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# Emotional Reactions Toward School Situations: Relationships With Academic Outcomes

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## Abstract

The current study investigated self-reported positive affect (PA) and negative affect (NA) in high school students ( $N = 451$ ) within three academic contexts: homework, classwork/tests, and after-school activities. We examined whether context-specific emotions predicted grades, life satisfaction, and discipline records. Our findings revealed that context may be important when examining test-criterion relations, with students' affective reactions during extracurricular activities leading to different relationships with outcomes than reported affect during homework and classwork/testing. Furthermore, we found that PA predicted student grades and satisfaction with life to a much greater extent than NA. Practical implications and future directions are discussed.

## Keywords

positive and negative affect, homework, after-school activities, classwork, academic outcomes

Students' emotional reactions during learning have been shown to relate to a number of important educational and life outcomes (Pekrun, Elliot, & Maier, 2009; Pekrun & Frese, 1992; Pekrun, Goetz, Titz, & Perry, 2002). These findings are not surprising as the school environment creates a context for a variety of emotional experiences that have the potential to influence teachers' instructional practices and students' learning processes. These, in turn, can either enhance or hinder students' academic attainment.

Historically, research on affective variables and relationships with achievement has concentrated extensively on the role of test anxiety in test performance (Gumora & Arsenio, 2002; Schutz & DeCuir, 2002). More recently, studies have emerged that focus on various aspects of academic emotions, such as valence (e.g., positive, negative; Larsen, McGraw, & Cacioppo, 2001; Watson & Tellegen, 1985), academic subjects (e.g., mathematics, languages; Goetz, Frenzel, Pekrun, & Hall, 2006; Goetz, Frenzel, Pekrun, Hall, & Lüdtke, 2007), specific characteristics of discrete emotions (e.g., boredom, Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010;

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Vodanovich, 2003), and the object focus of emotions (i.e., activity emotions pertaining to ongoing achievement-related activities, and outcome emotions pertaining to the outcomes of these activities; Pekrun et al., 2002, 2006). However, more research is needed on the relationship of student affective reactions in the school context and how these emotions relate to academic and nonacademic outcomes. The present study attempted to do just that: We investigated whether students' differently-valenced academic emotions in several academic contexts are related to academic and life success indicators.

### *Context of Learning*

The process of learning is not uniform. It comprises numerous domains and situations that differ dramatically from each other, and, as a result, elicit various emotional and behavioral responses from all involved. A number of psychosocial constructs have been shown to demonstrate weak between-domain correspondence. Anxiety, self-efficacy, causal attributions, academic self-concepts, and achievement goals have been demonstrated to depend heavily on the specific domain of study, with only moderate to weak relations revealed among different domains (e.g., Bernichon, Cook, & Brown, 2003; Fennema, 1989; Marsh & Ayotte, 2003; Marsh & Yeung, 1996). Goetz, Frenzel, Pekrun, Hall, and Ludtke (2007) investigated students' emotional experiences (enjoyment, pride, anxiety, anger, and boredom) to see whether they show situational specificity as well (mathematics, physics, German, and English classes). Their findings indicated a largely domain-specific organization of academic emotions, with anxiety and enjoyment showing the lowest degree of among-domains associations. Goetz et al.'s (2006) earlier study revealed similar results: Academic emotions were largely organized along domain-specific trajectories, with the degree of domain specificity varying for a particular emotion.

The aforementioned studies generally equate the notion of "domain specificity" with disciplines taught in school. There is another reasonable way of slicing the broad academic context into domains (and expect low between-domain correspondence) by looking at students' emotions associated with classwork and homework, and at those that emerge when students participate in after-school activities. To date, most studies have focused on emotions in the classroom, with fewer inquiries examining student affect during homework (Knollmann & Wild, 2007; Warton, 2001). Although students spend a considerable amount of time on extracurricular activities, research into emotion during after-school activities is scarce at the very best. Up until now, no study has investigated emotions in the classroom, during homework, and during after-school activities in one integrative framework.

