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The Impact of Negative Life Events on Young Adolescents: Comparing the Relative Vulnerability of Middle Level, High School, and College-Age Students

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Early adolescence represents a particularly vulnerable period of development during which young people are susceptible to establishing lifelong behavior patterns associated with poor life, health, and educational outcomes (McGee & Williams, 2000; Mohay & Forbes, 2009; Morgan & Todd, 2009; Schumacher & Kurz, 2000). Previous research demonstrates older adolescents and young adults often experience negative life events (NLEs) prior to corresponding periods of depression, anxiety, and anger (Johnson, Whisman, Corley, Hewitt, & Rhee, 2012; Sigfusdottir & Silver, 2009) and that NLE-related distress can influence students' readiness to learn (De Anda et al., 1997; Franko et al., 2004; Oliva, Jiménez, & Parra, 2009).

Educators—especially in the middle grades—must provide increasingly responsive support and intervention to help reduce the lifelong educational and health-related consequences too often associated with NLEs. To develop sound theory and effective interventions, researchers must understand not only whether young adolescents are more vulnerable to NLEs than older adolescents and adults, but also how they experience NLEs differently. In this study, we investigated the relative influence of NLEs on middle level, high school, and college students. Specifically, we examined young adolescents' emotional vulnerability to NLEs and described how these vulnerabilities changed during adolescence, and we assessed the impact of event intensity, timing, and gender.

Four core research questions guided this study:

1. Do middle level, high school, and college students differ in terms of exposure to and vulnerability to negative life events and corresponding experiences with depression, anxiety, and anger?
2. Does the relationship between low, medium, and high intensity negative life events and adolescent levels of depression, anxiety, and anger differ among middle level, high school, and college students?
3. Does the relationship between young adolescent emotional health outcomes and temporal proximity to negative life events differ among middle level, high school, and college students?
4. Do the relationships among depression, anxiety, and anger and negative life events during the middle grades, high school, and college differ depending on gender?

This study makes an important contribution to the professional literature on readiness to learn in the middle grades by helping researchers and practitioners better understand how emotional vulnerability changes during adolescence and by discussing the implications of these changes for professional practice. Further, it promises to help middle level professionals become better prepared to assist young people coping with NLEs and to create school environments that support student success.

Literature Review

Vulnerability in Early Adolescence

During the middle grades years, young people are experiencing "tremendous physical, intellectual, social, emotional, and spiritual growth" (North Carolina Department of Public Instruction [NCDPI], 2004, p. 6). This growth includes the physical growth related to puberty as well as a range of psychosocial changes associated with developing an increasingly refined identity; discovering individual talents, interests, and skills; forming meaningful peer and intimate relationships; and taking responsibility for more independent and adult decisions about risks, health, and the future (Steinberg, 2005). Although this exciting period of development is characterized by exploration, discovery, and rapidly expanding capacities, it is also accompanied by a number of factors that make people particularly vulnerable.

First, the sensitive and personal nature of the changes associated with early adolescence, combined with the increasing importance of peer relationships, often contributes to an amplified sense of self-consciousness and insecurity that promotes increased social and emotional vulnerability among middle grades students (Blakemore, 2008). Additionally, the variable and often erratic timing of these changes can create a level of uncertainty and instability that is unique during adolescence, particularly if one experiences these changes in a manner noticeably out of sync with one's peer group (NCDPI, 2004). Unlike the similarly large-scale physical, cognitive, and emotional changes that occur from birth to age three, the changes associated with early adolescence occur with an added level of conscious personal awareness and self-conscious peer comparison that can add to the stressfulness of the period (NCDPI, 2004).

Second, significant biological changes occur in the brain during early adolescence (Steinberg, 2005), and this may contribute to heightened emotional vulnerability. During this time, the socio-emotional aspects of the brain dominate thinking and are associated with emotional, often dramatic, responses to stressful life events. As middle level students age and become high school and college students, the prefrontal cortex develops and the cognitive control functions of the brain assume greater influence (Steinberg, 2005). These cognitive control functions are associated with a growing capacity for logic, weighing the advantages and disadvantages of a given response, and making accurate projections about the future. Further, as the prefrontal cortex develops, so does a young person's ability to override initial fight or flight responses, allowing for more sophisticated and nuanced responses to challenging life events (Spenrath, Clarke, & Kutcher, 2011). Most middle level students, however, are just beginning to develop these capacities and are more likely to respond to stress in ways that are socially and emotionally reactive than older adolescents.

Finally, middle level students are often being introduced, both intentionally and unintentionally, to progressively sophisticated adult life experiences (NCDPI, 2004). These experiences can be relatively benign, such as being held increasingly responsible for their academic studies, or more threatening, such as making decisions about substance use or delinquent behavior. These initial exposures to what may become routine adolescent and adult experiences can feel overwhelming to middle level students. Although essential, this process of accumulating life experience and developing the perspective necessary to interpret, assign value, and respond to life events can be a stressful part of early adolescence.

