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Reliability and validity of a brief measure of sensation seeking

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Abstract

We developed a self-report measure of sensation seeking, a dispositional risk factor for various problem behaviors. In two studies, we administered the Brief Sensation Seeking Scale (BSSS) to more than 7000 adolescents. Study 1 participants completed a paper-and-pencil form of the BSSS in mass-testing sessions. Psychometric analyses of the resultant data revealed suitable item characteristics and internal consistency of responses to the items across age (13–17 years), sex, and ethnic categories. Study 2 participants, who completed the BSSS individually in an interview format, also provided data on their perceptions of and experiences with licit and illicit drugs as well as a series of additional risk and protective factors. Scores on the full BSSS correlated inversely with negative attitudes toward drug use and positively with drug use; sensation seeking as measured by the BSSS was a particularly strong predictor of the intention to try marijuana in the future. BSSS scores were reliably and predictably associated with other risk and protective factors.

Keywords: Sensation seeking; Problem behavior; Measurement; Substance use

Sensation seeking, a biosocial dimension of personality characterized by "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (Zuckerman, 1979a, p. 10), is a potent predictor of a wide array of problem behaviors (Zuckerman, 1994). Individuals high in sensation seeking appear to

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be drawn to activities that are high in risk such as sexual risk-taking (Hoyle, Fejfar, & Miller, 2000), reckless driving (Heino, van der Molen, & Wilde, 1996), smoking (Zuckerman, Ball, & Black, 1990), alcohol use (Stacy, Newcomb, & Bentler, 1993), and use of illicit drugs (Newcomb & McGee, 1991; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). One explanation for these findings is that high sensation seekers underestimate the risks associated with such behaviors. Indeed, research findings indicate that sensation seeking is negatively associated with risk estimates for novel activities (Zuckerman, 1979b). Similarly, risk estimates for previously experienced activities are inversely associated with sensation seeking (Horvath & Zuckerman, 1993), an association that is mediated by risky behavior. In other words, high sensation seekers are more likely than low sensation seekers to engage in risky behaviors then, after the fact, less likely to label them as risky. These findings suggest that high sensation seekers are more likely than their low sensation seeking counterparts both to try and to repeat a wide array of risky activities.

1. Assessment of sensation seeking

The sensation seeking construct typically is assessed using Form V of the Sensation Seeking Scale (SSS-V; Zuckerman, Eysenck, & Eysenck, 1978), which comprises 40-items in forced-choice format.[1] The SSS-V produces an overall score as well as scores on four factor-analytically derived subscales: thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility. The disinhibition and experience seeking subscales represent the less socially acceptable forms of sensation seeking, whereas thrill and adventure seeking and boredom susceptibility reflect a more socially acceptable form of sensation seeking (Zuckerman, 1978). Disinhibition is particularly strongly associated with reckless behavior, perhaps due to its apparent effect on the decision stage of information processing (Orlebeke, van der Molen, Dolan, & Stoffels, 1990). Although males tend to score higher than females on the full SSS-V, sex-related differences are largely attributable to the thrill and adventure seeking and disinhibition items (Zuckerman et al., 1978). Also, the pattern of correlations between sensation seeking scores and problem behaviors appears to vary little across sex (Newcomb & McGee, 1991).

Although the SSS-V is meritorious in many respects, it is not optimal for use in many common research contexts. The large number of items prohibits its inclusion in lengthy surveys typical of longitudinal research on problem behavior. The forced-choice format is cumbersome and poses particular difficulties for adolescent respondents. A subset of items refer directly to problem behaviors such as alcohol and drug use and, therefore, must be excluded before scores can be used to predict those behaviors. And the colloquial words and phrases used in some items no longer hold meaning for young respondents.

