

Initial Development and Validation of the Multidimensional Students' Life Satisfaction Scale—Adolescent Version

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Received: 23 April 2007 / Accepted: 26 April 2007 /
Published online: 6 June 2007
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The International Society for Quality-of-Life Studies (ISQOLS) 2007

Abstract The factor structure of a new self-report scale, the Multidimensional Students' Life Satisfaction Scale—Adolescent version, was examined. Reliability and 2-week stability estimates of the domain scores and total score were calculated. Relationships of the domain and total scores with other well-being measures were examined as well as the impact of social desirability responding. Although additional development is necessary, results provided preliminary psychometric support for the MSLSS—A for research purposes. The usefulness of life satisfaction measures vis-à-vis the positive psychology movement (Seligman and Csikzentmihalyi, *American Psychologist*, 55(1): 5–14, 2000) is highlighted.

Keywords Adolescent · Life satisfaction · Measurement

Psychologists are directing increased attention to positive psychology in an effort to understand and promote optimal human functioning and quality of life. The special issue of *American Psychologist* devoted to happiness, excellence and optimal human functioning, emphasized the subjective experiences of positive psychology including subjective well-being (e.g., subjective quality of life), hope and optimism, and flow and happiness (Seligman and Csikzentmihalyi 2000). Subjective well-being (SWB) has been conceptualized to encompass positive and negative affect or emotional responses, global judgments of life satisfaction, and domain specific satisfaction judgments (Diener et al. 1999). Researchers have demonstrated that pleasant affect, negative affect and life satisfaction may be best understood as separate, but correlated components (Andrews and Withey 1976; Diener et al. 1999). More specifically, life satisfaction has been defined as a person's cognitive evaluation of

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their quality of life as a whole (Shin and Johnson 1978) and/or with specific domains of life (Diener et al. 1999). Both unidimensional (i.e., global ratings) and multidimensional (i.e., domain specific) ratings of life satisfaction have been examined in the literature. However, multidimensional measures provide the most differentiated information about a person's life satisfaction and thus are more useful for applied purposes (e.g., Frisch 2006; Huebner et al. 2006).

Life satisfaction has been studied from the perspective that it is an important outcome variable in and of itself (Diener et al. 1999). Research has also demonstrated that maintaining positive levels of life satisfaction is crucial to adaptation (Lyubormirsky et al. 2005; Veenhoven 1988). Studies of non-clinical samples of adolescents have suggested that individuals with low life satisfaction are at an increased risk for maladaptive outcomes, such as peer victimization (Martin 2007), internalizing and externalizing behavior problems (Haranin et al. 2007; Lewinsohn et al. 1991), and drug and alcohol use (Zullig et al. 2001).

Relatively stable overall or domain-specific life satisfaction appraisals may thus operate as higher-order cognitive appraisal systems (cf. Evans 1994; Lazarus 1991). Life satisfaction reports may reflect a summary appraisal of global or domain-specific life experiences that operate as "ground" relative to the "figure" of people's on-line cognitive and affective experiencing. Such an appraisal system is hypothesized to affect on-line cognitive appraisals (e.g., congruence with goals) and related emotional and coping responses, all of which are associated with particular environmental circumstances. A positive (versus negative) appraisal style may thus serve as a buffer against specific negative experiences. For example, an overall positive life satisfaction expectation appears to decrease the likelihood of aggressive coping responses in adolescents confronted with stressful life events (Suldo and Huebner 2004).

Although life satisfaction measures have been shown to be related to measures of psychopathology among adolescents, life satisfaction measures have also been shown to be distinct from them as well. Consistent with expanded conceptualizations of well-being in which well-being is not defined merely by the absence of psychopathological symptoms (e.g., Cowen 1991; Cowen and Kilmer 2002), an individual can be dissatisfied with life as a result of experiencing undesirable circumstances, but not necessarily demonstrate psychopathological behavior. Similarly, a person may be relatively satisfied with life while displaying psychopathological behavior (Greenspoon and Sakolofske 2001). In addition to conceptual distinctions, overall (i.e., global) life satisfaction has been distinguished empirically from a variety of traditional mental health indicators, including self-esteem (Huebner et al. 1999), anxiety and depression (Huebner et al. 2000), and negative affect (Huebner and Dew 1996; McCullough et al. 2000) in studies of adolescents. Thus, life satisfaction judgments appear to offer a unique perspective from which to view adolescents' psychological well-being.

