Measuring School-Related Subjective Well-Being in Adolescents

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The tripartite model of subjective well-being (SWB) incorporates 3 components: frequent positive emotions, infrequent negative emotions, and an overall positive evaluation of life circumstances (Diener, Suh, Lucas, & Smith, 1999). In light of the large amount of time that youth spend in school, this study investigated a tripartite model of school-related SWB among adolescents, based on 3 measures of SWB appropriate for adolescents. The measures included a measure of school satisfaction (SS) and measures of positive and negative emotions experienced specifically during school hours. Confirmatory factor analysis was conducted to analyze the factorial validity of 3- and 4-factor models of school-related SWB in a sample of 921 adolescents. Results indicated that a 4-factor model comprised of positive emotions, negative emotions, fear-related negative emotions, and SS best described the structure of school-related SWB in the current sample. Results also revealed a comparable factor structure for male and female students. The study points to the possible benefits of a contextualized approach to SWB that takes into account the specific environments in which adolescents live.

Traditionally, the measurement of child and adolescent well-being has taken a deficit-based approach by focusing on an individual's "problems" and associated factors in the environment (Ben-Arieh, 2000). Researchers across a variety of disciplines have typically defined well-being as the absence of problems. Among psychologists in particular, positive psychology, a relatively new focus within psychology, shifts the focus from problems, needs, and weaknesses to well-being, resiliency, and asset-based thinking (Terjesen, Jacofsky, Froh, & DiGiuseppe, 2004).

Subjective Well-Being Constructs

Positive psychology has been described as the study of positive emotions, positive character, and positive institutions (Seligman & Csikszentmihalyi, 2000) and the study of the conditions and processes that contribute to the optimal functioning of individuals, groups, and institutions (Gable & Haidt, 2005). One key construct in most descriptions of positive psychology is subjective well-being (SWB). SWB refers to how people evaluate the experiential quality of their lives in terms of emotional responses and global and domain-specific judgments of life satisfaction (LS; Diener, Suh, Lucas, & Smith, 1999).

Various conceptualizations of SWB have been proposed. A widely accepted model has been proposed by Diener et al. (1999). In their model, SWB is a multidimensional construct that includes positive affect (PA; i.e., frequent positive emotions, such as joy and interest), negative affect (NA; i.e., infrequent negative emotions, such as anger and anxiety), and a cognitive judgment of the quality of life overall (i.e., global LS) or with respect to specific domains (e.g., family relationships, school experiences). Thus, a person with high SWB experiences frequent PA, infrequent NA, and a high level of global and/or domain-specific LS.

Subjective well-being has been linked to various immediate and long-term positive life outcomes. In a comprehensive review of the literature, Lyubomirsky, King, and Diener (2005) concluded that higher levels of SWB were causally related to occupational success, positive mental and physical health, and satisfying interpersonal relationships. Research also indicates that people who report high levels of SWB are more cooperative, confident, creative, tolerant, and altruistic (Cohen & Pressman, 2006; Lyubomirsky et al., 2005). Over time, people who regularly experience SWB in the form of frequent positive emotions have been shown to exhibit greater resilience to adversity (Fredrickson, Tugade, Waugh, & Larkin, 2003).

A multidimensional approach to SWB leads to an emphasis on the distinctions among the three components (i.e., PA, NA, and LS). Although sometimes viewed as polar opposites, PA and NA have consistently emerged as somewhat independent constructs when measured over time (see Watson & Naragon, 2009, for a review). PA and NA correlate with different variables and are only modestly correlated with one another. For example, NA has been demonstrated to be related to anxiety and depression, whereas PA has been demonstrated to be related to depression, but not anxiety. Thus, these constructs

are not simply opposites along the same continuum. In addition, Lucas, Diener, and Suh (1996) found that measures of LS, PA, and NA could be differentiated using stringent multitrait, multimethod analyses.

Although researchers, especially those associated with positive SWB research, have suggested that NA (e.g., emotions of fear, anxiety, and depression) constitutes one general distress factor (e.g., Finch, Lipovsky, & Casat, 1989; Laurent et al., 1999), other researchers have found support for multidimensional models of NA. For example, three-factor models, which conceptualize fear, anxiety, and depression as distinct, yet correlated, components, have been supported (Chorpita, Albano, & Barlow, 1998; Chorpita, Plummer, & Moffitt, 2000; Jacques & Mash, 2004; Muris, Schmidt, Merckelbach, & Schouten, 2001). Alternatively, two-factor models have also been supported. For example, Muris et al. (2001) obtained findings suggesting that indicators of fear and anxiety together constitute one factor, while indicators of depression constitute another factor. In short, the dimensionality of NA remains unclear.

Although there have been numerous studies with adults, a much smaller body of literature has examined SWB among children and adolescents. Results have shown that the SWB reports of children and adolescents reveal similarities to those of adults. For example, children as young as age 8 are able to differentiate among the SWB constructs of PA, NA, and global LS (e.g., Huebner, 1991c; McCullough, Huebner, & Laughlin, 2000), as well as among specific domains of LS (e.g., family life, school life; see Huebner, Gilman, & Suldo, 2006, for a review).

Subjective well-being constructs have been conceptualized in a similar manner for children and adults by some researchers (Huebner & Dew, 1996). Nevertheless, differential correlates of the constructs have been demonstrated across development. For example, relationships with parents and school teachers have been identified as important predictors of global LS in childhood and early adolescence (Suldo, Riley, & Shaffer, 2006; Vecchio, Gerbino, Pastorelli, Del Bove, & Caprara, 2007), while concerns over physical appearance and romantic relationships become critical predictors during later adolescence and early adulthood (Emmons & Diener, 1985; Zullig, Huebner, Patton, & Murray, 2009). Levels of satisfaction with work and marriage have been identified as key predictors among younger adults, while levels of satisfaction with peer relationships and health gain importance later in life (Anderson, Christenson, Sinclair, & Lehr, 2004).