There have been a number of attempts to develop alternative measures of sensation seeking. The Sensation Seeking Scale for Children (Russo et al., 1993) is a forced-choice measure that comprises 26 items from the SSS-V revised for use with children. Factor analyses indicate that

[1] Zuckerman (1984) introduced Form VI about 5 years after Form V was introduced; however, Form VI was described as an adjunct to, not a replacement for, Form V. Form V remains the standard measure of sensation seeking in adults.

scale taps three dimensions: thrill and adventure seeking, drug and alcohol attitudes, and social disinhibition. The Arnett Inventory of Sensation Seeking (Arnett, 1994) is a 20-item self-report measure of sensation seeking based on a conceptualization of sensation seeking that includes two dimensions: need for intense stimulation and need for novel stimulation. Finally, the 21 impulsive sensation seeking items from the Zuckerman–Kuhlman Personality Questionnaire (Zuckerman et al., 1993) assess sensation seeking as reconceptualized in Zuckerman's (1994) psychobiological model of personality. Although each of these measures has strengths, they share two limitations that we sought to overcome in a new measure. None of the measures is based on a conceptualization of sensation seeking that corresponds to the SSS-V. Hence, findings based on the measures are not easily integrated with the many documented findings involving sensation seeking as measured by Form V. And none of the measures is sufficiently brief to be included in lengthy, large scale surveys often used to document the occurrence of problem behaviors.

An attempt to address some of the shortcomings of the SSS-V while retaining its basic structure is evident in a measure presented by Huba, Newcomb, and Bentler (1981; see also, Tang, Wong, & Schwarzer, 1996) in a methodology paper comparing canonical correlation analysis and interbattery factor analysis (i.e. the focus of the paper was not the measure itself). They analyzed responses to a brief measure of sensation seeking in which each of the four aspects of sensation seeking was measured using four items chosen from the 40 item-pairs of the SSS-V. The items, which were presented in Likert format, were chosen for their high loadings on the four factors that emerge from analyses of the SSS-V and for their appropriateness for adolescents. Published internal consistency estimates of scores range from 0.43 to 0.70, but the internal consistency of scores on the full measure were not documented. An advantage of this measure for many researchers is that neither alcohol nor drug use is mentioned in the items. One disadvantage is that detailed reliability and validity information on the measure is not archived in the published literature. Also, the items feature some of the outdated language characteristic of the SSS-V (however, see Zuckerman, 1996).

Given the liabilities of the SSS-V and Huba et al.'s (1981) abbreviated form of it, we sought to develop a brief self-report measure of sensation seeking suitable for survey research involving adolescents and young adults. In developing the measure, we adhered to five criteria: we felt it important to develop a measure with the same basic content as the SSS-V, which is used in virtually all research on sensation seeking with young adults. Adherence to this criterion would guarantee that the measure represents the sensation seeking construct in a fashion similar to the SSS-V. Moreover, such correspondence facilitates attempts to integrate new findings into the voluminous literature on sensation seeking and problem behavior. Following the lead of Huba et al. (1981), we elected to use a Likert-type response format rather than the forced-choice format used in the SSS-V, thereby avoiding the technical difficulties associated with the forced-choice format (Anastasi, 1988) and producing scores more conducive to standard data-analytic strategies such as factor analysis. An important consideration was the use of terminology familiar to contemporary adolescents and young adults. As noted earlier, the Huba et al. (1981) measure, because of its direct link to SSS-V, does not meet this criterion. We sought a measure that would be relatively brief. We aimed for a total number of items between eight and 12. Finally, we desired a measure with similar and well-documented psychometric properties and performance across, age, sex, and ethnic groups.

2. Study 1

2.1. Method

2.1.1. Participants

Students at a middle school and a high school were invited to participate in a survey of interests and preferences. From among 1692 students on roll, a total of 1302 students (77%) completed the survey. Data from 23 respondents were excluded because they reported being in the 12th grade (which was not included in the sampling frame), and data from another 14 respondents were excluded because they did not report a grade. Accounting for those unusable responses, a total of 1263 responses (comprised of 602 females and 658 males — some did not indicate sex) were used in the final analysis. Two hundred and forty-four respondents were in the 8th grade, 338 were in the 9th grade, 377 were in the 10th grade, and 304 were in the 11th grade. About 19% of the respondents were non-white.