Relatively limited attention has been given to the examination of child and adolescent life satisfaction overall. The lack of research in this area of well-being may be explained in part by the few psychometrically sound measures of life satisfaction designed for use with children and adolescents. A review of the literature revealed a handful of life satisfaction measures appropriate for adolescents, most of which focus on global or overall life satisfaction (Gilman et al. 2000; Huebner et al.

2006). The current study focuses on the development of a new multidimensional measure, the Multidimensional Students' Life Satisfaction Scale–Adolescent Version (MSLSS–A). The MSLSS–A is a modification of the Multidimensional Students' Life Satisfaction Scale (MSLSS), which has been used mostly with pre-adolescent children (Huebner 1994).

The Multidimensional Students' Life Satisfaction Scale (Huebner 1994; Huebner et al. 1998) was designed to measure children's (ages 8 and above) overall life satisfaction as well as satisfaction with five specific domains: family, friends, school, self, and living environment. The reliability and validity of the MSLSS has been investigated in studies of US elementary school (Huebner 1994) and middle school students (Huebner et al. 1998). The results have provided encouraging evidence of reliability and validity for research purposes. For example, internal consistency estimates have fallen mostly in the 0.80–0.90 range. One-month test-retest coefficients (mean $r=0.72$) suggest meaningful stability (Huebner et al. 1998). Evidence for construct validity with US students has been provided through exploratory (Huebner 1994) and confirmatory factor analyses (Huebner et al. 1998). Supportive findings have also been reported for students in Spain (Casas et al. 2002) and Korea (Park et al. 2004). The five domains have been shown to be important to students from Grades 3 to 8 (Seligson et al. 2003).

Construction of the MSLSS–A

To further advance the study of life satisfaction among adolescents in particular, this study focused on the validation of a modification of the MSLSS, the Multidimensional Students' Life Satisfaction Scale -Adolescent Version (MSLSS–A).

The inclusion of specific domains in a life satisfaction measure adds to the utility of the measure (Gilman et al. 2000) and its incremental validity (Haranin et al. 2007). However, the issue then becomes which specific domains to include in order to provide the most relevant view of life satisfaction for a particular age group. Based on a review of the life satisfaction literature, adolescent developmental literature, and a pilot study with adolescents, the five domains incorporated in the MSLSS were retained in the MSLSS–A. However, an additional domain involving opposite-sex relationships which is often included in research concerning adolescent well-being (Marsh 1990) was added to enhance its developmental appropriateness. As adolescents develop, peer groups become increasingly heterosexual and opposite-sex relationships develop. Sexual experiences, thoughts, and the development of intimate opposite-sex relationships become increasingly important and central to adolescents' lives (Offer et al. 1988). Thus, items written specifically pertaining to satisfaction with opposite-sex relationships were included on the MSLSS–A.

The primary purpose of this study was thus to explore the psychometric properties of the MSLSS–A. First, item analysis and factor analysis were conducted to guide item selection and evaluate the resulting factor structure. Second, internal consistency and test-retest reliability estimates for the total and domain scores were calculated. Third, correlations with other well-being measures were examined as evidence of validity. Finally, the impact of social desirability responding was assessed.

Materials and Methods

Participants

The participants were 266 adolescents from Grades 9 to 12 of two high schools with heterogeneous student populations from a metropolitan area of a Southeastern US state. The sample consisted of 35% males and 65% females with a mean age of 16.2 (SD=1.28). The racial make-up of the sample was 27% African American, 68% Caucasian, and 5% "other." As an estimate of socioeconomic status, the mean rating on the Revised Occupational Rating Scale From Warner, Meeker, and Eells's Index of Status Characteristics (Miller 1991) was 3.58 (in which 1 = highest level and 7 = lowest level).

Ninety students from the original sample completed the MSLSS–A after a 2-week interval. This retest sample consisted of 65% females and 25% males with a mean age of 17.1 years (SD=0.8). Approximately 20% were African American, 3% were Asian, and 76% were Caucasian. There were four tenth grade students, 44 eleventh grade students, and 42 twelfth grade students in this sample.