NLEs and Young Adolescent Risk Behavior

Exposure to NLEs represents one pathway to risk for adolescents. Previous research has demonstrated older adolescents often experience NLEs prior to corresponding periods of depression, anxiety, and anger and has documented the sometimes debilitating effects of these emotional states (Sigfusdottir & Silver, 2009). Specifically, a large number of studies support the relationship between NLEs and internalizing symptoms such as depression and anxiety (Bouma, Ormel, Verhulst, & Oldehinkel, 2008; Espejo, Hammen, & Brennan, 2012; Franko et al., 2004; Garber & Flynn, 2001; Johnson et al., 2012), while an equally large number of studies support the relationship between NLEs and externalizing symptoms related to anger, delinquency, and substance abuse (Allwood, Baetz, DeMarco, & Bell, 2012; Flouri & Kallis, 2011; Levers-Landis, Greenley, Burant, & Borawski, 2006; Ireland, 2002;

Lee, Storr, Ialongo, & Martins, 2012; Lloyd & Turner, 2008; Overbeek, 2005). Additionally, adolescents who experience NLEs are more likely to describe themselves as feeling less ready to participate in learning (De Anda et al., 1997; Franko et al., 2004; Oliva et al., 2009), as participating in higher rates of a wide range of health risk behaviors (McGee & Williams, 2000; Mohay & Forbes, 2009; Morgan & Todd, 2009; Schumacher & Kurz, 2000), and as having lower levels of overall life satisfaction than adolescents who have not shared similar difficulties (Ash & Huebner, 2001; Garcia, Rosenberg, & Siddiqui, 2011; Ho, Cheung, & Cheung, 2008; Suldo & Huebner, 2004).

Young Adolescent NLEs and Lifelong Risk Behavior

In addition to concerns about the immediate impact of NLEs on young adolescents, there are also legitimate concerns about consequences that last into adulthood. Evidence suggests that NLEs and poor emotional health in early adolescence may contribute to lifelong patterns associated with diminished educational outcomes, poor emotional health, and heightened levels of risk behavior. Because the basic patterns, structures, and relationships associated with adult decision-making are being integrated, refined, and firmly established during the adolescent years, these patterns exert an influence on adult decision-making that may be especially difficult to change in adulthood. Burgess Dowdell (2006) described this process in terms of health behavior:

> Adult health outcomes are linked to the health-related behaviors they adopted as children and adolescents. As a child grows and matures into an adolescent, behavior patterns can change rapidly, and any health risk behaviors that are established during adolescence often can be difficult to change in adulthood. These behaviors can include bad eating habits, inactivity, and the use of tobacco and alcohol. These behaviors can place an adolescent at high risk for continuing unhealthy lifestyles. (2006, p. 160)

Evidence also suggests that early adolescence represents a particularly influential phase of development, and that developmental delays or academic setbacks suffered in early adolescence can contribute to higher levels of risk during the later phases of adolescence and adulthood. For instance, the degree of healthy development of self-esteem in late childhood and early adolescence predicts rates of eating disorders, suicide, and a range of other health risk behaviors in late adolescence (McGee & Williams, 2000). Exposure to abuse and crime during early adolescence predicts the majority of repeat delinquency in late adolescence (Schumacher & Kurz, 2000), and "youth who begin drinking before the age of 14 are 4 times more likely to become alcohol dependent as adults compared with those who begin drinking at age 20 years or older" (D'Amico, 2005, p. 336). Perhaps most relevant to middle level educators is that people seem more likely to develop lifelong patterns associated with academic failure, emotional distress, and victimization in early adolescence (Colman, Kim, Mitchell-Herzfeld, & Shady, 2009; Schumacher & Kurz, 2000).

Method

Sample and Data Collection

The data for this study came from two of the latest of the population-based *Youth in Iceland* surveys: the 2012 survey of upper secondary school students (13- to 15-year-old students in grades eight through ten) and the 2010 survey of full-time junior college students (16- to 20-year-old students). For the present analysis we included all accessible 13- and 15-year-old students enrolled in Icelandic secondary schools during February 2012 and all accessible 17- and 19-year-old full-time students enrolled in junior colleges in October 2010. These samples represent approximately 86% and 71% of the populations in these age groups, respectively.