2.1.2. Measures

The Brief Sensation Seeking Scale was created by adapting items from the SSS-V (Zuckerman et al., 1978) and a set of items derived from the SSS-V but tailored for adolescents (Huba et al., 1981). Candidate items were reviewed by multiple investigators and retained if they were appropriate for or could be adapted for use with adolescents. An additional criterion was that each of the four dimensions represented in the SSS-V would be equally well represented in the new measure. Because sensation seeking is often used to predict substance use, items that referred to alcohol or drug use were not considered for the new measure. Finally, items were avoided that included colloquialisms or references to activities likely to be unfamiliar to contemporary adolescents and young adults.

In the final version of the BSSS, displayed in Table 1, each of the four primary dimensions of sensation seeking is represented by two items. Responses are indicated on five-point scales labeled, ''strongly disagree'', ''disagree'', ''neither disagree nor agree'', ''agree'', and ''strongly agree''. For research purposes, the scale was titled ''Interest and Preference Survey''.

In addition to completing the BSSS, respondents provided information about their sex, ethnicity, and grade in school. Respondents could choose from five ethnic categories: African–American, Asian–American, Hispanic/Latino, Native American, and White. Because of low frequencies of Asian–American, Hispanic/Latino, and Native American responses, we combined those categories into a single ''Other'' category for analysis purposes.

2.1.3. Procedure

About 1 week before the survey was conducted, a form letter describing the study was disseminated to all potential participants to take to their parent(s) or legal guardian(s). The letter explained that, with the cooperation of their child's school, a survey would be given to students asking them about their attitudes toward and preferences for a number of leisure-time activities such as skiing, going to parties, and trying new things. If the parent(s) or guardian(s) preferred the child not to complete the survey, they were asked to sign and return a tear-off portion of the form to their child's teacher.

The following week, researchers administered the survey in the two participating schools. Students first were asked to read and sign an assent form, which assured confidentiality of responses and indicated that responses to the survey would qualify some students to participate in additional studies. Surveys were distributed at the beginning of the class period and took about 10 min for students to complete. Students marked responses on NCS Trans-Optic scan forms.

2.2. Results and discussion

Item means and standard deviations as well as corrected item-total correlations are presented in Table 1. With one exception, mean scores fall within the 3 to 4 range, indicating no problem with ceiling or floor effects in the responses. Standard deviations are relatively consistent across the items. Internal consistency of the eight item set was 0.76. In the rightmost column of the table are corrected item-total correlations for each item. Values are moderate in magnitude, indicating breadth in coverage of the sensation seeking construct.

We also examined internal consistency as a joint function of sex and ethnicity. Coefficient alpha for four of the six groups fell between 0.74 and 0.79. The value for "Other" females was 0.85; however, this value is somewhat suspect because it is based on an n of only 19. Coefficient alpha for African–American males was 0.68. Inspection of corrected-item total correlations did not reveal any items that, if deleted, would result in greater internal consistency. Rather, the difference of about 0.08 between the value of coefficient alpha for African–American males and the remaining participants, appears to be due to a general pattern of lower inter-item correlations.

Table 1
Items and descriptive statistics for the Brief Sensation-Seeking Scale (BSSS)[a]

Item (by content domain)	M	S.D.	Corrected item-total r
Experience seeking			
1. I would like to explore strange places.	3.98	0.97	0.38
5. I would like to take off on a trip with no pre-planned routes or timetables.	3.94	1.19	0.41
Boredom susceptibility			
2. I get restless when I spend too much time at home.	4.18	1.00	0.31
6. I prefer friends who are excitingly unpredictable.	3.59	0.99	0.54
Thrill and adventure seeking			
3. I like to do frightening things.	3.47	1.16	0.58
7. I would like to try bungee jumping.	3.71	1.45	0.44
Disinhibition			
4. I like wild parties.	3.83	1.15	0.51
8. I would love to have new and exciting experiences, even if they are illegal.	3.17	1.30	0.56
Total	3.74	0.71	0.76[b]

[a] $n = 1263$. Responses were indicated on five-point scales labeled, "strongly disagree", "disagree", "neither disagree nor agree", "agree", and "strongly agree".