### *Emotional Reactions Toward Classwork and Homework: General Findings*

Studies have examined academic emotions in classroom situations. For example, test anxiety has been shown to be negatively related with performance on a test and grades for students of various levels of schooling (Hembree, 1990; Hunsley, 1987; Pekrun, Goetz, Titz, & Perry, 2002). Boredom—especially specific subtypes of it—has been negatively related to student performance in the classroom (Daschmann, Goetz, & Stupnisky, 2011; Harris, 2000).

Leone and Richards (1989) employed the *subjective experience sampling* methodology and showed that the levels of affect, arousal, and motivation reported by students were significantly more negative during homework than during other activities, including work performed in the classroom. Interestingly, homework was viewed less favorably than all other activities for students of different levels of achievement, across gender, and grade levels.

Similarly, Chen and Stevenson's (1989) study focused on students' feelings about homework in elementary school students from the United States, Japan, and Taiwan. The results were not reassuring, with most students reporting general boredom and discouragement when rating their

feelings associated with homework completion. Chen and Stevenson (1989) also found that children who were negative about homework were more likely to be negative about school in general. More recent inquiries echo these findings. For example, Warton (2001) and Knollmann and Wild (2007) discussed students' general negative reaction toward homework and suggested that homework, typically a solitary and independent activity, was viewed more negatively than classwork, which was normally associated with social interactions. Warton (2001) suggested that developmental trajectories of students' emotional reactions toward homework needed to be explored, and differences between affective reactions toward homework and classwork further investigated. The present study investigated emotional reactions in classwork, homework, and after-school situations in a large sample of high school students.

### ***Positive and Negative Affect Schedule***

There are three predominant theoretical conceptions that guide research on the structure of emotion (Gaudreau, Sanchez, & Blondin, 2006; Watson & Clark, 1997). The first approach describes emotion in terms of discrete categories such as anger, anxiety, fear, guilt, joy, pride, and so forth. The second approach is based on the premise that appraisals of control and values are central to the arousal of emotions in academic situations (Pekrun, 2006). These include activity-related emotions such as enjoyment, frustration, and boredom experienced during learning, as well as outcome emotions such as joy, hope, pride, anxiety, hopelessness, shame, and anger relating to feedback about success or failure. The third theory allots discrete emotions into higher-order dimensions on the basis of their overlapping properties—positive and negative valence (Watson, Wiese, Vaidya, & Tellegen, 1999). Based on the latter conceptualization of emotion, Watson, Clark, and Tellegen (1988) developed the Positive and Negative Affect Schedule (PANAS). This measure uses an adjective checklist that contains two subscales designed to measure positive (i.e., active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong) and negative affect (i.e., afraid, ashamed, distressed, guilty, hostile, irritated, jittery, nervous, scared, and upset). The PANAS can be used to assess transient affective states (e.g., present moment, today, past few days), and more stable traits (e.g., past month, past year, typically), depending on the time frame provided by the instructions (Watson & Clark, 1997).

Since its development, the measure has been widely used in research for diverse purposes in social (e.g., Koestner, Lekes, Powers, & Chicoine, 2002), organizational (e.g., Ilies & Judge, 2005), educational (e.g., Gumora & Arsenio, 2002), and sport psychology (e.g., Crocker & Graham, 1995). The subscales have been shown to be internally consistent, largely orthogonal, and stable (Watson et al., 1988). Low correlations between positive affect (PA) and negative affect (NA) may appear counter-intuitive. However, substantial research evidence suggests that individuals can experience a mixture of positive and negative affects during the same period of time, thus refuting the contention that PA and NA represent two opposite poles of the mood continuum (Larsen, McGraw, & Cacioppo, 2001; Watson & Clark, 1997). Our study employed a variation of PANAS and examined the structure of affect across three academic contexts.