All aspects of data collection were supervised by the Icelandic Centre for Social Research and Analysis (ICSRA) at Reykjavik University and carried out using established research protocols (Sigfusdottir, Thorlindsson, Kristjansson, Roe, & Allegrante, 2009; Kristjansson, Sigfusson, Sigfusdottir, & Allegrante, 2013). Teachers at individual school sites administered the surveys, and all students who attended school on the day it was administered participated. A total of 7,291 13- and 15-year-old secondary school students (50.4% girls, 49.6% boys) completed the questionnaire in 2012 and 4,339 17- and 19-year-old junior college students (52.5% girls, 47.5% boys) completed the questionnaire in 2010.

Measures

We used three dependent variables in the analysis—depressed mood, anxiety, and anger—and we used four versions of the main independent variable—negative life events (NLEs1-4). We further used three control variables—family structure, parental education, and family financial status. Because of the homogeneity of the population (Statistics Iceland,

2012), exogenous variables such as race and religion, which are often used in research in other countries, were not included in the present analysis. Table 1 displays the means and standard deviations for all study variables for boys and girls in all four cohorts.

Independent variables. NLEs, often referred to as adverse events, stressful events, stressors, chronic events, or traumas (see Thoits 1995; 2010), were measured with 17 questions pertaining to negative life experiences among participants. Similar questions have been widely used to measure the frequency, accumulation (chronicity), and intensity of life experiences defined as challenging, stressful, or traumatic (e.g., Felitti et al., 1998; Kristjansson, Sigfusdottir, Allegrante, & Helgason, 2009; Sigfusdottir, Farkas, & Silver, 2004; Sigfusdottir, Thorlindsson, & Bjarnason, 2007; Thoits 2010; Wills, Vaccaro, & McNamara, 1992). Due to the nature of the measured events, the questions were put forth as counts in time sequence since each respondent may have had the same experience more than once and may have experienced more than one type of event.

Participants responded to a list of 17 items that began with the question: *How often, if ever, have you had the following experiences?*

1. Been involved in a serious accident.
2. Had a severe illness.
3. Experienced a separation or divorce of your parents.
4. Had a serious argument with your parents.
5. Witnessed a serious argument by your parents.
6. Witnessed physical violence in your home in which an adult was involved.
7. Been involved in physical violence in your home in which an adult was involved.
8. Experienced the death of a parent or sibling.
9. Experienced the death of a friend.
10. Had a break-up with a girlfriend/boyfriend.
11. Been rejected by your friends.
12. Experienced a separation from a friend.
13. Received an exceptionally low grade.
14. Had a father or mother lose a job.
15. Been expelled from school.
16. Been sexually abused by an adult.
17. Been sexually abused by a contemporary (peer).

The four multiple-response categories were:

- Yes, during last 30 days.
- Yes during last 12 months.
- Yes, more than 12 months ago.
- No, never.

We coded the 17 items in four different ways to better understand their relative impact in our four sample cohorts. We began by dividing the items into four categories based on intensity or seriousness of events and assigned them a score of 1 to 4 with the least serious events receiving a score of 1 and the most serious events a score of 4. We categorized items 4, 5, and 13 as intensity level 1, items 2, 6, 10, 11, 12 and 14

Table 1
Means and standard deviations (in parentheses) for all study variables.

	13-year-olds		**15-year-olds**		**17-year-olds**		**19-year-olds**	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NLEs1 Count	3.32 (2.74)	3.71 (2.80)	3.53 (2.71)	4.17 (2.77)	4.46 (3.14)	4.91 (2.71)	4.54 (3.05)	4.80 (2.67)
NLEs2 Intensity	5.61 (6.15)	6.27 (5.98)	5.85 (5.91)	6.94 (5.85)	7.52 (6.82)	8.20 (5.65)	7.74 (6.48)	8.24 (5.64)
NLEs3 Proximity	5.16 (5.34)	5.94 (5.48)	5.49 (5.28)	6.60 (5.10)	7.12 (5.98)	7.82 (4.67)	6.78 (5.61)	7.09 (4.46)
NLEs4 Combined	8.89 (11.86)	10.15 (11.46)	9.18 (11.40)	10.96 (10.11)	11.88 (12.94)	12.74 (9.06)	11.39 (12.02)	11.99 (9.00)
Depress. Mood	5.47 (5.51)	8.44 (7.35)	5.94 (5.94)	9.60 (7.73)	6.88 (6.37)	9.70 (7.00)	6.48 (5.82)	8.97 (6.52)
Anger	4.14 (3.46)	4.49 (3.54)	4.27 (3.35)	4.88 (3.71)	4.38 (3.31)	4.85 (3.38)	3.96 (2.71)	4.47 (3.13)
Anxiety	2.30 (1.77)	3.20 (2.31)	2.44 (1.93)	3.63 (2.48)	2.57 (2.02)	3.79 (2.38)	2.47 (1.85)	3.56 (2.32)
Family struct.	0.28 (0.45)	0.33 (0.47)	0.30 (0.46)	0.32 (0.47)	0.30 (0.46)	0.30 (0.46)	0.29 (0.46)	0.36 (0.48)
Parental Educ.	8.56 (3.00)	8.39 (3.03)	7.92 (2.84)	7.61 (2.83)	8.67 (2.93)	8.57 (2.72)	8.87 (2.85)	8.68 (2.72)
Finance Stat.	4.92 (1.15)	4.62 (1.13)	4.79 (1.12)	4.53 (1.10)	3.28 (1.10)	3.44 (1.06)	3.26 (1.01)	3.43 (0.97)