[b] Coefficient alpha.

Displayed in Table 2 are means and standard deviations for the six combinations of sex and ethnicity. A two-way analysis of variance (ANOVA) revealed only a significant main effect for ethnicity, $F(2, 1259) = 29.97$, $P < 0.001$. Marginal means underlying this effect appear in the rightmost column of Table 2. Simple effects tests showed that the mean for African–American respondents was significantly lower than the other two means, which were not significantly different from each other. The relatively large sample size and coincident high level of statistical power renders this effect highly significant; however, the effect size for the ethnicity effect, $\eta^2 = 0.05$, is not large. Nonetheless, we probed deeper in order to determine whether particular items were responsible for the overall mean difference. There were no mean differences attributable to ethnicity for the two boredom susceptibility items and the two disinhibition items. The means for the two experience seeking items were lower for African–American respondents compared with respondents from other ethnic backgrounds; however, the differences were less than one-half a scale interval. As with prior research on the measurement of sensation seeking (e.g. Russo et al., 1993) the clearest difference was on the thrill and adventure seeking items, on which African–American respondents averaged nearly three-quarters of a scale interval lower than the remaining respondents. In summary, African–American respondents scored a bit lower on the BSSS; however, as with other measures of sensation seeking, the difference was largely attributable to lower scores by African–Americans on thrill and adventure seeking.

The means were surprisingly consistent across the four grade levels. A one-way ANOVA revealed no effect for grade, $F(3, 1259) = 0.75$, $P > 0.50$. Means were 3.71, 3.78, 3.73, and 3.71, for eighth, ninth, tenth, and eleventh grade students, respectively. Similarly, internal consistency was about the same for each grade level. Values were 0.78, 0.75, 0.75, and 0.78, respectively.

Table 2
BSSS means and standard deviations by ethnicity and sex of respondent[a]

	Gender		
Ethnicity	Female	Male	Marginal
African–American			
M	3.34	3.41	3.38
S.D.	0.69	0.68	
n	79	93	
White			
M	3.70	3.89	3.79
S.D.	0.67	0.71	
n	497	515	
Other			
M	3.58	3.69	3.66
S.D.	0.81	0.66	
n	20	33	
Marginal	3.68	3.54	

[a] Some respondents did not indicate sex or ethnicity.

Taken together, these findings parallel those from psychometric analyses of the lengthy counterpart to our measure, the SSS-V (Zuckerman et al., 1978). The internal consistency of scores on the full scale is within the range expected for measures of a broad-band construct such as sensation seeking (Nunnally & Bernstein, 1994). The absence of sex differences on the BSSS is an improvement over the performance of the SSS-V (Zuckerman et al., 1978). Finally, there was a tendency for African–Americans to score lower than respondents of other ethnic backgrounds. The psychometric characteristics of the BSSS are highly stable across the adolescent age range.

3. Study 2

We next sought to establish the validity of scores on the new measure. First, we conducted a confirmatory factor analysis of the eight BSSS items to evaluate the structural validity of the measure. Then, because sensation seeking has been established as a risk factor for substance use among adolescents (e.g. Webb, Baer, & McKelvey, 1995), we examined associations of the BSSS with drug-related attitudes, intentions, and behaviors. In addition, we assessed a variety of additional risk and protective factors, some specific to drug use and others more general, that should be associated in a predictable pattern with sensation seeking.

3.1. Participants

Participants were 6368 adolescents in grades seven through 12 recruited by telephone from class rolls in two metropolitan areas in the southeastern United States. A grade-stratified random sample of approximately 100 participants was recruited from each area each month for 32 months. The sample was 54% female and 86% white.