The extant literature thus highlights the multidimensional nature of SWB in children and youth and suggests a tripartite model of well-being in children and youth including the constructs of PA, NA, and global LS. Furthermore, the research on multidimensional approaches to SWB suggests the value of domain-specific reports of SWB, such as measures of PA, NA, and satisfaction in the school setting. Recent research has highlighted the potential importance of distinguishing between overall and domain-specific (e.g., school) indicators of SWB. For example, Antaramian, Huebner, and Valois (2008) found effects of differing family structures (intact vs. nonintact) on measures of satisfaction with family and living environment, but not on measures of general LS, suggesting that general LS scores may, at times, mask important relationships.

School satisfaction (SS) is one dimension of LS in children and adolescents; it has been defined in the literature as a cognitive evaluation of one's overall satisfaction with school experiences (Huebner, 1994). Perhaps related to the amount of time spent in the school setting, students' perceptions of their school life correlate significantly with their overall LS (DeSantis-King, Huebner, Suldo, & Valois, 2007; Huebner, 1991b), moderated by the importance of schooling in a given culture (Park & Huebner, 2005). Research on individual differences in SS among children and youth has been sparse. However, studies have shown linkages between SS and academic performance and school-related behaviors including school absences, drop-out, and behavioral problems (see Baker & Maupin, 2009, for a review).

The experience of NA (e.g., depression, anxiety) during school has been investigated in numerous studies. Robust linkages between NA and negative academic and behavioral outcomes have been demonstrated (see Roeser, 2001, for a review). In contrast, studies of PA, as experienced specifically during school hours, have been sparse. Nevertheless, like SS, some studies have shown important relationships between school-based PA and school performance. For example, Lewis, Huebner, Reschley, and Valois (2009) showed that PA explained additional variance, above and beyond that of NA, in explaining academic performance including classroom behavior and interpersonal relationships in school. Furthermore, based on the broaden and build theory of positive emotions (Fredrickson, 1998), Reschly, Huebner, Appleton, and Antaramian (2008) examined the role of PA during school, coping styles, and student engagement among a sample of middle school students. They found that frequent positive emotions were associated with adaptive coping, which were in turn associated with higher levels of student engagement. This finding suggests that higher frequencies of positive emotions in school might lead to greater future success in school; children and adolescents who experience frequent positive emotions would be more likely to experience success in school given that they are emotionally prepared to explore, solve problems, and succeed at new learning tasks (Reschly et al., 2008).

The tripartite theory of SWB suggests that well-being in adults is a multidimensional construct comprised of three components: (a) the presence of PA, (b) the relative lack of NA, and (c) people's cognitive evaluations of their life circumstances (Diener, Suh, & Oishi, 1997). The literature suggests that a similar multidimensional construct of well-being also exists for children and adolescents (Huebner & Dew, 1996). In light of the large amount of time that children and adolescents spend in school, it seems reasonable to suggest the presence of a school-based SWB construct that might parallel the multidimensional SWB in adults. However, little research has been conducted related to SWB and satisfaction with school experiences in particular. For example, studies of PA and NA have been limited primarily to the studies employing measures of PA and NA that ask children and adolescents to report on the frequency of their experiences of PA and NA *in general*, not in a particular context, such as during school. Nevertheless, it is plausible that some students experience differential frequencies of PA and NA across contexts. For example, an academically struggling student might report frequent NA and infrequent

PA in school along with frequent PA and infrequent NA in general or at home. Similarly, studies of LS have consistently revealed students' abilities to differentiate LS judgments in terms of context (see Huebner, Gilman, & Suldo, 2008, for a review). Thus, assessments of students' SWB might benefit from more finely grained analyses that take context into account.

Subjective Well-Being Within the School Context

The overarching purpose of this study was to explore the possibility of extending the tripartite model of SWB to the specific context of youth and their schooling. The meaningfulness of the multidimensional SWB model within the context of schooling was evaluated by using measures of adolescents' reports of their satisfaction with their school experiences along with measures of the frequency of positive and negative emotions experienced specifically within the school context. To do so, we used the School subscale of the Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner, 1994; Huebner, Laughlin, Ash, & Gilman, 1998) and a modified version of the Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999), which asked students to report on their emotions experienced specifically during school. In doing so, we were able to address the factorial validity of the proposed tripartite model of school-related SWB with a sample of adolescents. Because gender differences for well-being variables have been found among adolescents (Eamons, 2002; Karatzias, Power, & Swanson, 2001; Okun, Braver, & Weir, 1990; Verkuyten & Thijs, 2002), we also addressed the factorial invariance of the obtained model across gender and subsequent mean levels of adolescent reports on the SWB dimensions across gender. Taken together, the findings should further inform efforts to apply the science of SWB to the study of children and adolescents and their schooling.

Method

Participants

Participants consisted of students from a large middle school in a suburban school district in the southeastern USA who participated in a school-wide assessment of their school engagement and psychological well-being conducted by school administrative personnel during fall 2008. Of the 1,025 students recruited to participate, 12 parents denied permission, one teacher failed to participate ($N = 25$), and 79 students were absent on the day of the survey administration. The final sample included 921 students, representing 90% of the total school population.

The sample ($N = 921$) included 7th (50.1%) and 8th (49.5%) grade students, with a mean age of 12.70 ($SD = 0.68$). Four hundred and thirty-two students (46.9%) were boys and 470 (51%) were girls. A total of 2.1% did not report their gender. The majority of students identified themselves as Caucasian (57.7%) or African American (28.8%), while 3.0% identified themselves as Asian American or Pacific Islander, 1.7% identified themselves as Hispanic or Latino, 1.1% identified themselves as Native American or Indian, and 6.2%

identified themselves as "other." A total of 1.5% did not report their race or ethnicity. As an approximation of socioeconomic status (SES), 22.4% reported receiving free or reduced lunch (lower SES), 70.9% reported paid lunch (higher SES), and 6.9% did not indicate whether or not they received free or reduced lunch.