as intensity level 2, items 1, 3, 7, 9, and 15 as intensity level 3, and items 8, 16 and 17 was intensity level 4. We then assigned a proximity score from 0 (No, never.) to 3 (Yes, during last 30 days.) to the response categories with an event closer in time indicating greater current impact on the emotional outcomes.

Based on the intensity level of the question items (1 to 4) and the proximity of responses (0 to 3), we constructed the following four types of negative life events scales:

- NLEs1 Count-based Analysis: All responses were coded with "1" if marked and "0" if not marked. This measure took into account neither the intensity of events nor the proximity of responses.
- NLEs2 Intensity-based Analysis: The intensity categorization above was multiplied with a 1 for every "Yes" response category and 0 for "No, never." This scale took account of intensity but not proximity.
- NLEs3 Proximity-based Analysis: The proximity of response categories was multiplied with 1 for all question items. This scale took into account proximity of responses but disregarded differences in intensity of items.
- NLEs4 Combined Analysis: Intensity scores for question items and proximity scores for response categories were multiplied according to the above. This scale took into account both intensity of events and proximity of responses.

For all the four NLEs measures, we collapsed calculated responses to form a scale. Due to high skew and kurtosis, we transformed each scale before multivariate analyses using the natural logarithmic function, which brought the scores into the suggested range of +/- 1.0 in all instances (Gujarati, 2003).

Control variables. The three control variables were family structure, parental education, and family financial status. Family structure was measured with the question: Which adults live in your home with you? The response categories were:

- I live with my father and mother.
- I live separately but equally with my mother and father.
- I live mainly with my mother.
- I live mainly with my father.
- I live with my mother and her partner.
- I live with my father and his partner.
- I live on my own.
- I live in different arrangements.

The questions were collapsed to the following categories:

- Lives with both biological parents. = 0 (~ 70%)
- Lives in different arrangements. = 1

Data pertaining to parental education was obtained by asking respondents separate questions about their fathers' and mothers' educational attainment. Response options were:

- Finished elementary school or less.
- Started but did not finish secondary school.
- Finished secondary school.
- Started university but did not finish.
- Has a university degree.
- Don't know.

The two responses for the father and mother were summed to form a scale ranging from 2 to 12.

Family financial status was assessed with the question: *What do you think is the relative financial standing of your family in comparison to other families in Iceland?* The response categories were:

- Much worse off.
- Considerably worse off
- A little worse off.
- Similar to others
- A little better off.
- Considerably better off.
- Much better off.

Dependent variables. The three dependent variables were depressed mood, anger, and anxiety. Depressed mood symptoms were measured using a 10-item subscale from the SCL-90 outpatient assessment tool defined by Derogatis, Lipman, and Covi (1973). The respondents were asked how often during the previous seven days the following 10 statements applied to them:

- I was sad or had little interest in doing things.
- I had little appetite.
- I felt lonely.
- I had sleeping problems.
- I cried easily or wanted to cry.
- I felt sad or blue.
- I was not excited in doing things.
- I was slow or had little energy.
- The future seemed hopeless.
- I thought of committing suicide.

Response categories were:

- Almost never = 0
- Seldom = 1
- Sometimes = 2
- Often = 3

The scores were summed to form a scale with a range from 1 to 31 (Cronbach's Alpha ranged from .89 to .92 per the four cohorts).

Symptoms of angry mood were measured with a five-item subscale also from the SCL-90 assessment tool (Derogatis et al., 1973). The questions had the same heading as the ones pertaining to depressed mood and the same response categories. Participants responded to the following five statements:

- I was easily annoyed or irritated.
- I experienced outbursts of anger that I could not control.
- I wanted to break or damage things.
- I got into a fight.
- I yelled at somebody or threw things.

Responses were summed to form a scale from 1 to 16 (Cronbach's Alpha range: .81 to .86).

Symptoms of anxiety were measured with three items also from the SCL-90 assessment tool (Derogatis et al., 1973). The questions had the same heading as the ones pertaining to depressed mood and anger and the same response categories. Participants responded to the following statements:

- I felt nervousness.
- I felt sudden fear for no apparent reason.
- I felt tense.

Responses were summed to form a scale from 1 to 16 (Cronbach's Alpha range: .74 to .81).