Measures

Multidimensional Students' Life Satisfaction Scale–Adolescent Version (MSLSS–A)

The Multidimensional Students' Life Satisfaction Scale–Adolescent Version was comprised of the 77 original MSLSS items that tapped the five domains of satisfaction and the seven items of global life satisfaction from the Students' Life Satisfaction Scale, and 14 new items pertaining to opposite-sex relationships. Collectively, these items formed the MSLSS–A. Four of the original domain specific items from the MSLSS were altered for age-appropriate wording (e.g., "Most kids would rather play with someone else" was changed to "Most teenagers would rather spend time with someone else"). Thus, the revised scale for adolescents (MSLSS–A) initially included 91-items.

There was an equal number of positively and negatively keyed items to minimize possible response acquiescence. The negatively keyed items were reverse scored so that, as in the MSLSS, a high score on the MSLSS–A indicates a high degree of satisfaction. The item format of the MSLSS–A was based on a six-point scale including (1) Strongly Disagree, (2) Slightly Disagree, (3) Disagree, (4) Agree, (5) Slightly Agree, and (6) Strongly Agree.

A thorough review was conducted prior to field testing to determine if the MSLSS–A items and directions were understandable and meaningful. Adolescent students, high school teachers, practicing psychologists, and university psychology professors were given the MSLSS–A to read and critique. Suggestions were incorporated to refine the instrument.

Rosenberg Self-Esteem Scale (RSE: Rosenberg 1965) The Rosenberg Self-Esteem Scale is designed to yield a unidimensional index of global self-esteem and consists of 10 statements that are answered on a four point scale and include responses of "strongly agree," "agree," "disagree," and "strongly disagree." Test-retest reliability

of 0.85 and validity correlations ranging from 0.56 to 0.83 have been reported (Silber and Tippet 1965). The RSE has been highly recommended for research purposes (Chiu 1988; Wiley 1989).

Nowicki-Strickland Locus of Control Scale-Short Form (LOCS-SF: Nowicki and Strickland 1973) This self-report measure was derived from Rotter's (1966) internal-external control of reinforcement theory. Items are answered in a yes/no format and are scored in the direction of externality with higher scores indicating a more external locus of control. A short form for Grades 7–12, the LOCS-SF, was used in this study. The LOCS-SF consists of the 21 items from the LOCS that demonstrate the highest item-total correlations. The internal consistency of the LOCS-SF has been reported as 0.70 (Boss and Taylor 1989).

Positive and Negative Affect Schedule (PANAS: Watson et al. 1988) The PANAS consists of two 10-item mood scales that describe positive or negative affect. Respondents indicate the extent to which they have felt each mood within a specified time frame. Responses are on a five point scale and include: very slightly or not at all, a little, moderately, quite a bit, or extremely. The authors report that when used with short term instructions (e.g., right now or today), the PANAS scales may be sensitive to mood fluctuations but when used with longer term instructions such as “past several weeks or months” they demonstrate trait-like stability (Watson et al. 1988). In the present study, adolescent students were asked to indicate the extent they have felt this way during the “past several weeks.”

Reported internal reliability coefficients range from 0.86 to 0.90 for the Positive Affect scale and from 0.84 to 0.87 for the Negative Affect scale. Factorial validity of the PANAS has been demonstrated with convergent correlations ranging from 0.89 to 0.95 and discriminant correlations ranging from -0.02 to -0.18 . The PANAS also shows good convergent correlations with other brief affect measures.

Children's Social Desirability Questionnaire (CSD: Crandall et al. 1965) CSD has been used on numerous occasions within the literature to assess the influence of socially desirable responding on measures of psychological well-being. A shortened version, the 20 item true/false form designed for students in Grades 6 through 12, was used in this study. Point biserial correlations for this form have been reported as ranging from 0.41 to 0.57 (Crandall et al. 1965).

Procedures

Students enrolled in 20 social studies high school classrooms were asked to participate in the study by the principal investigator (first author) one week prior to data collection. At this time, students read and signed a consent form that briefly explained the nature and purpose of the study. Each student who signed a consent form was given an envelope containing an informational letter detailing the nature and purpose of the study and an attached parental consent form. Students were told that in order to be eligible for the random drawing/raffle, parental permission forms

must be signed and returned to their teacher during the next week. Parental consent forms were returned in sealed envelopes provided by the principal investigator.

The principal investigator and a trained research assistant administered the various instruments during one session in the regular classroom setting. All instruments were completed anonymously. Directions for each of the five instruments were read aloud to students prior to administration. The measures were counter balanced according to classrooms to control for order effects. The investigators were available during administration to answer individual questions about the scales. After completing the instruments, students were debriefed about the study and given opportunities to ask questions. Two weeks after the initial data collection, the principal investigator returned to the high school settings and re-administered the MSLSS–A for test-retest reliability data.