Measures

Multidimensional Students' Life Satisfaction Scale. The MSLSS is a 40-item self-report scale that measures LS of children and adolescents (grades 3–12) in important life domains including family, friends, school, self, and living environment (Huebner, 1994; Huebner et al., 1998). Each item is rated on a 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

The MSLSS has been shown to demonstrate favorable psychometric properties including acceptable internal consistency, test–retest reliability, and factorial validity (Greenspoon & Saklofske, 1997; Huebner, 1994; Huebner et al., 1998). For the purpose of this study, only the School subscale of the MSLSS was used. The School subscale consists of eight items that measure students' overall satisfaction with school-related experiences. Because of space limitations in the survey, the three reverse-keyed items were removed. The internal consistency reliability of the measure for this sample was 0.89.

The Positive and Negative Affect Scale for Children. The Positive and Negative Affect Scale for Children is a child version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; Laurent et al., 1999). It is a self-report scale consisting of 27 items that measure PA and NA in children and adolescents. The scale was initially developed using students in grades 4–8 ($N = 707$). Participants are prompted to indicate how often they have felt *interested*, *sad*, and so forth during the past few weeks. Items are scored on a 5-point Likert scale ranging from 1 (*very slightly* or *not at all*) to 5 (*extremely*). For the purposes of this study, the PANAS-C was administered with a slightly different prompt, "Indicate to what extent you have felt this way during the past few weeks *in school*." This modification was carried out to ensure that students reported on context-specific emotions, that is, the frequencies of positive and negative emotions experienced during school activities.

Research with the PANAS-C has supported its reliability and validity with school-age children (Crook, Beaver, & Bell, 1998; Laurent et al., 1999). The results of principal axis factor analyses revealed a two-factor structure, with an intercorrelation between the PA and NA scales of −0.36 (Laurent et al., 1999). Internal consistency reliability estimates were 0.92 for the NA Scale and 0.89 for the PA Scale (Laurent et al., 1999). The internal consistency reliability of the PANAS-C for this sample was 0.90 for both scales. In addition, a modest negative intercorrelation between the PA and NA scales was found ($r = -.25$), indicating that PA and NA are separable, but not completely orthogonal constructs in this sample.

Procedures

The data for this study involved archival data provided to the researchers by a public U.S. middle school. The database has been used in previous studies (Antaramian, Huebner, Hills, & Valois, 2010; Lewis, Huebner, Malone, & Valois, 2011). Regular classroom teachers administered the paper and pencil measures during homeroom to groups of 15–28 students. Teachers read scripted instructions and prompted students to complete the entire survey. The sequence of the measures was counterbalanced to control for ordering effects. All student names were removed from the surveys and replaced with numerical codes to ensure student confidentiality.

Results

Preliminary Analyses

To establish the reliability of the measurement model for the current sample within the framework of the PANAS-C, corrected item-total correlations were generated for the items comprising PA and NA subscales. Using the guidelines provided by Nunnally and Bernstein (1994), an item was considered "weak" if it had a corrected item-total correlation of $< .30$. For the PA scale, only the item *calm* ($r = .29$) failed to meet the item-total correlation criterion. An examination of Cronbach's alpha indicated that eliminating *calm* increased the internal consistency reliability of the PA subscale from $\alpha = .89$ to $\alpha = .90$. For the NA scale, only the item *jittery* ($r = .17$) failed to meet the item-total correlation criterion. An examination of Cronbach's alpha indicated that eliminating *jittery* increased the internal consistency reliability of the PA subscale from $\alpha = .89$ to $\alpha = .91$. Thus, these items were eliminated from the measurement model because they did not appear to be measuring the intended construct. All of the items comprising the SS measure met the guidelines for corrected item-total correlations and were retained for further analyses.

To test for one-, two-, and three-factor interpretations of the NA dimension, preliminary factor analyses were conducted on the 14 NA items from the PANAS-C. Iterated principal factor analysis and an oblique rotation were employed in the analysis. These methods were chosen because it was assumed that the underlying factors were correlated. An examination of the screen plot revealed an elbow consistent with a two-factor solution. The two-factor solution was also selected based on retaining factors with eigenvalues > 1. The pattern matrixes for one-, two-, and three-factor solutions were examined to interpret underlying factors. The loadings for the one-factor solution, the rotated two-factor solution, and the rotated three-factor solution are presented in Table 1.

Although a one-factor solution provided fairly high loadings for each of the items, a two-factor solution provided a strong basis for a two-factor model in which four items (*scared, nervous, frightened,* and *afraid*) loaded on what we interpreted as a Fear factor. While the three-factor solution seemed to separate depression states (*blue* and *gloomy*) from more general negative states, it accounted for only slightly more variance than the two-factor solution.