Data Analysis

Ordinary least squares multiple linear regression (OLS) was the main method of analysis (Gujarati, 2003). We ran discrete models for the four samples and separately tested all four types of NLEs measures as predictors of the three types of emotional outcomes—depressed mood, anger, and anxiety—while controlling for family structure, parental education, and family financial status. All models were run separately for girls and boys because prior researchers have found these events to differentially affect the genders (Thoits, 1995; 2010). We report unstandardized and standardized beta coefficients for all four types of NLEs measures within the four samples and adjusted R^2 for all models. For clarity purposes, we did not mark the beta coefficients for significance of p-values in Tables 2-4 as all are significant at the .001 level.

Additionally, please note that in this study we were able to capture a very large proportion (80%) of the student population attending middle school, high school, and junior college in Iceland. As a result, we did not use inferential statistics to test for group differences as the differences observed are the actual differences within the population.

Results

We begin our overview of the findings by looking at the mean trends on the NLEs scales for girls and boys in the four samples (see Table 1). As expected, the mean score on the NLEs scales rises with ascending age for both girls and boys. For the most part, the same holds true for the mean score for depressed mood, anger, and anxiety.

Table 2 shows the findings from the OLS regression models predicting depressed mood. First, the adjusted R^2 measures consistently reveal the highest variance explained by the NLEs3 Proximity measure, which accounts for the proximity of events but disregards intensity. The amount of variance explained is considerably higher among girls than boys in our models, with the proximity measure decreasing linearly from 27.7% among 13-year-old girls to 15.8% among 19-year-old girls, respectively, as opposed to 18.8% to 8.7%, respectively, among the boys in the same age groups. A similar trend was observed with the standardized beta coefficients. Generally, we observed the strongest relationships of all four NLEs measures in the NLEs3 Proximity measure among both girls and boys, with all predictive relationships being considerably stronger among girls. Overall, the trends in predictive power decrease with age for both boys and girls.

Table 3 shows the findings from the OLS regression models predicting anger. As with depressed mood, the adjusted R^2 measures consistently reveal the highest variance explained by the NLEs3 Proximity measure. The amount of variance explained is higher among girls than boys for the first three samples—13-, 15-, and 17-year-olds—but is higher among boys in the 19-year-old sample (9.9%) compared to the girls (9.2%). As before, the variance explained in our models decreases linearly with higher age of the sample. A similar trend was observed with

Table 2
OLS Regression Models. NLEs1-4 predicting depressed mood.

	Adjusted R^2 (%)				Unstandardized Beta (SE)				Standardized Beta			
					Boys							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	18.4	13.6	11.4	8.8	3.21 (.20)	2.90 (.20)	2.89 (.28)	2.36 (.32)	.416	.352	.325	.269
NLEs2 Intensity	16.1	12.6	10.5	7.3	2.22 (.15)	2.11 (.15)	2.11 (.21)	1.62 (.25)	.387	.339	.312	.240
NLEs3 Proximity	18.8	14.8	12.9	8.7	2.50 (.15)	2.38 (.16)	2.52 (.22)	1.95 (.27)	.416	.363	.341	.261
NLEs4 Combined	16.9	13.9	12.1	7.7	1.89 (.12)	1.86 (.13)	2.00 (.18)	1.48 (.22)	.392	.353	.332	.243
					Girls							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	26.2	23.1	14.3	13.5	5.01 (.24)	4.96 (.24)	3.72 (.31)	3.45 (.36)	.498	.454	.332	.329
NLEs2 Intensity	23.8	21.3	13.1	12.8	3.62 (.18)	3.65 (.19)	2.73 (.25)	2.61 (.28)	.472	.436	.316	.323
NLEs3 Proximity	27.7	25.2	16.0	15.8	4.01 (.18)	4.11 (.19)	3.35 (.26)	3.20 (.29)	.507	.472	.354	.358
NLEs4 Combined	25.5	23.9	15.1	15.1	3.12 (.15)	3.28 (.16)	2.69 (.22)	2.59 (.25)	.485	.460	.344	.354

Table 3
OLS Regression Models. NLEs1-4 predicting anger.

