaires, the children were given a blank piece of paper and asked to draw how they were currently feeling. Afterwards, the children played a best two out of three games of Connect Four, resulting in a winner and loser. The winner received either a sticker, pencil, or a piece of candy, and was congratulated. Both children were then given a second piece of blank paper and asked to draw how they were feeling. Lastly, the children were given a second copy of the PANAS-C to fill out regarding how they were feeling right then. The measures completed before playing Connect Four were considered Time 1 (T1) and those completed after playing Connect Four were considered Time 2 (T2).

Results

Descriptive Statistics

Table 1 lists the means, standard deviations and correlations of all the measures. All of the measures were normally distributed, with the exception of the PANAS “mad” subscale at T2 (skewness = 3.93; kurtosis = 17.40). Thus, the distribution of the mad scale was examined, revealing that 81.7% of the participants received a score of 1 on this scale. That is, the vast majority of the students reported feeling not at all “angry” or “irritable” after playing Connect Four. Based on the extreme non-normality of this
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distribution, it was decided to transform the “mad” scores into a dichotomous variable “mad group” such that 0 = no evidence of mad feelings (i.e., a score of 1 on the original mad scale) and 1 = at least some reporting of feeling mad (i.e., a score > 1 on the original mad scale).

There was a significant negative correlation between T1 “proud” and T1 “mad” ($r = -.26, p < .05$) as well as a significant negative correlation between T2 “mad group” and T2 “proud” ($r = -.25, p < .05$). These correlations indicate that participants who reported increased proud affect also reported decreased mad affect. In addition, there was a positive correlation between T2 Drawing and T1 Drawing ($r = .44, p < .01$); thus, subjects tended to start their drawings in the same general place at each time point.

Lastly, there was a significant correlation between Drawing Difference and T1 “mad” ($r = -.29, p < .05$). Participant’s who reported being more “mad” initially tended to move their drawings more to the left at T2 relative to T1, consistent with greater negative affect, regardless of winning or losing. Of note, achievement orientation did not correlate significantly with any of the variables.

Regression Analyses

Hierarchical multiple and logistic regression analyses were run to examine the hypothesized possible two-way interaction between achievement orientation and achievement event outcome (win/lose) to predict the three dependent variables, Time 2 “proud” affect, Time 2 “mad group,” and drawing difference. Hierarchical multiple regressions were used to predict the continuous dependent variables (T1 proud and drawing difference). A hierarchical logistic regression was utilized when predicting T2 “mad group” due to its binary nature. Each regression had three steps. In the first step, the
T1 measure of the dependent variables (PANAS measures only) and achievement orientation were entered. In the second step, whether or not the participants won or lost was added. In the third and final step, the interaction of achievement orientation and the outcome of the game (win/lose) was entered.

“Proud”

In the first step of the hierarchical multiple regression, predicting participants’ level of proud affect at Time 2, there was no significant effect for achievement orientation. There was a marginally significant effect for participants’ level of proud affect at Time 1 ($t = 1.79, p < .08$), such that participants who reported more proud affect at Time 1 also had higher proud affect scores at Time 2. In the second step when predicting level of proud affect, there was a significant effect for winning or losing the game ($t = 2.97, p < .05$). Participants who won Connect Four reported more “Proud” affect than those who lost the game. In the third step of the regression, there also was a significant effect for the interaction of achievement orientation and the outcome of the game ($t = 2.49, p < .05$). The nature of this interaction was such that participants who reported higher levels of achievement orientation and who won Connect Four reported more “proud” affect; in contrast, those who had higher levels of achievement orientation and who lost the game reported lower levels of “proud” affect (see Figure 1).

“Mad”

In the first step of the logistical regression predicting whether or not participants reported any “mad” affect at Time 2, neither Time 1 “mad” affect nor achievement orientation was significant. However, in the second step when predicting “mad group,” there was a significant effect for winning or losing the game (Wald’s $d (1) = 6.89, p <$
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.01). In other words, significantly more participants who lost the game (11 out of 35) reported at least some “mad” affect (irritability and/or anger) than participants who won the game (2 out of 36); continuity correction Chi-square (1) = 6.31, \( p < .05 \). In the third step of the regression the interaction of achievement orientation and the outcome of the game (win/lose) was not significant.