### **Positive and Negative Affect and Academic Outcomes**

Many researchers have focused on the PA versus NA dichotomy when exploring its relationship with meaningful academic and life outcomes. Inquiries that focused on interactions between positive and negative affective reactions and cognitive factors, have shown that both positive and negative mood can enhance mood-congruent memory processes by mechanisms of state-dependent learning and mood-congruent recall (e.g., Levine & Burgess, 1997). In addition, PA and NA have been demonstrated to trigger different modes of thinking, reasoning, and problem

solving. Positive mood may facilitate holistic, intuitive, and creative ways of solving problems, as well as an optimistic reliance on generalized knowledge structures. In contrast, negative mood may enhance more focused, detail-oriented, analytical, and algorithmic modes of processing information (Pekrun et al., 2002). Finally, studies reveal that both positive and negative mood can produce task-irrelevant thinking that may be detrimental for task performance (Baumeister, Hutton, & Cairns, 1990; Kluger, Lewinsohn, & Aiello, 1994). Obviously, as a result of the above contingencies, PA and NA may hinder or facilitate students' academic achievement, and studies that would carefully examine these relationships are in order. The design of our study allows us to do just that explore possible differential associations between PA and NA and academic outcomes.

Positive psychology provides insight into relationships between PA and NA and important life outcomes. In their review of cross-sectional, longitudinal, and experimental data, Lyubomirsky, King, and Diener (2005) suggest that people who experience a preponderance of positive emotions tend to be successful and accomplished across multiple life domains. The researchers claim that PA engenders success, and cite numerous studies that demonstrate that positively-valenced moods and emotions lead people to think, feel, and act in ways that promote both resource building and involvement with approach goals (Lyubomirsky, 2001; Lyubomirsky, Sheldon, & Schkade, 2005). In general, as many researchers working within positive psychology paradigm posit, positive emotions matter more than negative (Fredrickson, 2001; Seligman & Csikszentmihalyi, 2000). This study investigated whether in fact positive moods that students experience in school-related situations better predict important outcomes than negative moods do.

## Summary of Aims and Goals of the Present Research

The present study had three main aims. First, we examined the underlying factor structure that might circumscribe emotional reactions toward school in three academic situations: classwork/tests, homework, and after-school activities. Second, we examined whether students' emotional experiences vary depending on the specific domain (i.e., homework, school work, and extracurricular activities). Third, we examined the relationship between negative and positive emotional reactions toward school and academic outcomes that included student grades, disciplinary infractions, and life satisfaction. Based on the preceding review of the literature, we predicted that positive and negative emotional reactions would show differential relationships with these criteria.

## Method

### *Participants*

A total of 500 students attending a large Northeastern public high school in the United States participated in this study. After deleting cases that had missing data for more than one item per variable, the sample consisted of 451 students (225 male, 214 female, 12 who did not report gender). For cases with only one missing data point per variable, missing data was replaced with the mean response across all items contributing to that variable. The sample comprised the following self-reported ethnicities: African American (22.0%), Asian American (3.7%), Hispanic (12.4%), White (50.1%), and Multiracial/Other (11.8%).

### *Measures*

1. *Emotional reactions to school.* Test-takers rated how often they had felt several positive and negative emotions over the past month when participating in: (a) after-school activities, (b)

homework, or (c) classwork/tests (e.g., “I have felt *confident*,” “I have felt *frustrated*”). Items were rated on a 4-point scale: (1) *Never or Rarely*, (2) *Sometimes*, (3) *Often*, (4) *Usually or Always*. Seven negative emotions and eight positive emotions were included in the scale, with eight of these emotion repeated across two or more situations (e.g., “I feel *excited*” was asked for both homework, and classwork/test situations). Eight items each referred to homework, classwork/tests, and after-school activities.

2. *Students’ life satisfaction scale*. Test-takers rated how they felt about their life, relative to the lifestyle they desire and their knowledge of their friends’ lives (Huebner, 1991). Seven items were rated on a 6-point scale ranging from: (1) Strongly Disagree to (6) Strongly Agree. Sample items include: “*My life is going well*,” “*I have what I want in life*.”

3. *Student grades*. Students’ cumulative mark grade point average (GPA) across their school subjects was obtained from their school records. A valid grade was only obtainable for 346 students in the study.