Table 1. *Factor Loadings From One-, Two-, and Three- Factor Solutions for the Negative Affect Scale*

		One-factor	Two-factor rotated		Three-factor rotated		
		Factor 1	Factor 1	Factor 2	Factor 1	Factor 2	Factor 3
N1	Mad	0.70	0.72	0.00	0.88	−0.03	0.09
N2	Lonely	0.68	0.55	0.16	0.43	0.20	−0.13
N3	Miserable	0.67	0.65	0.04	0.37	0.10	−0.28
N4	Guilty	0.56	0.37	0.23	0.29	0.26	−0.08
N5	Upset	0.75	0.67	0.12	0.67	0.13	−0.03
N6	Ashamed	0.67	0.48	0.24	0.35	0.23	−0.13
N7	Sad	0.75	0.74	0.03	0.47	0.09	−0.27
N8	Disgusted	0.62	0.72	−0.10	0.64	−0.07	−0.11
N9	Blue	0.73	0.83	−0.09	0.00	−0.10	−0.91
N10	Gloomy	0.66	0.73	−0.06	0.07	0.03	−0.69
N11	Afraid	0.68	0.04	0.77	−0.05	0.79	−0.08
N12	Frightened	0.55	−0.00	0.67	−0.00	0.67	0.01
N13	Nervous	0.47	0.28	0.53	0.11	0.51	0.08
N14	Scared	0.68	−0.00	0.82	−0.07	0.83	−0.06

Note. $N = 873$. For the two-factor solution, the correlation between the factors was .69; for the three-factor solution, the factor correlations were as follows: Factors 1–2 = .66, Factors 1–3 = .72, and Factors 2–3 = −.55.

Confirmatory Factor Analyses

Confirmatory factor analyses (CFA) procedures were conducted to analyze the factor structure of school-related SWB in the current sample. Amos 18.0 was used to employ structural equation modeling (SEM) methods. Amos provides a widely validated method for fitting SEM models when there are missing data (Enders, 2010; McDonald & Ringo Ho, 2002); approximately 5% of the study participants had missing data in the full set. Goodness-of-fit indices were used to gauge model fit. The following indices were used: (a) the chi-square statistic, which was used to compare the fit of the various models by means of nested chi-square tests (Schumacker & Lomax, 2004); (b) the Comparative Fit Index (CFI; Bentler, 1990), which should be larger than 0.90 (Byrne, 1994; McDonald & Ringo Ho, 2002); (c) the Incremental Fit Index (IFI; Bollen, 1989), which should be larger than 0.90 (Byrne, 2004); (d) the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), which should be 0.08 or lower (Hu & Bentler, 1999; McDonald & Ringo Ho, 2002), and (e) Akaike Information Criterion (AIC; Akaike, 1987), which is designed to examine the relative fit of competing models, with a lower value indicating comparatively better fit (Bollen, 1989; Wicherts & Dolan, 2004).

In accordance with Diener's "tripartite" theory of SWB, a three-factor model was estimated. To examine the proposed three-factor structure, CFA was conducted on the total sample with the 11 PA items, the 14 NA items, and the 5 SS items loading onto their respective latent variables. Latent variables were estimated with a mean of 0 and a variance of 1. Factors were free to correlate, but each item was constrained to load on a single factor. Factor variances were fixed at one and factor loadings were not constrained. The measurement model for the three-factor solution is presented in Figure 1. Statistical results for the three-factor model are presented in row one of Table 2.
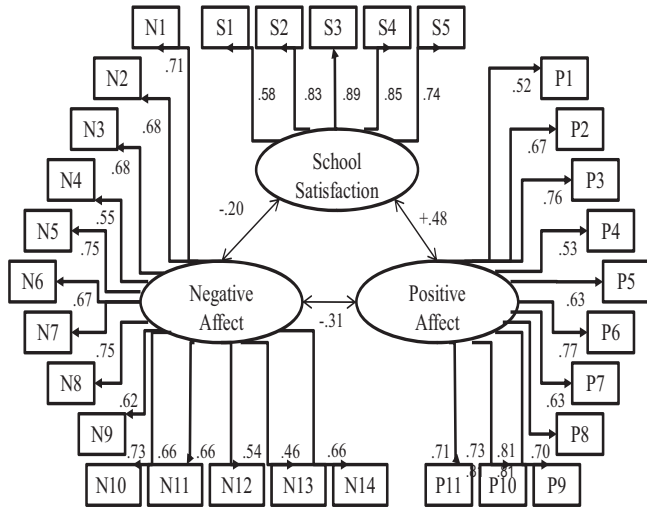
Figure 1. Measurement model for the three-factor solution.

As shown, two of the three goodness-of-fit indices for the solution failed to achieve model fit criteria. Both the CFI and the IFI were < 0.90. As such, further analyses were conducted to determine whether adding a fourth factor would significantly increase the fit.

Consistent with our preliminary analyses, a four-factor model in which a Fear factor was included and linked to four of the NA items (*scared*, *nervous*, *frightened*, and *afraid*) was estimated. The three-factor model was nested within the four-factor model; that is, all of the paths in the three-factor model were included in the four-factor model along with some additional paths linked to the fourth factor (four Fear items). This model allowed us to assess whether the added paths would significantly increase fit relative to the nested three-factor model. All path coefficients were free to vary except for the covariance between NA and Fear, which was constrained to 0. All items, except for the four Fear items, were constrained to load on a single factor; those four items were free to load on both the NA and Fear factors. Parameter estimates for this four-factor model in which the three-factor model was nested are presented in Table 3. Statistical results for this model are presented in row two of Table 2. Results indicated that the solution provided a good fit to the data. As shown, the criteria for all three of the goodness-of-fit indices are met. Furthermore, the change in chi-square is significant and the change in AIC also supports the conclusion of increased model fit.

Having established the utility of the four-factor model over the three-factor model, we developed a more parsimonious model by including a correlation between NA and the Fear factor and constraining all items to load on a single factor. This final four-factor model is presented in Figure 2. The fit statistics for the model are presented in the third row of Table 2 and indicate a good fit to the data.