**Drawing Difference**

When predicting the change in participants’ drawings from Time 1 to Time 2, there was no significant effect of students’ level of achievement orientation in the first step. In the second step, there was a significant main effect for whether or not students won the game \( (t = 2.33, p < .05) \), students who won tended to move their drawings more to the right. However, that effect was further modified by participants’ level of achievement orientation as demonstrated by a significant interaction between win/lose and level of achievement orientation in the third step \( (t = 2.40, p < .05) \). The nature of this interaction was consistent with the hypothesis; losing participants’ drawings moved more to the left as their level of achievement orientation increased indicating increased right hemisphere activity, i.e., negative affect, and winning participants’ drawings moved more to the right as their levels of achievement orientation increased indicating greater left hemisphere activity, i.e., positive affect (see Figure 2) Of note, the significant interaction became non significant when T1 “mad” was controlled.

**Discussion**

The intent of this study was to determine if achievement events and level of achievement orientation interacted to impact children’s positive and negative affect. Specifically, it was hypothesized that children with higher levels of achievement
orientation would react more positively to winning and negatively to losing than children with lower levels of achievement orientation. These hypothesized relations were supported for “proud” affect and the placement of participants’ drawings, but not “mad” affect. Participants who reported higher levels of achievement orientation and who won the game reported increased levels of “proud” affect and moved their drawings more to the right, therefore reacting more positively than winners who had low levels of achievement orientation. Also consistent with the hypothesis, losers with higher levels of achievement orientation felt less proud and moved their drawings more to the left (an indication of increased negative affect) than did losers with low levels of achievement orientation. Contrary to expectations and previous research (Little & Garber, 2000, 2004), level of achievement orientation did not influence self-reports of mad affect in response to the game outcome. These results might be due to the fact that the achievement stressor, losing at Connect Four, was not a strong enough achievement stressor to produce sufficient negative affect to show differential effects for various levels of achievement orientation.

After running the hierarchical regression, it was found that if a participant won the game, they reported more “proud” affect than the participants who lost. It was also found that more participants who lost reported some “mad” affect than participants who won the game. These findings indicate that even small events in people’s lives, such as uplifting events and hassles, can significantly impact people’s moods at least temporarily. Much of the current research on stress has been concerned only with major events, such as getting divorced or the death of a family member, leading to significant changes in affect, such as depressive disorders. Ravindran and colleagues (2002) researched minor
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stressor events, what they termed hassles (minor negative events such as getting stuck in traffic) and uplifts (minor positive events such as going to a party). They found that the minor hassles and uplifts had a significant impact on both positive and negative affect (Ravindran et al., 2002). Thus, the current research with children indicates that examining uplifts and hassles in youth populations, like winning or losing a game, may provide further insight into important aspects of mood regulation.

It was also hypothesized that children’s affective reactions would be apparent by the movement of their drawings from Time 1 to Time 2. Indeed, the data supported the hypothesis and Heller’s (1994) study; there was a main effect for whether the students won or lost the game and where they placed their second drawings relative to their first. Participants who lost the game started their second drawing more to the left side of the paper, indicating right hemisphere activation, while winners started their drawing more to the right, indicating left hemisphere activation. Yet, this effect was further modified by achievement orientation. As Figure 2 illustrates, those with high levels of achievement orientation who won moved their drawings significantly more to the right than those with low levels of achievement orientation while those with high levels of achievement orientation who lost moved their drawings significantly more to the left than those with low levels of achievement orientation. This finding supports Beck’s (1983) hypothesis in that the participants’ level of achievement orientation impacted the level of affective reaction to an achievement event.