3.2. Procedure

Data were gathered by interviewers from two university-based survey research centers. Interviews took place in the respondents' homes and lasted approximately 45 min. To enhance confidentiality, participants keyed responses directly into a notebook computer. The interviewer guided the participant through the interview by reading questions aloud as they appeared to the participant on the screen. After the participant registered the final response, the computer monitor went blank, and the interviewer assured the participant that his or her responses would not be seen by the interviewer.

3.3. Measures

3.3.1. Sensation seeking

Participants completed the BSSS shown in Table 1. In addition to the five response options described earlier, participants were provided "don't know" and "refuse to answer" options. Coefficient alpha is 0.74.

3.3.2. Drug-related attitudes and behavior

Participants responded to a number of items regarding their perceptions of and experiences with alcohol, tobacco, marijuana, inhalants, hallucinogens, and cocaine or crack.[2] Instructions provided a brief description of each drug and listed colloquial names. For each drug we created an index reflecting the strength of participants' negative attitude toward occasional use of the drug.[3] Respondents chose disagree strongly, disagree somewhat, agree somewhat, or agree strongly in response to the statements: ''Occasional use of [drug] is harmful''. ''People should not use [drug] occasionally''. ''Occasional use of [drug] is harmful to people's health''. The internal consistency of responses to these three items for the six drugs ranged from 0.81 for marijuana to 0.93 for hallucinogens.

Participants also indicated whether they had used each drug and, if they had, the frequency of their use. Items were worded as follows: ''Have you ever used [drug]?'' If the participant responded affirmatively, they were asked to, ''Please type the number of days between 0 and 30 that you used [drug] in the last 30 days.''[4] For marijuana only, participants were asked two questions about their intentions to use the drug in the future. Those questions were worded as follows: ''In the future, do you think you will try marijuana at least once?'' ''In the future, do you think you will use marijuana regularly?'' Response options were: definitely will NOT, probably will NOT, probably will, and definitely will.

3.3.3. Additional risk and protective factors

Participants responded to a series of items designed to assess their standing on a variety of risk and protective factors for drug use and other problem behaviors. These factors were assessed using measures developed and validated by Newcomb and colleagues (e.g. Newcomb & Felix-Ortiz, 1992; Newcomb, Maddahian, & Bentler, 1986). The risk factors included perceived (lack of) opportunity (e.g. school, work), deviance, and perceived peer, family, and community use of marijuana. Protective factors included (absence of) depression, self-acceptance, quality of home life, law abidance, religiosity, and perceived sanctions against using marijuana.

3.4. Results and discussion

Data from participants who responded to all eight BSSS items ($n = 6281$) were submitted to a confirmatory factor analysis. Initially, a single-factor model was specified. Descriptive analyses revealed no reason for concern about the multivariate distribution of the data, therefore the model was estimated using the maximum likelihood method. Omnibus fit was evaluated using the comparative fit index (CFI; Bentler, 1990) and the root mean square error of approximation (RMSEA; Steiger, 1990). Based on the noncentral χ^2, CFI indexes the relative reduction in lack of fit of a specified model versus the independence, or null, model; with standard model tests such as those performed here, values of 0.90 or greater are considered indicative of a good fit. With

[2] Participants also provided data on a number of variables not relevant to this analysis. As such, measures of those variables are not described here.

[3] The same questions were asked about regular use, but results of analyses involving those responses are not reported here because they mirror the results for occasional use.

[4] Participants who responded that they had never used a drug were assigned a score of 0 for use in the last 30 days.

regard to RMSEA, a measure of close fit, Browne and Cudeck (1993) recommend 0.05 as a value indicative of close fit, 0.08 as indicative of marginal fit, and 0.10 as indicative of poor fit of a model taking into account degrees of freedom of the model.