4. *Discipline records*. Discipline records were obtained for each student. The total number of penalties was used as an outcome variable (number of times each student was absent without permission, a number of times each student was late, in detention, etc.).

## Procedure

All participants completed the questionnaire in paper-and-pencil format in the presence of proctors. Students’ participation was voluntary, with parents’ permission obtained prior to the beginning of the study. All participants were asked to be as honest as possible in their responses. Tests and protocols were approved under the Educational Testing Service (ETS) human participants review committee and fairness review process.

## Results

### Reliability and Descriptive Statistics

Reliability and descriptive statistics are reported in Table 1. All instruments showed adequate reliability (Cronbach  $\alpha > .65$ ). Students reported a greater amount of PA in after-school activities than in doing homework ( $t(449)445 = 11.97, p < .001, d = .69$ ) or in a classwork/test situation ( $t(449)445 = 17.17, p < .001, d = .99$ ). Similarly, students reported greater NA while doing homework ( $t(449)448 = 12.29, p < .001, d = .70$ ), or while in a classwork/test situation ( $t(449)448 = 14.43, p < .001, d = .82$ ) compared with taking part in after-school activities. Nevertheless, students still report a substantial amount of PA even in classwork/test situations and while doing homework: Observed scores covered the full theoretical range of the scale, with some students reporting the highest possible scores on PA while doing exams or homework.

### Structural Analyses

We analyzed the structure of the data using linear structural relations (LISREL) v8.8, inputting polychoric correlation and asymptotic covariance matrices and using a diagonally weighted least squares (DWLS) estimator. We modeled the data in three stages (two for the measurement model and then one for the full model predicting criteria).

In stage 1 ( $N = 470$ ), we estimated a six-factor model with the following factors: (a) PA in homework, (b) PA in after-school activities, (c) PA in classwork/tests, (d) NA in homework, (e) NA in after-school activities, and (f) NA in classwork/tests. These factors were allowed to correlate freely. In addition, we modeled correlated error for any item that was repeated across

**Table 1.** Reliability and Descriptive Statistics for Contextualized Feelings Variables, Life Satisfaction, and Students' Mean School Mark

Measure	N	No. of items	Range	$\alpha$	Mean	SD
Positive feelings: Homework	448	4	4-20	.66	9.00	3.46
Positive feelings: Activities	447	4	4-20	.94	12.10	5.36
Positive feelings: Exams/tests	448	4	4-20	.74	7.72	3.24
Negative feelings: Homework	450	4	4-20	.67	7.70	3.21
Negative feelings: Activities	449	4	4-20	.71	5.67	2.56
Negative feelings: Exams/tests	450	4	4-20	.81	8.35	3.87
Life satisfaction	451	7	7-42	.87	30.41	7.36
GPA	350	1	56.25-99.5	—	87.82	7.82

Note: GPA = grade point average.

situations (e.g., The “I feel CALM” item was used for both homework and classwork contexts, so correlated error was modeled between calm-during-classwork/tests, and calm-doing-homework items). All decisions about correlated errors were made a priori, and no further correlated errors were modeled.

In stage 2 ( $N = 470$ ), we estimated a hierarchical model, where the three PA factors defined a second-order “positive affect” factor and the three (NA) factors defined a second-order “negative affect” factor. The two second-order factors were allowed to correlate.

In stage 3 ( $N = 346$ ), the two second-order factors predicted three outcome variables, which were entered into LISREL as manifest variables: (a) life satisfaction, (b) students' average mark for the semester, across all units of study, and (c) whether a student had incurred a disciplinary infraction. The error terms of the three outcome variables were allowed to correlate, as these three variables are related. Note that the reduced sample size at stage 3 was due primarily to missing data for students' school marks and disciplinary records. Data were deleted listwise.