The drawing measure yielded results consistent with Beck’s (1983) hypothesis for both positive and negative affect; in contrast, the self-report measure only supported Beck’s hypothesis for positive affect. Although the self-report measures had good
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reliability, some of the questions may have been too challenging for the age level of the
participants and not fully measured the participants’ mood. On the other hand, the
drawing measure has many advantages that the self-report measures do not. Firstly, the
measure looks at affect partially subconsciously through the activation of the right and
left hemispheres. If the participant was feeling a positive emotion, such as proud, the left
hemisphere would be activated without the participants’ control, thus possibly causing
the participant to place their drawings more to the right. If they were experiencing a
negative emotion, such as anger or irritability, the right hemisphere would be activated
causing the drawings to be placed more to the left. However, there was not a significant
correlation between the drawing difference measure and T2 “mad group.” Maybe there
were some participants who lost the game that did not want to admit they were mad or
irritable over something trivial like losing the game, particularly if they were highly
achievement oriented. Secondly, the drawing measure was less academically challenging
and more straightforward than the self-report measures. In many instances, the
participants needed a verbal explanation for the meanings of some of the affect words and
statements. Thus, maybe drawing how they were feeling allowed participants to give a
more accurate account of their true mood.

This study also found a positive correlation between Time 2 drawing and Time 1
drawing; participants, regardless of any other extraneous variables, had a tendency to
start their drawings in the same spot on the paper each time. For example, if a participant
started the drawing on the left side of the paper, they tended to place the second drawing
on the left side as well, despite their level of achievement orientation or if they won or
lost the game. This finding possibly shows support for the effects of baseline mood; that
is, people vary in the levels of positive and negative affect they typically experience (Kassin, 2004) and the tendency to start drawings in a certain place regardless of winning or losing at Connect Four may be a reflection of the participants’ typical moods. Although the content of the drawings was not analyzed in depth, many of the participants drew either a smiley face or stick figure. Although the features and overall atmosphere of the drawing might have changed depending on if they won or lost, the content tended to stay the same; perhaps students’ tendency to draw similar content may have influenced drawing placement. Considering the content of the drawings tended to be faces or human figures, there might have been increased activity in the right hemisphere to process the facial features (Kassin, 2004).

Although it was not specifically hypothesized, this study also found a positive correlation between drawing difference and Time 1 “mad.” This finding can be seen as consistent with Heller’s (1994) research; participants’ who showed higher levels of “mad” affect moved their drawings further to the left at Time 2 then at Time 1, regardless of winning or losing. Participants who were mad, not depressed, moved their drawings more to the left, indicating right hemispheric activation for the negative affect. In fact, this effect was so strong, that when added to the regression predicting drawing difference, the significant interaction between achievement orientation and game outcome became non-significant. It may be that simply playing the game of Connect Four acted as a minor stressor for those participants that were already displaying “mad” affect. In Ravindran et al. (2002) found that depressed individuals who experienced hassles reported greater negative affect than non-depressed individuals who experienced hassles.
This study has many unique attributes that make it different from previous research concerning achievement stressors and affect. Specifically, this is one of the first studies that tested Beck’s (1983) hypotheses using a positive achievement event as well as a negative event. The outcome of the game resulted in both a winner and a loser for each trial. This distinction is extremely important to examine in further studies. Although it is very important to know how children are reacting to negative experiences such as bad grades or test anxiety, it is equally important to know how children are reacting when something positive occurs. If children are or are not showing positive affect after positive events, this could be just as detrimental, if not more so for young children. Psychologists have begun to explore this area, called positive psychology, more in depth. Positive psychology focuses on positive emotions and events rather than the negative to treat depression (Seligman et al., 2006). Seligman and colleagues found that using positive techniques and exercises helped to lessen depressive symptoms among adults. In this study, participants showed increased levels of positive affect, specifically “proud” affect, after winning Connect Four. Knowing how people, particularly children, react to these major and minor positive events can inform psychologists and educators about better techniques to promote mental health in children.

This study also looked at both positive affect (proud) as well as negative affect (mad) and found significant main and interactive effects for positive affect. These findings help to highlight another potential strength of this study, the achievement event. Unlike many studies, this study chose to use a children’s game as the achievement stressor, mainly because it was a developmentally appropriate stressor that would result in a positive and negative outcome. Although Connect Four might have appeared to some
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participants as a minimal stressor, it functioned extremely well for this experiment as an achievement stressor, as evidenced by winning and losing have significant impacts on both positive and negative affect. Future studies might consider building upon this study by increasing the strength of an achievement stressor, possibly by having the participants taking a test (i.e., math or science test) against each other resulting in a winner and a loser.