	Adjusted R^2 (%)				Unstandardized Beta (SE)				Standardized Beta			
					Boys							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	14.0	8.9	12.0	8.1	1.77 (.12)	1.39 (.12)	1.52 (.14)	1.06 (.15)	.371	.300	.335	.262
NLEs2 Intensity	12.0	7.9	11.1	6.7	1.22 (.09)	.99 (.09)	1.11 (.11)	.72 (.11)	.342	.284	.321	.234
NLEs3 Proximity	14.1	10.1	13.3	9.9	1.37 (.10)	1.17 (.09)	1.31 (.11)	1.00 (.12)	.367	.316	.347	.292
NLEs4 Combined	12.4	9.0	12.6	8.3	1.02 (.08)	.89 (.07)	1.04 (.09)	.74 (.10)	.343	.299	.339	.264
					Girls							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	19.4	16.3	12.4	7.8	2.12 (.12)	2.09 (.12)	1.84 (.15)	1.24 (.18)	.435	.397	.338	.246
NLEs2 Intensity	16.9	14.5	11.0	7.1	1.49 (.09)	1.51 (.10)	1.31 (.12)	.92 (.14)	.403	.375	.314	.235
NLEs3 Proximity	20.1	18.6	14.7	9.2	1.68 (.09)	1.77 (.10)	1.66 (.13)	1.16 (.15)	.438	.422	.363	.271
NLEs4 Combined	17.8	16.7	12.7	8.3	1.28 (.08)	1.38 (.08)	1.29 (.11)	.90 (.12)	.409	.401	.340	.256

the standardized beta coefficients. Generally, the strongest relationships of all the four NLEs measures was observed for the proximity measure among both girls and boys with all predictive relationships being considerably stronger among girls. As before, the trend in predictive power generally decreases with age for both boys and girls.

Table 4 shows the findings from the OLS regression models predicting anxiety. As with previous models, the adjusted R^2 measures consistently reveal the highest variance explained by the NLEs3 Proximity measure, which takes account of proximity of events but disregards intensity. Again, the amount of variance explained is considerably higher among girls than boys in our models, with the proximity measure decreasing linearly from 17.6% among 13-year-old girls to 8.4% among 19-year-old girls, respectively, as opposed to 9.6% to 5.2%, respectively, among the boys in the same age groups. We observed a similar trend with the standardized beta coefficients. Generally, we observed the strongest relationship of all the four NLEs measures in the NLEs3 Proximity measure among both girls and boys, with predictive relationships being considerably stronger among girls. As before, the trend in predictive power decreases with age for both boys and girls.

Table 4
OLS Regression Models. NLEs1-4 predicting anxiety.

	Adjusted R^2 (%)				Unstandardized Beta (SE)				Standardized Beta			
					Boys							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	9.2	10.2	6.1	5.4	.74 (.07)	.84 (.07)	.73 (.09)	.59 (.10)	.296	.314	.258	.215
NLEs2 Intensity	7.7	9.6	5.4	4.9	.50 (.05)	.62 (.05)	.53 (.07)	.43 (.08)	.268	.306	.244	.204
NLEs3 Proximity	9.6	10.7	6.9	5.2	.58 (.05)	.68 (.05)	.63 (.07)	.48 (.08)	.301	.318	.269	.208
NLEs4 Combined	8.3	10.2	6.4	5.1	.43 (.04)	.54 (.04)	.50 (.06)	.39 (.07)	.277	.311	.262	.205
					Girls							
	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr	13-yr	15-yr	17-yr	19-yr
NLEs1 Count	17.2	11.7	6.4	8.2	1.28 (.08)	1.21 (.08)	.95 (.11)	.99 (.13)	.404	.342	.250	.267
NLEs2 Intensity	15.6	10.3	5.7	7.8	.92 (.06)	.87 (.07)	.70 (.09)	.75 (.10)	.384	.322	.238	.263
NLEs3 Proximity	17.6	12.7	7.0	8.4	1.00 (.06)	.99 (.07)	.84 (.09)	.84 (.11)	.404	.352	.260	.267
NLEs4 Combined	16.3	11.4	6.5	8.3	.78 (.05)	.77 (.05)	.67 (.08)	.69 (.09)	.387	.336	.252	.267

Discussion

The authors of *This We Believe: Keys to Educating Young Adolescents* (National Middle School Association, 2010) suggest that an effective education for young adolescents must be developmentally responsive, challenging, empowering, and equitable. This framework calls for middle level educators to create equitable environments that help empower vulnerable students so they can embrace and meet academic challenges in school. Additionally, it suggests that for middle level educators to be truly developmentally responsive, they must understand the factors related to developmental success or failure and be prepared to intervene on behalf of struggling students. The purpose of this study was to investigate the relative influence of NLEs on students and to identify the unique ways NLEs may influence young adolescents' emotional well-being and readiness to learn.

Several interesting observations emerged from this study. First, frequencies and mean scores indicated most students experience and cope with NLEs during the middle grades. Second, when compared to high school and college students, middle level students were (1) more vulnerable to depression, anger, and anxiety associated with NLEs; (2) more likely to be equally affected by low, medium, and high intensity NLEs; and (3) more vulnerable to the impact of recent NLEs, even when those events were of relatively low intensity. Third, evidence related to developmental trajectory suggests that, although the incidence of NLEs and the means associated with depression, anxiety, and anger increase as adolescents develop, the predictive power of the relationship between NLEs and emotional outcomes decreases as they age. Finally, girls in the middle grades were more likely to have (1) experienced NLEs; (2) experienced depression, anger, or anxiety related to NLEs; and (3) a stronger relationship between their experiences with NLEs and their emotional health.