### Structural Analysis 1: Six-factor Confirmatory Factor Analysis of Student Affect

Factor loadings from the six-factor confirmatory factor analysis are shown in Table 2. All factor loadings were significant, ranging from .53 to .94. Note that the model included eight correlated errors, based on the eight emotion adjectives that were repeated across two situations (calm, exited, enthusiastic, delighted, scared, sad, angry, nervous, and upset). Four of the nine correlations between error terms were significant (for the adjectives calm, exited, scared, and sad). Fit statistics indicated that the model provided a good fit to the data: Satorra-Bentler  $\chi^2 = 505.133$  ( $df = 228$ ), root mean square error of approximation (RMSEA) = .052 (90% CI: .046 to .058), NFI = .958, CFI = .976.

Correlations between the six latent factors are shown in Table 3. All PA factors were highly inter-correlated ( $r = .34$  to  $.80$ ), with the strongest correlation between classwork/tests and homework factors. Similarly, all NA factors were highly inter-correlated ( $r = .46$  to  $.78$ ), with the strongest correlation between classwork/exams and homework factors. Correlations between PA and NA scores were *negative* for homework and classwork/tests contexts, but *positive* for extracurricular activities. That is, students appear to either feel positive or feel negative about their homework and classwork, but tend to feel both ways about their extracurricular activities. In general, the correlations between latent factors highlight that context may be important when



**Table 2.** Standardized Factor Loadings From Six-Factor Confirmatory Factor Analysis and Hierarchical Model for Student Affect

	Model 1 (6-factor CFA)	Model 2 (hierarchical CFA)	
	Loading	Loading (1st-order factor)	Loading (2nd order factor)
Factor 1: Positive -homework			.87
Homework: Calm	.67	.65	
Homework: Excited	.85	.86	
Homework: Happy	.75	.74	
Homework: Fearless	.53	.53	
Factor 2: Positive -activities			.39
Activities: Enthusiastic	.93	.93	
Activities: Proud	.91	.92	
Activities: Delighted	.94	.94	
Activities: Energetic	.89	.89	
Factor 3: Positive -exams			.94
Exams: Calm	.56	.55	
Exams: Excited	.80	.81	
Exams: Enthusiastic	.85	.86	
Exams: Delighted	.75	.75	
Factor 4: Negative homework			.87
Homework: Scared	.74	.77	
Homework: Sad	.69	.69	
Homework: Guilty	.59	.60	
Homework: Angry	.65	.62	
Factor 5: Negative activities			.49
Activities: Nervous	.76	.72	
Activities: Upset	.78	.77	
Activities: Angry	.80	.83	
Activities: Dissatisfied	.72	.74	
Factor 6: Negative exams			.93
Exams: Scared	.86	.87	
Exams: Sad	.80	.80	
Exams: Nervous	.77	.76	
Exams: Upset	.78	.77	

Note: CFA = confirmatory factor analysis. All factor loadings are significant at  $p < .01$ .

**Table 3.** Correlations Between the Six Latent Factors From the Six-Factor Confirmatory Factor Analysis

	F1	F2	F3	F4	F5
F1: Positive homework					
F2: Positive activities	.34**				
F3: Positive exams	.80**	.40**			
F4: Negative homework	-.29**	.12	-.08		
F5: Negative activities	.16**	.17**	.29**	.51**	
F6: Negative exams	-.22**	-.01	-.25**	.78**	.46**

Note: CFA = confirmatory factor analysis.

\*\* $p < .01$ , two-tailed.

examining student affect, and that individuals affect in the extracurricular contexts is structurally different from that found when individuals engaged in homework and classwork/testing.

### *Structural Analysis 2: Hierarchical Analysis of Student Affect*

Factor loadings from the hierarchical factor analysis are also shown in Table 2. All loadings on the six first-order factors were significant, ranging from .53 to .94. All loadings on the two second-order factors (PA and NA) were also significant, ranging from .39 to .94. Loadings on the two second-order factors were lower for the first-order factors representing an extracurricular activities context than for the first-order factors representing classwork/examination or homework context. Second-order factors representing PA and NA were not significantly correlated ( $r = -.12, n.s.$ ).