Results

Preliminary Factor Analysis

Several methods were utilized to assist in the determination of the number of factors to extract as part of the factor analysis procedures. The first technique used was the latent root criterion. Using this technique, only those factors having eigenvalues greater than one are considered significant. However, the latent root criterion approach is most reliable when the number of variables is between 20 and 50 (Hair et al. 1979). The original MSLSS–A had 91 variables so this approach was not deemed as critical since too many factors may be extracted when the number of variables is high. Using the latent root criterion, 23 factors were retained. This number of factors is far greater than what was deemed conceptually defensible; thus, other techniques were also considered.

The second technique used was the maximum likelihood technique (Lawley and Maxwell 1963). The maximum likelihood method calculates loadings that maximize the probability of sampling the observed correlation matrix from a population. With this approach, 23 factors were suggested. This number also was far greater than the number of conceptually appropriate factors. This over identification of factors was probably a result of a relatively large sample size.

The third method employed was the scree test. Since the component factor analysis extracts factors with both common and unique variance, all factors have some unique variance but this amount should be proportionately higher for later factors. The scree tail test allows the determination of the best number of factors to extract before the unique variance overpowers the common variance. To obtain the scree test, the latent roots (i.e., eigenvalues) are plotted against the number of factors as they are extracted. The point at which a single line drawn through the plotted points changes directions determines the number of factors. The scree plot obtained in this study indicated various numbers of factors to extract, including a low number of four and possibly as many as nine factors. Beyond four factors, the two distinct possibilities were for seven and nine factors.

Various factor solutions suggested by these techniques were then examined, including 7, 8, and 9-factor solutions. Based on these examinations, the 7-factor

solution appeared to fit the data best, as the 8 and 9-factor solutions were difficult to interpret.

Responses to the MSLSS-A were next analyzed via common factor analysis, with the specification to extract seven factors. The 7-factor solution was examined using an oblique method of rotation, the promax rotation, since previous research (Huebner 1994) demonstrated modest to moderate correlations among life satisfaction domains.

Because of space limitations the complete 7-factor rotated pattern matrix, which is discussed below, is not printed but is available from the first author upon request.

A total of 19 items had loadings of 0.30 or higher on Factor I. Loadings ranged from 0.31 to 0.79. Twelve items pertained to satisfaction with family relationships and did not have significant cross loadings (>0.25). Items loading exclusively on Factor I (i.e., no significant cross loadings) appeared to be tapping into a domain of satisfaction with one's family. Thus, this factor was labelled the "Family" domain.

A total of 17 items had loadings of 0.30 or higher on Factor II. Loadings ranged from 0.30 to 0.91. Twelve items, which were written specifically to tap into satisfaction with same-sex friends, did not have significant cross loadings. Items loading exclusively on Factor II appeared to be tapping into satisfaction with same-sex friends and relationships. Thus, this factor was labelled the "Same-Sex Friends" domain.

A total of 15 items had loadings of 0.30 or higher on Factor III. Loadings ranged from 0.30 to 0.75. Eight of these items, which were written specifically to tap into satisfaction with opposite-sex friends, did not have significant cross loadings. Items loading exclusively on Factor III appeared to be tapping into satisfaction with opposite-sex friends and relationships. Thus, this factor was labelled the "Opposite-Sex Friends" domain.

A total of 11 items had loadings of 0.30 or higher on Factor IV. Loadings ranged from 0.41 to 0.84. Ten items, which were written specifically to tap into satisfaction with school, did not have significant cross loadings. Items loading exclusively on Factor IV appeared to be tapping into the area of satisfaction with school experiences. Thus, this factor was labelled the "School" domain.

Ten items had loadings of 0.30 or higher on Factor V. Loadings ranged from 0.33 to 0.85. Eight items, which were written specifically to tap into satisfaction with one's house, neighborhood, and community did not have significant cross loadings. Items loading exclusively on Factor V appeared to be tapping into the domain of satisfaction with one's living environment. Thus, this factor was labelled the "Living Environment" domain.

Factors I through V were consistent with the hypothesized structure and were clearly separate from each other. In general, items loaded together on the predicted factors, resulting in five separate domains of life satisfaction: Family, Same-Sex Friends, Opposite-Sex Friends, School, and Living Environment. The sixth and seventh factors, however, were not as clearly identifiable as the first five factors. These two factors and their item loadings will be discussed.