Comparison of Male Adolescents and Female Adolescents

Next, multigroup invariance testing was conducted to investigate the equivalency of the final four-factor model across gender. The parameters for male adolescents and female adolescents were first estimated simultaneously without imposed cross-group constraints, and factor loadings were compared across the two groups. The unconstrained model, in which the factor loadings of the four constructs were free to vary across gender, yielded a reasonable fit to the data, IFI = 0.900, CFI = 0.899, and RMSEA = 0.043. The relevant test statistics for this model (Model 1) are presented in Table 4, which provides a summary of all invariance testing statistics (model comparisons).

For Model 2, cross-group equality constraints were imposed on the structural model so that the covariances between the latent factors were constrained to be equal across male adolescents and female adolescents while the factor loadings were free to vary with gender. In testing for the invariance of the constrained structure (Model 2), the change in chi-square from the unconstrained model (Model 1) was not statistically significant. This suggests that the structural model of school-related SWB is invariant across gender.

Table 5 presents the parameter estimates for the constrained Model 2. As shown, factor loadings for both male adolescents and female adolescents did not differ in sign (all positive), were of similar magnitude, and were quite substantial (none < 0.48). Table 5 shows the difference in factor loadings for male adolescents and female adolescents. As shown, 23 item loadings differed in magnitude by 0.00–0.07 while only 7 item loadings differed in magnitude by 0.08–0.16. None of the differences in loadings for PA differed by more than 0.07, suggesting that these items loaded very similarly for male adolescents and female adolescents. For NA, there were three moderately large differences. Male adolescents loaded higher for the emotion *guilt*, but female adolescents loaded higher for the emotions *blue* and *gloomy*. The Fear factor had no differences in loadings > 0.09. Finally, the largest differences for SS loadings were for *I learn a lot at school* and *I enjoy school activities*, with male adolescents showing higher factor loadings than female adolescents on both. Thus, while some differences were identified

Table 2. *Confirmatory Factor Analysis Test Statistics and Model Comparison Summary*

Model	χ^2	df	IFI	CFI	RMSEA	AIC	$\Delta\chi^2$	ΔAIC
Three factors	2,040.98	402	0.876	0.877	0.067	2,226.958	—	—
Four factors, nesting	1,605.33	396	0.909	0.909	0.058	1,803.330	420.557	435.655
Four factors, no nesting	1,608.11	399	0.909	0.909	0.057	1,800.118	−2.78	3.212

Note. N = 914. All chi-square statistics were significant at p = .000.
IFI = Incremental Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error Approximation; AIC = Akaike Information Criterion.

Table 3. *Confirmatory Factor Analysis Results for the Nested Three-Factor Model*

Scale	Item	Standardized estimates	SE
Positive affect (PA)			
P1	Interested	0.52	0.04
P2	Excited	0.67	0.04
P3	Happy	0.76	0.03
P4	Strong	0.53	0.04
P5	Energetic	0.63	0.04
P6	Cheerful	0.77	0.04
P7	Active	0.63	0.04
P8	Proud	0.70	0.04
P9	Joyful	0.81	0.04
P10	Delighted	0.73	0.04
P11	Lively	0.71	0.04
Negative affect (NA)			
N1	Mad	0.72	0.04
N2	Lonely	0.68	0.04
N3	Miserable	0.69	0.04
N4	Guilty	0.54	0.04
N5	Upset	0.76	0.04
N6	Ashamed	0.66	0.03
N7	Sad	0.77	0.03
N8	Disgusted	0.64	0.04
N9	Blue	0.75	0.03
N10	Gloomy	0.68	0.04
N11	Afraid	0.54	0.03
N12	Frightened	0.43	0.03
N13	Nervous	0.34	0.05
N14	Scared	0.60	0.03
School satisfaction (SS)			
S1	I learn a lot at school	0.58	0.04
S2	I look forward to going to school	0.83	0.05
S3	I like being in school	0.89	0.04
S4	School is interesting	0.85	0.05
S5	I enjoy school activities	0.74	0.05

Note. $N = 917$. The correlations between factors are as follows: PA and NA ($r = -.33$), PA and SS ($r = .48$), PA and Fear ($r = .10$), NA and SS ($r = -.20$), NA and Fear ($r = .00$), Fear and SS ($r = -.02$).

Figure 2. Measurement model for the final four-factor solution.

loadings, the high power of the statistical tests yielded a final model that included invariance constraints on just three items: *excited*, *upset*, and *I like being in school*. This model is labeled Model 4 in Table 4 and does not differ significantly from the Model 2 fit.

In conclusion, the invariance testing demonstrated that a four-factor model structure describes male adolescents and female adolescents equally well, even when factor covariances are constrained to be equal (Model 2 in Table 4). Although factor loadings were by and large quite similar for male adolescents and female adolescents, as shown in Table 5, statistical testing indicated that only a few of these loadings could be equated for male adolescents and female adolescents without significantly worsening model fit. This result may be due to the high power of the change in chi-square test for this study, deriving from the very large sample sizes.

Internal Consistency

The reliabilities (internal consistencies) for the four sets of scores (PA, NA, Fear, and SS) were estimated using Cronbach's α (.90 for PA, .90 for NA, .80 for Fear, and .89 for SS). Based on the guidelines recommended by Clark and Watson (1991), the four school-related SWB scores were demonstrated to have adequate internal consistency.

Descriptive Analysis

Independent group *t* tests were conducted to analyze differences between the means for male adolescents and female adolescents on PA, NA, Fear, and SS scores. Significant differences were found for PA and SS. The means and standard deviation for male adolescents and female adolescents on measures of PA, NA, Fear, and SS are provided in Table 6.

among the magnitudes of factor loadings between male adolescents and female adolescents in the unconstrained model, the extent of these differences was relatively small.