### *Structural Analysis 3: Predicting Outcomes From Positive and Negative Affect*

Figure 1 shows the full model where latent factors of PA and NA predict the three key student outcomes: (a) life satisfaction, (b) student's average school mark awarded in the following semester, and (c) whether students had a recorded disciplinary infraction that semester. This model also fit the data well: Satorra-Bentler  $\chi^2 = 628.415, df = 302, RMSEA = .056$  (90% confidence interval (CI): .049 to .062), normed fit index (NFI) = .938, comparative fit index (CFI) = .967. The model explained 4.7% of the variance in life satisfaction, 3.6% of the variance in average mark, and 1.5% of the variance in disciplinary infractions. PA predicted both student life satisfaction and students' grades (but not whether students had a disciplinary infraction). NA did not predict any of the three outcomes. Such a result highlights the importance of positive emotions in the educational sphere.

## **Discussion**

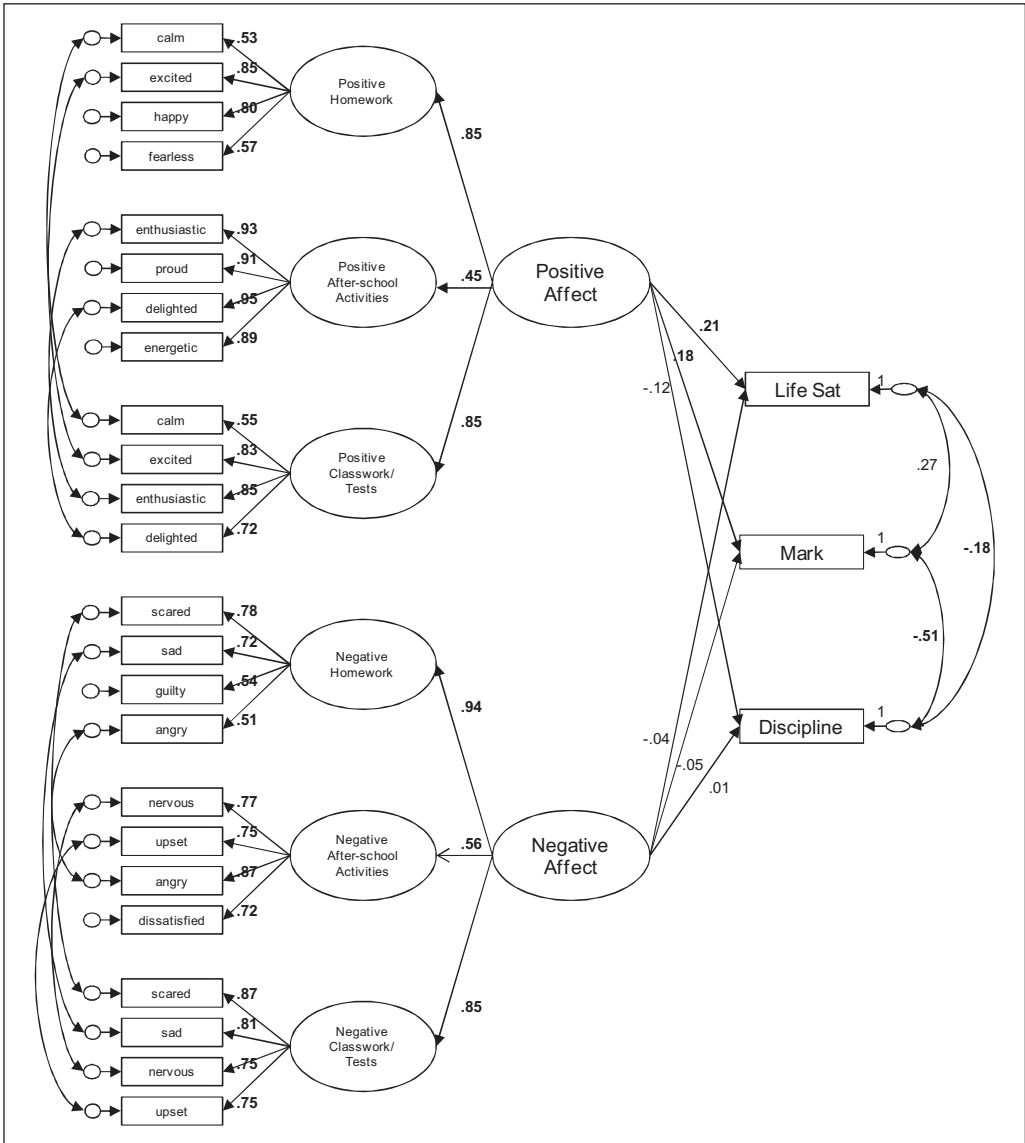
The present study investigated students' PA and NA in three broad academic situations: When students work on their homework, during classwork/tests, or when they participate in extracurricular activities. We also examined whether PA and NA predicted educational outcomes (life satisfaction, grades, and disciplinary infractions). The results demonstrated that students' affective experiences are indeed context dependent, and that PA, and not NA predicts students' grades and satisfaction with life.