A total of 15 items had loadings of 0.30 or higher on Factor VI. Loadings ranged from 0.30 to 0.77. Of these 15 items, only four items loaded exclusively on Factor VI (i.e., no significant cross-loadings). These four items were originally written to tap into a domain of satisfaction with one's self (e.g., I like myself. There are lots of

things I can do well.). Since a separate factor tapping into self-satisfaction was originally conceptualized during the construction of the MSLSS–A and four items specific to self satisfaction loaded exclusively on Factor VI, this factor was labelled the “Self” domain. Although, Factor VI had considerably fewer items than factors I through V, the importance of this factor to the instrument and the existing data, led to the inclusion of these four items in the preliminary version of the MSLSS–A.

Fourteen items had loadings of 0.30 or higher on Factor VII. Loadings ranged from 0.30 to 0.54. Of these 14 items, only two loaded exclusively on Factor VII. Both of these items were originally written as self satisfaction items. None of the seven original items written to tap into global life satisfaction loaded exclusively on this factor. No clear pattern was noted on this factor since it included items originally designated as self, school, and opposite-sex items. Since the seventh factor was difficult to interpret, the decision was made to eliminate these items from further analyses.

Not only was the seventh factor difficult to interpret, a discriminable Global factor of life satisfaction did not emerge from the data. The seven items from the Student Life Satisfaction Scale which were intended to reflect global (i.e., domain-free) life satisfaction, did not load on a separate factor; thus, these seven items were eliminated as well.

Based on this examination of the seven-factor rotated pattern matrix, six of the hypothesized domains of life satisfaction were indicated. The Family, Same-Sex Friends, Opposite-Sex Friends, School, and Living Environment domains were strongly supported with predicted items loading on their respective factors. The sixth factor, Self domain, appeared weaker since there were fewer items, but still justifiable for inclusion in the instrument and further analyses.

Construction of Preliminary Scale

The next step in the validation of the MSLSS–A involved determining the specific items for each of the six domains to be included in the preliminary version of the instrument. Criteria to guide the retention of items were as follows: (1) Loading greater than or equal to 0.30 on the appropriate hypothesized factor (Tabachnick and Fidell 1989). (2) No cross-loadings greater than or equal to 0.25.

After applying the criteria for retention, 53 items were retained. Of the items retained, 34 were positively keyed. Thus, a preliminary version of the MSLSS–A was developed consisting of six domains of life satisfaction: Family, Same-Sex Friends, Opposite-Sex Friends, School, Living Environment and Self. The number of items comprising each domain varied from 4 to 12.

To further eliminate ineffective items from the MSLSS–A, the corrected biserial correlation between each retained item and its respective domain score was obtained. Only items that showed item-total correlations equal to or exceeding 0.30 were retained.

Because all item-total correlations met the criterion, the MSLSS–A remained as before with a total of 53 items.

Reliability Data

To determine internal consistency reliability estimates for the domain scores, Cronbach alpha coefficients were obtained. Cronbach alphas were 0.90 (Family),

0.88 (Same-Sex), 0.86 (Opposite-Sex), 0.89 (School), 0.82 (Living Environment) and 0.72 (Self). The lower alpha for the Self domain could be a function of the fewer items on that particular domain. Nevertheless, all of the alphas indicated adequate reliability for research purposes.

Test-retest reliability coefficients were obtained for the six MSLSS-A domain satisfaction and the Total Life Satisfaction scores for a 2-week interval. The correlations were 0.94 (Total), 0.90 (Family), 0.89 (Same-Sex Relationships), 0.93 (School), 0.86 (Opposite-Sex Relationships), 0.85 (Living Environment), and 0.86 (Self). These data indicated the MSLSS-A domain and total life satisfaction scores were relatively stable.

Final Factor Analysis

As a final check on the factor structure of the MSLSS-A, the responses to the retained 53 items were analyzed via common factor analysis, with specifications to extract six factors. An examination of the rotated pattern matrix indicated that all items loaded on their predicted respective factors. The complete factor pattern matrix is reported in Table 1.

One item on the Self domain, #79, demonstrated a slightly lower loading of 0.29 based on this factor analysis. Other loadings continued to provide support for six separable domains of adolescent life satisfaction. Overall, 37.31% of the total variance of the MSLSS-A scores was accounted for by the six factors.