Another important attribute of this study is the examination of the immediate impact of achievement events on children’s affect. Prior studies have examined the impact of achievement events with a delayed amount of time, such as the day before and after an examination (Locker & Cropley, 2004). This study measured levels of affect directly pre and post experiment. This is a very important distinction because recording directly before and after gives a more accurate account of the true initial affective response level. Delaying the measurements allows for other extraneous variables to confound and influence the participants’ mood. There would be greater room for error in a delayed situation versus an immediate measure of affect. For example, in a study done by Hilsman and Garber (1995), children’s emotional reactions were examined before and after receiving their report cards. Children who received lower than expected grades showed increased levels of negative affect (Hilsman & Garber, 1995). Their reactions were not examined immediately after the distribution of the grades, though; thus, their negative reactions could have been a result of an extraneous variable, such as their parents’ adverse reaction to the grades, and not to their own personal reaction.

One of the limitations of the current experiment was small sample size ($n = 71$). More participants would have strengthened the current results. Also, the population of the
private, Midwestern elementary school was small in comparison to many other schools, including the public, Northeastern elementary school. For example, each grade level in the private school had only one class with approximately 6-15 students in each class, whereas the public school had two classes per grade level with approximately 20-25 students per class. The Midwestern school was also an accelerated school in which the children came from affluent homes with many advantages atypical to local areas. Children were given more individual attention and increased benefits, such as greater access to technological advancements. Thus, approximately half the sample comes from a fairly atypical, privileged, educational and family background. Such a background may have influenced the level of achievement orientation and reactions to the achievement events.

Another limitation of the current study is the lack of significant gender differences. Many of the previous studies mentioned, in particular Little and Garber’s (2000, 2004), found differences between boys and girls. They found that increases in achievement stressors resulted in an increase in aggression and anger in girls but not in boys. However, this study did not examine for gender differences due to a lack of power to detect such differences based on the small sample size. This may explain why the hypothesized interaction between achievement orientation and the achievement event when predicting mad affect was non-significant; that is, in the past that effect was only true for girls and detected when gender differences were specifically examined. Further studies might want to examine gender differences with larger sample sizes.

In summary, taking into account confounds and limitations, the current study supported both Beck (1983) and Heller’s (1994) hypotheses and research while
examining new realms in child psychology. This study helped to verify that although this was a good start into exploring children’s reactions to achievement stressors and events, further research is still needed in this area to prevent children from the negative effects of stress.
References


Table 1  
*Means, Standard Deviations, and Correlations for Achievement Orientation, Affect Proud/Mad, and Drawing Difference Variables*

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<th>5</th>
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<td>-.23</td>
<td>.08</td>
<td>-.08</td>
<td>-.25*</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. T2 Drawing</td>
<td>-27.76</td>
<td>37.92</td>
<td>-.03</td>
<td>.02</td>
<td>-.22</td>
<td>.44**</td>
<td>.06</td>
<td>-.12</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>8. Drawing Difference</td>
<td>-.45</td>
<td>42.34</td>
<td>.18</td>
<td>.09</td>
<td>-.29*</td>
<td>-.60**</td>
<td>.23</td>
<td>-.02</td>
<td>.46**</td>
<td>---</td>
</tr>
</tbody>
</table>

* p < .05, two-tailed. ** p < .01, two-tailed.

Note: “Proud” = PANAS question 7; “Mad” = PANAS question 9 and PANAS question 19
Figure Captions

*Figure 1.* Time 2 proud affect as a function of achievement orientation and outcome of game.

*Figure 2.* Drawing difference as a function of achievement orientation and outcome of game.
The diagram illustrates the relationship between the level of achievement orientation and drawing difference. It shows two lines:

- The blue line represents the 'Winner' group, which increases as the level of achievement orientation increases.
- The magenta line represents the 'Loser' group, which decreases as the level of achievement orientation increases.

The x-axis represents the level of achievement orientation, with 'Low' and 'High' markers. The y-axis represents the drawing difference, ranging from -20 to 25.