### *The Context of Positive and Negative Emotions*

Goetz et al. (2006, 2007) demonstrated that academic emotions are largely organized along domain-specific lines. That is, students' experiences of a variety of affective states vary depending on the particular academic subject. Furthermore, a recent study (Goetz, Frenzel, Ludtke, & Hall, 2011) investigated the moderating effect of having the same versus a different course instructor across academic domains. The results revealed that students' emotional experiences were indeed moderated by the presence of the same teacher across domains. However, the between-domain relations between emotions in subjects having the same instructor were not strong enough to refute the domain-specific nature of student affective reactions. In other words, students' emotions across subjects vary, and these differences are rather salient and pronounced even after other variables (e.g., personality of the instructor) are taken into account.

In the current study we examined whether academic emotions vary depending on the type of activity in which students participate—when working on their homework, during classwork/





**Figure 1.** The Final Model Showing the Hierarchical Affect Solution Predicting Student Life Satisfaction, Average Mark at School, and Disciplinary Infractions, With Significant Parameters Shown In Bold Text

tests, and when engaged in extracurricular activities. We revealed differences in affect between these three academic contexts. Students’ PA was the highest (and NA the lowest) for extracurricular activities, as compared with classwork and homework. Prior studies have shown links between participation in sports and clubs and a number of important outcomes (e.g., higher GPA, Elder & Conger, 2000; school engagement, Marsh & Kleitman, 2002; reduced dropout rates, Mahoney, 2000; Mahoney & Cairns, 1997; see also Eccles, Barber, Stone, & Hunt, 2003, for a review). Researchers report high interest, intrinsic motivation, and opportunities to form strong social bonds with nonfamilial adults and peers, as reasons for participation in extracurricular

activities (e.g., Eccles et al., 2003). It is not too fanciful to speculate that higher PA may serve as an additional mediator variable that can explicate the mechanism underlying the relationship between participation in extracurricular activities and educational outcomes. Furthermore, it is worth noting that students reported a substantial amount of PA even in classwork/test situations and while doing homework. In other words, it is not just “the least academic kind” of school activities, extracurricular activities, that is likely to elicit PA. Scores on assessments capturing affective reactions in all three contexts covered the full range of the scale, with students obtaining the highest possible scores on the PA scale while engaged in classwork/exams or during homework.

### *The Structure of Affective Reactions*

The results of the confirmatory factor analyses indicate that a six-factor model shows good fit to the data, providing insight into the structure of high school students’ feelings toward school. Specifically, students’ affective reactions toward school seem to be distinguishable both in terms of PA and NA, and across the differing domains of after-school activities, classwork/tests, and homework.

In terms of facet level relations, all PA factors were positively and highly correlated, as were all NA factors. In addition, PA related negatively to NA for homework and classwork/test. The exception was for affective reactions toward extracurricular activities, where there was a positive relation between students’ PA and NA. That is, high school students tend to either feel positive or negative about their homework and classwork/exams, but can feel both ways about their after-school activities. This serves as an indication that the structural relations between PA and NA for high school students can differ depending on the situation. Perhaps it is easier for high school students to disentangle positive and negative emotions when reacting to homework or classwork, as opposed to after-school activities.