Interfactor Correlations

Based on the six-factor solution, interfactor correlations were obtained (see Table 2). Correlations were all less than 0.30 except for five: ($r=0.33$ between Family and School), ($r=0.38$ between Family and Living Environment), ($r=0.40$ between Family and Self), ($r=0.32$ between Same-Sex Friends and Self), ($r=0.35$ between School and Self). These low to moderate correlations provide support for the multidimensionality of the scale, indicating that adolescents were able to differentiate the specific domains.

Descriptive Data

Mean levels of total and domain-based life satisfaction scores are reported in Table 3. Mean raw scores for each of the six domains were calculated by summing the item responses and then dividing by the number of domain items. Mean item scores were used rather than total domain scores since the six domains consisted of differential number of items. This method resulted in a number that directly translated into one of the Likert ratings used as response choices for the MSLSS-A.

Correlations of MSLSS-A Scores with Other Measures of Well-being

Relationships of the Total and domain life satisfaction scores of the MSLSS-A with other well-being measures were examined in an effort to further demonstrate the validity of the MSLSS-A. In particular, support for the validity of the Total score was sought (Table 4).

Table 1 Factor pattern matrix

Items	I	II	III	IV	V	VI
Family						
39 My family gets along well	0.79					
74 My parents and I do fun things	0.76					
14 I like spending time with my family	0.73					
2 I wish that I had different parents	0.70					
9 My parents treat me fairly	0.68					
55 My family has lots of problems	0.68					
63 Members of my family talk nicely to one another	0.67					
38 I enjoy being at home with my family	0.64					
16 My family is better than most	0.64					
84 I wished I lived with a different family	0.60					
68 Members of my family argue with one another	0.52					
Same-sex Friends						
33 My same-sex friends treat me well		0.89				
69 I have lots of fun with my same-sex friends		0.79				
23 My friends of the same-sex are great		0.74				
1 My same-sex friends are nice to me		0.72				
26 My same-sex friends will help me if I need it		0.70				
51 I'm not sure my same-sex friends really like me		0.68				
44 My same-sex friends are mean to me		0.66				
10 I have a bad time with my same-sex friends		0.66				
21 I have a best friend of the same sex		0.46				
88 I have enough friends of the same-sex		0.42				
54 Other teenagers have more friends of the same-sex than me		0.41				
School						
43 I like being in school			0.85			
50 School is interesting			0.80			
40 I look forward to going to school			0.78			
52 I enjoy school activities			0.71			
86 We do fun things at school			0.70			
29 I wish I didn't have to go to school			0.67			
17 I don't like school activities			0.59			
13 I learn a lot at school			0.55			
20 There are many things about school I don't like			0.53			
35 Teachers help me when I need it			0.35			
Opposite-sex Friends						
3 My relationships with teenagers of the opposite sex are better than most				0.77		
67 I feel comfortable with my opposite-sex relationships				0.75		
81 My opposite-sex friends are great				0.71		
53 My opposite-sex relationships aren't as good as other teenagers				0.62		
36 My opposite-sex friends and I do fun things together				0.62		
18 It's hard to find things to do with teenagers of the opposite-sex				0.61		
72 My opposite-sex friends treat me well				0.59		
76 I have a special opposite-sex relationship				0.58		
Living Environment						
90 I like where I live					0.79	
75 I like my neighborhood					0.78	
77 I wish I lived somewhere else					0.71	
62 I wish I lived in a different house					0.63	
89 I wish there were different people in my neighborhood					0.57	
78 I don't feel safe in my neighborhood					0.57	
19 My neighborhood is too noisy					0.46	
32 There are lots of things to do where I live					0.32	
Self						
31 I like myself						0.78
11 There are lots of things I can do well						0.59
22 I think I am good looking						0.55
79 I am a nice person						0.29

Table 2 Inter-factor correlations

	Factors					
	1	2	3	4	5	6
1	–					
2	0.23	–				
3	0.33	0.17	–			
4	0.15	0.21	0.18	–		
5	0.38	0.14	0.08	0.11	–	
6	0.40	0.32	0.35	0.26	0.22	–

1 = Family, 2 = Same-sex friends, 3 = School, 4 = Opposite-sex friends, 5 = Living environment, 6 = Self