For Model 3, cross-group equality constraints were imposed on the measurement model in addition to the Model 2 constraints on factor covariances. As shown in Table 4, the change in chi-square between Models 2 and 3 was statistically significant, indicating a requirement for all 30 factor loadings to be equated for male and female adolescents leads to a significantly worse fit. Further invariance testing was conducted to determine which factor loadings could be constrained without significantly decrementing the fit of the model. Accordingly, the equality constraints on factor loadings for the items displaying the greatest differences between genders were removed sequentially and the change in chi-square for those models compared with that of Model 2.

Despite the many items shown in Table 5 with very small differences between male adolescents and female adolescents in
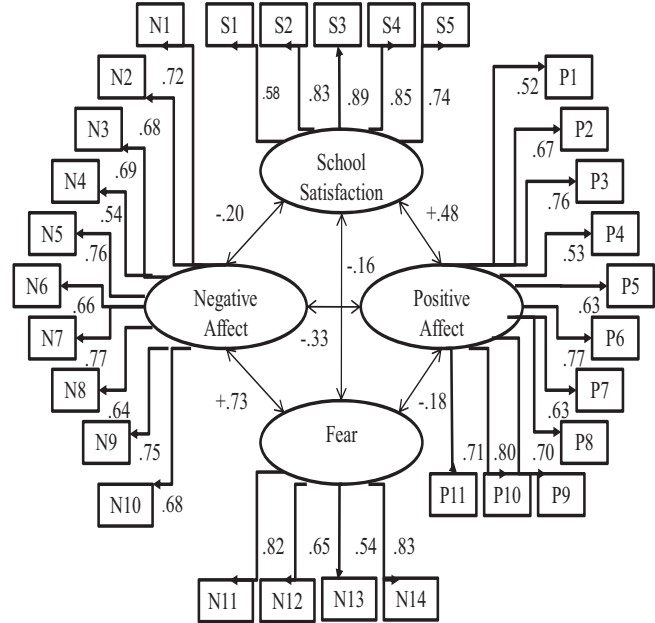
Table 4. *Invariance Testing Four-Factor Model Comparison of Male Adolescents and Female Adolescents*

Model description	Comparative model	χ^2	df	$\Delta\chi^2$	Δdf	Significance
Model 1: Unconstrained: structural and measurement models free to vary across groups	—	2110.618	798	—	—	—
Model 2: Structure constrained	Model 1	2122.805	804	12.187	6	*ns*
Model 3: Structure and factor loadings constrained	Model 2	2194.636	834	71.831	30	$p < .05$
Model 4: Model 4 with *excited*, *upset* and *I like being in school* free to vary	Model 2	2130.747	810	8.128	6	*ns*

Note. $N = 917$.

Table 5. *Four-Factor Model Comparison of Parameter Estimates Between Male Adolescents and Female Adolescents*

Scale	Item	Males	Females	Difference
Positive affect				
P1	Interested	0.55	0.49	0.06
P2	Excited	0.67	0.65	0.02
P3	Happy	0.79	0.74	0.05
P4	Strong	0.59	0.54	0.05
P5	Energetic	0.59	0.66	0.07
P6	Cheerful	0.73	0.80	0.07
P7	Active	0.65	0.64	0.01
P8	Proud	0.73	0.67	0.06
P9	Joyful	0.80	0.80	0.00
P10	Delighted	0.71	0.75	0.04
P11	Lively	0.73	0.69	0.04
Negative affect				
N1	Mad	0.68	0.74	0.06
N2	Lonely	0.68	0.68	0.00
N3	Miserable	0.71	0.72	0.01
N4	Guilty	0.67	0.53	0.14
N5	Upset	0.77	0.75	0.02
N6	Ashamed	0.68	0.63	0.05
N7	Sad	0.75	0.78	0.03
N8	Disgusted	0.65	0.62	0.03
N9	Blue	0.68	0.80	0.12
N10	Gloomy	0.60	0.74	0.14
Fear				
N11	Afraid	0.83	0.83	0.00
N12	Frightened	0.66	0.65	0.01
N13	Nervous	0.58	0.51	0.07
N14	Scared	0.79	0.88	0.09
School satisfaction				
S1	I learn a lot at school	0.64	0.48	0.16
S2	I look forward to going to school	0.80	0.87	0.07
S3	I like being in school	0.90	0.88	0.02
S4	School is interesting	0.89	0.80	0.09
S5	I enjoy school activities	0.79	0.67	0.12

Note. Females ($n = 470$), males ($n = 432$).

A significant difference was found between mean scores on PA for male adolescents and female adolescents, $t(823) = 2.83$, $p < .05$, $d = 0.21$, with female adolescents reporting higher levels of PA than male adolescents. Both genders reported feeling positive emotions *moderately to quite a bit* in school. No significant differences were found between genders for NA and Fear, indicating that both genders reported feeling negative and fear emotions *very little* in school. In terms of SS, a significant differ-ence was found between the mean scores for male adolescents and female adolescents, $t(835) = 2.75$, $p < .05$, $d = 0.19$, with female adolescents reporting higher levels of satisfaction with school experiences than male adolescents. Both genders agreed *quite a bit* with positive school statements.

Discussion

Research with adults has suggested a multidimensional model of global SWB, including at least three separate, but related, dimensions, including PA, NA, and LS (Diener et al., 1997; Diener, 1994). Research among children and adolescents has extended the generalizability of the three-factor model of global SWB to preadolescent (Huebner, 1991a,b,c) and adolescent (Huebner & Dew, 1996) samples beginning at age 8 and extending into adulthood. These findings have suggested that traditional, one-dimensional conceptualizations of well-being (e.g., well-being is simply the opposite of ill-being) are insufficient for understanding children's psychological functioning; thus, models yielding a more comprehensive explanation are needed. The current study sought to meet this need by employing a multidimensional, *contextualized* approach to the analysis of SWB. More specifically, the current study investigated the structure of SWB specific to the context of school, an environment in which adolescents spend a great portion of their time and development. In addition, the invariance of the structure across gender was examined. To the authors' knowledge, the current study is the first to examine the structure of SWB specifically within the context of school.