Frequency of NLEs in Early Adolescence

Frequencies and mean scores indicated most students experience and cope with NLEs during the middle school years. This finding is supported by the literature on adolescent development and suggests that most middle level students cope with what they perceive to be challenging circumstances. Whether or not these events result in a corresponding experience with depression, anger, or anxiety, early adolescents report regularly facing difficulty during the middle grades.

Relative Vulnerability to NLEs

Middle level students were more vulnerable to depression, anger, and anxiety associated with NLEs. This finding is consistent with the professional literature describing developmental vulnerabilities commonly associated with early adolescence. Young adolescents are just beginning to transition from the relative simplicity of childhood to the sophistication of adulthood (Steinberg, 2005). During this period, they are being exposed to adult experiences for the first time, without the benefit of either the perspective that comes with prior experience or fully developed cognitive function and impulse control. Their

rapidly expanding cognitive abilities contribute to a heightened level of awareness of and sensitivity to the pain, consequences, and social stigmas frequently associated with NLEs.

Additionally, middle level students are beginning to develop capacities that help them consider abstract concepts related to trauma for the first time; for example, equity or justice. It seems reasonable that the capacity to consider the inequitable distribution of trauma or the injustice associated with unpunished offenders comes with additional psychological stress—i.e., "It's not fair." Older adolescents appear to have an advantage when mitigating the emotional effects of NLEs. These advantages may include (1) having more time to develop their cognitive abilities including emotional regulation and impulse control and (2) benefiting from accumulated life experience and the perspective that comes with that experience.

NLEs and Intensity

Middle level students were more likely to be equally affected by low-, medium-, and high-intensity NLEs. Stress appraisal has been described as a relative phenomenon (Lazarus, 1987; 2000), as an individual's perceptions of stress change over time. People collect experiences with which they make relative comparisons and assess and reassess their ability to cope with life events. Middle level students may have difficulty differentiating between low-, medium-, and high-intensity life events. Because young adolescents are inexperienced, they have few reference points for making relative comparisons of NLEs. From a middle level student's point of view, the worst thing that has happened so far is the worst thing that has happened in his or her life, regardless of the objectively assessed relative intensity of those life events. Failing a math quiz may feel like the worst thing that could possibly happen to a student until her best friend is seriously injured in an accident. This study's findings suggest that, as they age, adolescents became increasingly differentially affected by low-, medium-, and high-intensity NLEs. The findings further suggest that as older adolescents gain experience and perspective and develop, they become better able to differentiate the relative intensity of events and become less emotionally vulnerable to lower intensity events.

NLEs and Event Timing

Middle level students were more vulnerable to the impact of recent NLEs, even when those events were of relatively low intensity. Results indicate that recently occurring NLEs exerted more influence on young adolescents' emotional outcomes than previously occurring NLEs, even when the recent NLEs were lower in intensity. For example, a middle level student may have been more emotionally affected by failing a quiz than being in a major accident if failing the quiz occurred more recently.

Adolescents seem to become less vulnerable to the emotional impacts associated with recently occurring NLEs as they age. Previous research suggests that some of these differences may be biologically based (Blakemore, 2008; Giedd et al., 2006; Lenroot & Giedd, 2006; Steinberg, 2005; 2007). For instance, as the prefrontal cortex develops, adolescents seem better able to override their initial fight-or-flight reactions and initiate more sophisticated responses to NLEs. Additionally, young adolescents have been described as having a brain-based, biological imperative to seek novelty, to explore their surroundings, and to engage in a variety of experiences (Steinberg, 2005). In this context, it seems logical for young adolescents to be most reactive to their most recent experiences. For young adolescents, this heightened attention to recently occurring events may actually be an adaptation that allows them to more rapidly transition from one experience to another and, therefore, more rapidly accumulate the experiences necessary to develop the perspective demonstrated in later adolescence and adulthood.

Gender Differences and NLEs

Girls in middle level schools experienced NLEs and their effects more frequently and intensely than did boys in middle level schools. This finding is consistent with the professional literature describing the impact of NLEs on boys' and girls' emotional outcomes. Numerous studies have described girls experiencing a comparatively higher number of cumulative NLEs than boys (Flouri & Panourgia, 2011; Harkness et al., 2010; Sigfusdottir & Silver, 2009), and the present study adds support to those findings. Girls consistently experienced NLEs more frequently than boys in the same grade. Further, these findings remain stable throughout adolescent development; adolescent girls in the study consistently experienced NLEs more frequently than did adolescent boys.