Hierarchical analysis of student affective reactions revealed further differences among the three academic contexts. More specifically, the analyses demonstrated that loadings onto the two second-order factors of NA and PA were lower for the first-order factors representing extracurricular activities than for the first-order factors representing classwork/tests or homework context. The findings from structural analyses highlight that context may be important when examining student affect, and that students’ affective reactions toward extracurricular activities differ from affective reactions in contexts involving homework and classwork/testing.

### *Positive and Negative Affect and Academic Outcomes*

The present study investigated the effectiveness of positive and negative affective reactions in predicting meaningful academic outcomes—grades, life satisfaction, and disciplinary infractions. The results indicate that PA significantly predicts student grades and life satisfaction, although the effect size is small in each case. NA did not predict any of the three outcomes examined in this study. These results suggest the important role that emotional reactions play in shaping general happiness and satisfaction with life in high school students. These findings also demonstrate that measures of academic emotions can be related to important criterion measures of school success.

The fact that only positive emotions predicted grades and life satisfaction can be explicated by using the positive-psychology perspective. Researchers working within this theoretical framework state that positive emotions are more important than negative emotions (Fredrickson, 2001; Seligman & Csikszentmihalyi, 2000). Our study revealed that, indeed, positive emotional

reactions toward academic situations are meaningful predictors of student grades and general satisfaction with life, unlike negative emotions, which showed no such relationship with valued outcomes.

Needless to say, this finding may have important implications for educators. For instance, several social and emotional learning programs exist in schools across the United States that are designed to improve students' emotional capabilities (e.g., Zeidner, Matthews, & Roberts, 2009; Zins, Bloodworth, Weissberg, & Walberg, 2004). These programs are designed to help students to be able to recognize emotions in themselves and others, manage and regulate their own emotions, and develop a sense of empathy, among others (Zins, Payton, Weissberg, & O'Brien, 2007). Several of these programs have been found to be very effective in groups of racially and ethnically diverse students, and thus may be promising in reducing the existing achievement gap (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Payton et al., 2008). Our findings suggest that additional effort should be invested into ensuring that students' reactions toward schools are positive, and offer them tools that will help them to deal with possible negative emotions.

### *Limitations and Future Directions*

Some limitations of the present study must be noted. The correlational nature of the study prevents us from drawing causal inferences. Longitudinal investigations would be highly instrumental in determining causal relationships among the variables examined in this study. Furthermore, other methods, such as situational judgment tests, forced choice tests, day reconstruction method—to name a few (Lipnevich, MacCann, & Roberts, in press)—could be used as alternatives to the items used in the present study to measure student affective reactions. In addition, more studies are needed that would use students from different countries and various educational tracks to examine affective reactions across academic contexts. Finally, studies demonstrate that students' emotional reactions overlap significantly with the so-called "Big Five" or the five factor model of personality (e.g., Scherer, Wrantik, Sangsue, Tran, & Scherer, 2004). Extraversion has been shown to be the strongest correlate of positive emotions, and Neuroticism was the strongest correlate of negative emotions. Future studies could investigate whether student emotional reactions incrementally predict outcome measures above and beyond personality, and thus, are not redundant.

### **Conclusion**

The results of the current study suggest that students' emotional reactions toward three academic situations are related to valued educational outcomes, and these relationships vary depending on a specific academic context. Our findings demonstrate that PA and NA experienced during homework, classwork/tests, and extracurricular activities are important variables that educators and policymakers should consider, as they relate to students' grades and general satisfaction with life. More specifically, because we found that only positive emotions predicted school outcomes, more attention should be paid toward ensuring that students' reactions toward schools are positive, and introduce them to specific strategies that will help them to manage negative emotions.

### **Authors' Note**

1. All statements expressed in this article are the authors' and do not reflect the official opinions or policies of the authors' host affiliations.

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