A Total Life Satisfaction score was computed for use in subsequent analyses. To obtain this score the six mean domain scores were added together and then divided by six. Thus, this procedure controlled for the differential numbers of items in each scale. This Total Life Satisfaction score represents the summation of a group of context-dependent items. It should be noted that this indicator is conceptually different from the global life satisfaction indicators reported in previous research with children and adolescents (Huebner 1991; Dew and Huebner 1994). Global life satisfaction scores, as the global items included in the MSLSS-A but subsequently eliminated, are context free. Conversely, a Total Life Satisfaction score represents the cumulative evaluation of the various domains in one's life. In this sample, the correlation among the Total Life Satisfaction score and the sum of the seven global items (i.e., SLSS) was substantial ($r=0.74$, $p<0.0001$), suggesting a notable relationship between the two scores. This significant correlation indicated that the global items probably contribute redundant information, offering additional support for the elimination of these items from the MSLSS-A. Overall, these scores indicate positive levels of adolescent satisfaction.

Significant negative correlations between scores on the Nowicki-Strickland Locus of Control Scale and the six domains of life satisfaction were obtained. A significant negative correlation between external locus of control and the Total score was also obtained, ($r=-0.55$), $p<0.0001$. These correlations indicate that a more internal locus of control is associated with higher levels of Total Life Satisfaction and domain specific life satisfaction scores while a more external locus of control is associated with lower levels of total life satisfaction and domain life satisfaction.

Significant positive correlations resulted between the measure of self-esteem and the six domains scores as well as the Total Life Satisfaction score. The highest correlation was found between self-esteem and the Self domain, ($r=0.71$), $p<0.0001$. A moderate positive correlation was also indicated between the Total Life Satisfaction score and self-esteem ($r=0.62$), $p<0.0001$. Other correlations with the domain scores, although significant, were lower in value.

Table 3 Descriptive statistics for MSLSS-A scores

Domains	<i>N</i>	<i>M</i>	SD
Family	260	4.40	1.01
Same-sex Friends	259	4.91	0.82
School	263	3.91	1.06
Opposite-sex Friends	261	4.64	1.02
Living Environment	261	4.23	0.99
Self	264	4.99	0.82
Total Score	243	4.52	0.58

Table 4 Correlations among MSLSS–A scores and other well-being measures

Domain	PA	NA	LOC	SE
Family	0.29**	–0.23**	–0.49**	0.36**
Same-sex Friends	0.16**	–0.24**	–0.27**	0.31**
School	0.46**	–0.14*	–0.39**	0.30**
Opposite sex Friends	0.35**	–0.15**	–0.19**	0.32**
Living Environment	0.22**	–0.11	–0.33**	0.28**
Self	0.50**	–0.33**	–0.34**	0.71**
Total Score	0.52**	–0.35**	–0.55**	0.62**

* $p < 0.05$, ** $p < 0.01$

PA Positive Affect, NA Negative Affect, LOC Locus of Control, SE Self-Esteem

Meaningful correlations between measures of positive and negative affect and the Total Life Satisfaction score were also obtained. A moderate, positive correlation between positive affect and Total Life Satisfaction was found; thus, higher levels of Total Life Satisfaction were associated with higher frequencies of positive affect such as pleasure, energy, and concentration. A moderate, negative correlation between negative affect and Total Life Satisfaction was found; thus, lower levels of Total Life Satisfaction were associated with higher frequencies of negative affect, such as anger, contempt, fear and guilt. The pattern of correlations among the domain scores and positive and negative affect was similar.

Overall, the validity coefficients demonstrated support for the Total Life Satisfaction score. Also, specific support for the validity of the Self domain was provided given that its highest correlation was with the Rosenberg Self-Esteem Scale.

Relationship of MSLSS–A with a Measure of Social Desirability

The MSLSS–A domain scores and Total score were correlated with scores on the Children’s Social Desirability Questionnaire. Nonsignificant correlations were obtained between the social desirability measure and the Same-Sex Friends ($r=0.01$) and the Living Environment ($r=0.10$) domains. Significant correlations were obtained for Family ($r=0.27$), School ($r=0.32$), Opposite-Sex Relationships ($r=0.17$), Self ($r=0.23$) and Total ($r=0.31$). Although statistically significant, these correlations were low to modest suggesting that social desirability responding played a limited role in adolescent life satisfaction reports.