Additionally, results suggest that NLEs were a stronger predictor of depression, anxiety, and anger for young adolescent girls than they were for boys. Many studies support the stronger influence of NLEs on rates of girls' depression and anxiety (Flouri & Panourgia, 2011; Harkness et al., 2010; Sigfusdottir & Silver, 2009), and higher rates of both depression

and anxiety have been regularly associated with girls experiencing NLEs. However, previous research has been inconsistent regarding the influence of NLEs on rates of girls' anger. The findings in this study support the position that girls demonstrate higher rates of NLE-related anger than adolescent boys.

Finally, evidence suggests that young adolescent girls are more likely to become depressed, anxious, or angry, even when compared to emotionally affected boys. Traditionally, this heightened emotional sensitivity has been described in the context of girls' vulnerability to symptoms—most often, internalizing symptoms. Current research, however, makes it increasingly difficult to interpret these findings exclusively in the context of girls' negative symptomology. While girls are more susceptible to the emotional influences of NLEs, they also tend to outperform boys academically (Scott, 2007), are less likely than boys to engage in delinquency (Davis, 2002), and are more likely than boys to be leaders in their schools and communities. Future researchers might choose to focus on investigating the strengths associated with the heightened emotional sensitivity and responsiveness of girls and the relationship between this sensitivity and positive academic and life outcomes.

Limitations and Strengths

There are some limitations associated with this study. First, this study used data from a cross-sectional survey administered to groups of middle level, high school, and college students. Because the study did not follow the students longitudinally or apply experimental methodology, this study does not provide definitive causal evidence. Second, the sample from this study came from a relatively homogenous population. Most participants were middle class, white, and European. Therefore, caution should be used when generalizing this study's findings to young people who differ in terms of ethnicity, race, national origin, or other demographic factors. Third, all measures relied on participant self-reports. Some students may not have accurately reported their histories with NLEs or their current feelings and emotions. Finally, the NLEs instrument itself has some limitations. As originally designed, this instrument is a count-based measure that does not account for intensity. Although effective adaptations were made for the purposes of this study, it might be reasonable for future researchers to use an instrument designed to better measure the intensity of NLEs.

Researchers and practitioners can also be confident in these findings for several reasons. This study used an exceptionally large sample size of approximately 11,000 participants. This sample size suggests participant responses will be highly representative of the populations and sub-populations being studied. For instance, each study sub-group—middle level girls or college-age boys, for instance—consisted of more than 1,500 respondents. Additionally, this study used data collection procedures that have been used routinely and carefully refined for more than15 years. These data collection procedures have been rigorously assessed (Bjarnason, 1995; Kristjansson et al., 2013) and were implemented consistently and effectively. Finally, the scales used to measure depression, anxiety, and anger have been validated and demonstrate reliability when used among adolescent and young adult populations. Each of these scales are widely used and considered strong measures of their corresponding emotional outcomes.

Conclusions

National Middle School Association (1982) suggested, "No other age level is of more enduring importance [than early adolescence] because the determinants of one's behavior as an adult, self-concept, learning interests, skills, and values largely are formed during this period of life" (p. 26). This study suggests that middle level students experience NLEs differently than older adolescents and that these differences may contribute to heightened emotional vulnerabilities related to those events. These heightened vulnerabilities may include more frequently occurring emotional reactions to NLEs and emotional reactions that are less differentiated by the relative intensity of events or the influence of time.

Taken together, these findings suggest that adults who spend time with middle level students should be aware of these emotional vulnerabilities and treat these young people with high levels of respect, consideration, and compassion; thereby supporting the development of lifelong behaviors associated with academic success and emotional well-being. For example, they should be willing to offer middle level students higher levels of support for circumstances that adults may perceive as low intensity events and they should respond empathetically to recent NLEs regardless of adult judgments regarding the intensity of the events.

Additionally, Frenn, Malin, and Bansal (2003) proposed that "middle school students are at an age

and in a setting that offer great potential for effective and efficient interventions" (p. 42). This study supports the idea that middle level students may benefit from interventions designed to build effective coping skills, emotional intelligence, and positive emotional health. At a minimum, it is important for middle level professionals to be aware that students may be particularly responsive to role models and interpersonal interactions that help build perspective and demonstrate effective coping skills. Examples of interventions designed to help middle level students successfully cope with NLEs include the REAL Girls and Project Challenge programs (Mann, 2012; 2013).

Finally, this study suggests that young adolescent girls experience NLEs differently than young adolescent boys and that people of each gender experience different NLE-related emotional health outcomes. Future research investigating these differences—using a strengths-based perspective that includes girls' higher rates of academic and life success—may make a valuable contribution to the professional literature associated with NLEs, gender, and academic success in the middle grades.

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