Analyses conducted to establish the reliability of the PANAS-C items revealed two items, *jittery* and *calm*, which did not appear to be measuring the intended construct. Similar results have been found in previous studies. For example, during initial development of the PANAS-C on students in grades 4–8, Laurent, Potter, and Cantanzaro (1994) identified *jittery* and *calm* as poorly performing items that failed to meet factor analytic and item-total correlation criterion. However, a subsequent study conducted by Laurent et al. (1999) with students in grades 4–8 based on different selection criteria found the items *jittery* and *calm* to meet selection criteria successfully. Still, other studies have substituted the term *jumpy* for *jittery* claiming that it may be a more developmentally appropriate term for children and adolescents (e.g., Joiner, Cantanzaro, & Laurent, 1996; Laurent et al., 1999). The current study also found these items to demonstrate poor reliability. Taken together with previous findings, the terms *jittery* and *calm* may not be developmentally appropriate for use in studies

Table 6. *Descriptive Statistics*

	Males			Females			Total		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Positive affect	3.78	0.85	388	3.93	0.76	437	3.86	0.81	843
Negative affect	1.86	0.75	384	1.93	0.74	440	1.89	0.74	842
Fear	1.76	0.82	396	1.86	0.81	451	1.81	0.81	865
School satisfaction	4.14	1.37	400	4.38	1.15	437	4.27	1.27	856

with children and adolescents and were thus removed from the measures in this study.

Although numerous researchers have concluded that the affective component of SWB is best represented by the two broad dimensions of PA and NA, some research in adults suggests that NA incorporates multiple domains (Barlow, Chorpita, & Turovsky, 1996; Clark & Watson, 1991; Muris et al., 2001). However, the specific composition of NA has been debated. Research into the structure of NA with children and adolescents has been limited, with no studies examining its applicability specifically within the context of school.

NA in the School Context

In light of the paucity of research into the structure of NA among adolescents, the current study sought to identify the dimensions of NA within the context of school as a preliminary step toward defining the measurement model of school-based SWB. Results showed a two-factor model best fit the data. The first factor consisted of items reflecting depression and general distress, while the second factor consisted of items reflecting fear and anxiety. This lends support to the plausibility of either a combined anxiety–fear factor or a distinct fear factor and is consistent with some past empirical findings and current theoretical notions about the structure of NA, when measured without reference to a specific context such as school (Dong, Yang, & Ollendick, 1994; Muris et al., 2001). However, these results could also suggest that the structure of NA among adolescents in school differs from the structure of NA among adults.

Using the total sample, both a three-factor model of SWB (based on Diener's tripartite theory) and a four-factor model (accounting for the two-factor structure of NA) were examined within a SEM framework. The structure of school-based SWB did not parallel global SWB as previously found in research with adults (Diener et al., 1997) and children (e.g., Huebner & Dew, 1996; McCullough et al., 2000). Results indicated that a four-factor model comprised of PA, NA, Fear, and SS as separable, but related, factors better described the structure of school-related SWB than a three-factor model consisting of PA, NA, and SS.

The reasons for the finding of a "Fear" factor among the school-related SWB measures are unclear. One possible consideration involves the PANAS-C authors' decision to include the four relatively synonymous adjectives of *afraid*, *frightened*, *nervous*, and *scared*. Similar to its predecessor (i.e., PANAS), the PANAS-C involves a disproportionate weighting (about 30%) of items representing one emotion (i.e., anxiety; Diener et al., 2009). This factor could thus simply reflect an artifact of the item selection process, not a meaningful, differentiable factor. On the other hand, the emergence of the fourth factor could suggest a substantive difference, reflecting an important distinction in adolescents' emotional experiences in some, if not all, school contexts. Given that this particular middle school is known in the state as a high-achieving school, it is possible that anxiety or stress responses are particularly salient among its students. Clearly, additional research with larger and more diverse samples is needed to determine the generalizability of the structure and meaning of SWB constructs in children and adolescents. Furthermore, the key to whether the Fear factor should be measured separately is whether or not it provides differential prediction of outcomes. Future studies that include these measures could examine the utility of measuring the Fear factor separately in this way.

SWB Dimensions Across Gender

Another focus of this study was to examine the equivalency, or the invariance, of the school-based SWB construct across gender. This study found the structural model of the school-based SWB construct to be invariant across gender as fixing the covariances among the four factors (PA, NA, Fear, and SS) for the two groups did not yield significant results. Thus, the school-based SWB construct appears to be comprised of the same factors for both male and female adolescents. However, this study found the measurement model to be noninvariant across gender as the factor loadings of indicators on their respective latent factors differed significantly across groups. This suggests that (a) male adolescents and female adolescents may actually have different school experiences and/or (b) male adolescents and female adolescents may interpret and respond differently to those school experiences. Nevertheless, these differences were relatively small and reflect small differences in degree rather than kind.

Subsequent analyses were also conducted to investigate mean levels of adolescent reports on the school-based SWB dimensions across gender. Findings indicated that female adolescents reported experiencing more frequent positive emotions in school than male adolescents. Female adolescents also reported higher levels of SS than male adolescents. However, the effect sizes for these gender differences were small ($d = 0.21$ for PA; $d = 0.19$ for SS). There were no significant differences reported in mean levels for NA or Fear, although female adolescents reported slightly more of these types of emotions as well.

These results suggest that gender contributed little to understanding individual differences in school-related SWB in this particular school. These results are similar to past findings with

adolescents. For example, in a study examining the school-based emotions and behavior of middle and high school students, Lewis et al. (2009) found weak relationships between gender and PA, NA, and SS (r = .10–.12). Nevertheless, given the robust findings of gender differences in adolescents' reports of internalizing disorders (Hankin et al., 1998; Nolen-Hoeksema, 1987), further study of gender differences in the experience of negative emotions in schools is crucial to formulate meaningful conclusions.