Discussion

The study was conducted in an effort to design and begin the validation process of an adolescent version of the Multidimensional Students’ Life Satisfaction Scale, the MSLSS–A. Through factor and item analysis, a 53-item version was constructed, comprised of six domains: Family, Same-Sex Friends, School, Opposite-Sex Friends, Living Environment, and Self. Relative to the MSLSS, this version thus enables interested researchers to distinguish between adolescents’ satisfaction with same-sex and opposite-sex relationships, in addition to the other four domains,

which are included on both the MSLSS and MSLSS–A. Internal consistency reliability estimates for the six domains and the total scores offered preliminary psychometric support for these scores. In addition, test-retest reliability data offered further support for the reliability of the measure. Domain-specific and total life satisfaction scores were highly stable over a 2-week period.

Mean levels of life satisfaction were positive across the six domains and total life satisfaction scores for the adolescents in this study. Positive reports of life satisfaction are consistent with previous research with adults (Diener et al. 1999), children (Huebner 1994, 2004), and adolescents (Dew and Huebner 1994; Huebner et al. 2000).

Evidence for the validity of the MSLSS–A domain and total scores was determined by examining the relationship of these scores with other measures of well-being. As expected, adolescents reporting a more internal locus of control also reported higher levels of total and domain-specific life satisfaction. Conversely, those adolescents who reported a more external locus of control indicated lower levels of total and domain life satisfaction. This finding is consistent with previous research in the areas of adolescent global life satisfaction (Dew and Huebner 1994), children's global life satisfaction (Huebner 1991), and adult life satisfaction (Emmons and Diener 1985).

Self-esteem has been demonstrated as positively related to but, nevertheless, separate from global life satisfaction in studies with children (Huebner 1991; Huebner et al. 1999), adolescents (Dew and Huebner 1994) and adults (see Diener 1994; or Myers and Diener 1995 for reviews). Consistent with such studies, correlations with self-esteem were positive and significant for all domain scores and for the Total Life Satisfaction score. Those adolescents who indicated higher levels of self-esteem also indicated higher levels of domain and total life satisfaction. Thus, additional evidence for validity of the MSLSS–A was provided.

Validity for the MSLSS–A scores was also demonstrated through the meaningful correlations with measures of positive and negative affect. Students who indicated higher levels of total and domain life satisfaction also reported higher levels of positive affect over the past several weeks. In contrast, lower levels of total and domain satisfaction were associated with higher levels of negative affect. That is, those students who reported more recent experiences of negative affective states such as anger, contempt or guilt also reported lower levels of total and specific life satisfaction. Previous research has demonstrated similar relationships among life satisfaction, positive affect and negative affect (see Diener 1994 for a review). Although related, these constructs diverge since life satisfaction is a more cognitive appraisal of one's life while affective states are determined more by one's hedonic reaction to life events. In this study, correlations were low to moderate suggesting the separability of life satisfaction and affect reports.

Although the results of this study offer preliminary support for the multidimensional factor structure of the MSLSS–A, limitations must be discussed. First, the sample was exclusively from one Southeastern state. Second, this sample was limited to Caucasian and African-American students. Future research with the MSLSS–A should examine potential differences among various ethnic groups (e.g., Hispanic and Asian adolescents). Finally, although this study provided initial support for the validity of the total score of the MSLSS–A, additional validity studies are needed to provide evidence of validity for the six domains.

This study provided promising preliminary support for the reliability and validity of the MSLSS–A. Findings of the study suggest that adolescents are able to reliably differentiate among various domains in their lives when forming judgments of satisfaction. This study of the initial development and validation of a multidimensional life satisfaction scale, designed specifically for adolescents represents a critical, preliminary step. Further refinement of the scale (e.g., additional Self items) is needed to enhance the validity and usefulness of the scale, however.

Perceived life satisfaction is a useful psychological well-being construct that covers the full range of subjective experience from negative to positive. Measures of life satisfaction should provide an alternative to traditional measures of subjective experience that are limited to negative indicators, such as psychopathological conditions (e.g., symptoms of depression and/or anxiety). Although the construct of life satisfaction is related to various mental health constructs (Harandin et al. 2007; Huebner et al. 2000; Huebner and Alderman 1993), it is also conceptually and empirically separable, thus measures of life satisfaction should yield information that complements traditional mental health measures. Life satisfaction measures, such as the MSLSS–A thus have the potential to contribute to the positive psychology movement as well as prove useful for a variety of applied purposes, including program development and evaluation efforts at the individual and systems levels (see Frisch 2006; Huebner et al. 2006).

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