Frequency of Positive and Negative Experiences

Although it is beyond the scope of this study to calculate a precise ratio, it is possible to examine the relative frequencies of positive and negative emotions (including those emotions representing general NA and those emotions representing Fear) and note that, at least in this one school, male and female adolescents appear to be experiencing many more positive emotions than negative emotions. Such a finding is in line with Fredrickson and Losada's (2005) notion of an optimal positivity ratio, which is described as the ratio (2.9:1) of pleasant feelings and sentiments to unpleasant ones over time. Past research has shown that, for individuals, positive ratios predict global SWB (Diener, 2000; Kahneman, 1999) and may be essential to optimal functioning in domains such as work, interpersonal relationships, leisure, and physical and mental health (Fredrickson & Losada, 2005). The domain of school for children and adolescents has been compared to the domain of work for adults (Huebner, Ash, & Laughlin, 2001). This suggests the importance of future research into a positivity ratio specific to optimal adolescent functioning during school hours.

The current study also examined reported levels of the school-based SWB dimensions across the total sample. The majority (64%) of students in the current sample agreed (i.e., reported either *strongly agree*, *moderately agree*, or *mildly agree*) with statements indicating positive SS. This suggests that most students at this school were at least mildly satisfied with school experiences. By contrast, a noteworthy percentage (35%) of students disagreed (*strongly disagree*, *moderately disagree*, *mildly disagree*) with positive statements suggesting that many students were dissatisfied with their school experiences. Although not directly comparable, the percentage of students dissatisfied with school in this study appeared somewhat larger than that found in some previous studies of SS. For example, in a large state-wide study of middle school students' reports of SS in the same U.S. state (but at an earlier time), approximately 21% of middle school students described their satisfaction with school as *terribly unhappy* or *mostly dissatisfied* (Huebner, Valois, Paxton, & Drane, 2005). In regard to PA, approximately 85% of students in this school reported experiencing *moderate* to *extreme* levels of positive emotions, while approximately 10% of students reported experiencing *moderate* to *extreme* levels of negative emotions.

Similar to the findings in studies of global SWB in children and adults, current findings highlight the independent nature of the cognitive (i.e., satisfaction) and affective constructs among adolescents, specifically within the context of school. This suggests that SS is part of a comprehensive school well-being domain comprised of separable cognitive and affective

constructs. Furthermore, findings illustrate the importance of measuring these constructs separately when investigating SWB and optimal development among adolescents, as well as adults. For example, it is noteworthy that female adolescents reported higher SS than male adolescents despite reporting more NA and fear than male adolescents during school.

Findings from this study suggest that school-related SWB in adolescents does not parallel global SWB in children and adolescents or adults. Thus, different mechanisms may underlie school-related SWB judgments in adolescents. As such, future research on the well-being of adolescents should continue to include the perspective of the adolescent as well as other perspectives (e.g., parents, school administrators). The assumption that adults fully understand how adolescents think and feel lacks empirical support (Ben-Arieh, 2000). Furthermore, consideration of contextualized approaches to the study of SWB should provide even more nuanced assessments of adolescents' well-being.

Limitations, Implications, and Future Directions

These results should be interpreted cautiously. Although the sample was large in magnitude (N = 917), it was drawn exclusively from one suburban school in the United States. Further studies should be conducted that replicate the current findings with diverse groups of adolescents from diverse geographical areas. For example, results should be replicated across different nations, ethnic groups, and SES levels to enhance the generalizability of these findings. Studies of convergent and discriminant validity are also needed as well as studies of possible differential correlates of the four school-based SWB factors. Finally, longitudinal studies are needed to assess the generalizability of the findings across different developmental levels of children.

Overall, the literature has suggested that SWB in adults is multidimensional (Diener et al., 1999). Research has also supported a similar multidimensional conceptualization of global SWB for children and adolescents. The current study lends support to the multidimensionality of SWB among adolescents, but extends beyond previous research by suggesting that it is more complex than previously posited. The presence of a distinctive domain-based SWB construct was revealed, pointing to the possible benefits of a contextualized approach to SWB that takes into account the specific environments experienced by adolescents. The identification of a school-based SWB construct suggests benefits of future research investigating the structure of SWB relative to other major environmental contexts of adolescents. For example, researchers might consider the plausibility of SWB in contexts such as the family, peers, and the neighborhood. Further research could subsequently investigate whether there are differential determinants, correlates, and outcomes associated with context-specific measures of SWB. For example, it is possible that individuals report greater fear or anxiety in one environment versus another (e.g., school vs. neighborhood vs. family). Such differences might suggest not only different conditions associated with different environments, but also the need for different interventions to promote individual or group SWB under differing circumstances. Furthermore, different variables may be associated with different specific SWB measures (e.g., affect vs. satisfaction), again suggesting different determi-

nants and outcomes associated with the distinguishable components of domain-based SWB reports.

In sum, a contextualized approach to SWB is consistent with an ecological, developmental, whole-child approach to understanding and promoting child and adolescent well-being. This study evidences that such a comprehensive approach is not only important to the assessment of educational and behavioral difficulties, but also to the assessment of assets and strengths, such as SWB (see Huebner, Gilman, & Suldo, 2006).Youth well-being assessments that employ such an approach in conjunction with new understandings of differential mechanisms associated with high levels of global and domain-based SWB should contribute to more effective efforts to increase SWB and optimal functioning in the lives of adolescents.

Keywords: adolescents; children; subjective well-being; life satisfaction; school satisfaction; positive affect; negative affect; fear factor

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