Estimation of the single-factor model produced promising values for the indexes of fit, $\chi^2(20, n = 6281) = 621.46$, CFI = 0.93, RMSEA = 0.069 (90% confidence interval = 0.065–0.074). All loadings were statistically significant; values ranged from 0.32 for item 2 to 0.62 for items 6 and 8 ($M = 0.51$)

Lagrange multiplier tests, which indicate the expected decrease in overall χ^2 after freeing fixed parameters, pointed toward two fixed parameters as contributing significantly to the modest misspecification of the model. Specifically, two pairs of uniquenesses covaried significantly, indicating that responses to the items covaried for reasons beyond the common influence of the sensation seeking latent variable. Uniquenesses associated with items four and eight, the two disinhibition items, were correlated 0.28. And the correlation between uniquenesses associated with items three and seven, the pair of thrill and adventure seeking items, was 0.14. Relaxing these two constraints on the initially specified model resulted in a statistically significant improvement in the fit of the model, $\Delta\chi^2(2, n = 6281) = 405.71$, $P < 0.001$. Moreover, the re-specified model fit the data well, $\chi^2(18, n = 6281) = 215.75$, CFI = 0.98, RMSEA = 0.042 (90% confidence interval = 0.037–0.047).

3.4.1. Nomological network

Correlations of sensation seeking as measured by the BSSS with measures of drug-related attitudes and behaviors followed the expected pattern; those correlations are displayed in the second column of Table 3. The correlations are arrayed by category of substance. It is important to note that, although the tobacco and alcohol categories typically are not considered illicit, the age of the present sample renders them illicit (albeit more readily obtained than the remaining substances). The first line under each heading displays the association between BSSS scores and negative attitude toward the substance. It is clear that higher sensation seeking is associated with less negative attitudes toward every substance. Moreover, high sensation seeking is moderately associated with lifetime and 30-day use of every substance with the exception of cocaine/crack, for which use is rare in the population from which we sampled.

The pattern of correlations varied only trivially for males and females. The largest difference was 0.05 and the average difference was less than 0.02. However, as is apparent in the third and fourth columns of Table 3, most of the coefficients varied significantly for the African–American and White subsamples.[5] The average difference between the coefficients was just over 0.11 and in every case was in the direction of a stronger correlation for the White subsample. Although the coefficients for the African–American sample were smaller, all were statistically significant except for negative attitudes toward and 30-day use of inhalants, for which there was very little variability.

Displayed in Table 4 are correlations of BSSS scores with risk and protective factors. We expected positive correlations with the risk factors and negative correlations with the protective factors, a pattern that clearly is present. Particularly impressive are the inverse correlations between BSSS scores and the protective factors, which, with one exception, are nonspecific in nature. The substantial negative correlation with law abidance mirrored by a moderate positive

[5] The "Other" subsample was too small and heterogenous to analyze separately.

correlation with deviance indicates the likelihood that high sensation seekers are generally at risk for problem behaviors.

As with the correlations between BSSS scores and drug-related attitudes and behaviors, the coefficients did not vary by sex but varied significantly by ethnicity. With regard to sex differences, no pair of coefficients varied by more than 0.05 and the average difference was just over 0.02. With regard to ethnicity, the pattern of differences was again such that coefficients were larger for Whites than African–Americans; however, the difference was not as marked as for drug-related attitudes and behaviors. The average difference was just under 0.09. And, although all coefficients for African–Americans are smaller than the corresponding coefficient for Whites,

Table 3
Correlations between BSSS scores and responses to drug-related items[a]

Substance (item)	Full sample	African–American	White
Tobacco			
Negative attitude	−0.30[c]	−0.20	−0.31
Ever used[b]	0.36[c]	0.20	0.38
30-day use[b]	0.37[c]	0.24	0.38
Alcohol			
Negative attitude	−0.35[c]	−0.23	−0.36
Ever used[b]	0.36[c]	0.23	0.39
30-day use[b]	0.38[c]	0.23	0.40
Marijuana			
Negative attitude	−0.42[c]	−0.24	−0.46
Ever used[b]	0.35[c]	0.20	0.38
30-day use[b]	0.33[c]	0.21	0.35
Intention to try once	0.49[c]	0.40	0.52
Intention to use regularly	0.34[c]	0.28	0.37
Inhalants			
Negative attitude	−0.16[c]	−0.06	−0.18
Ever used[b]	0.22	0.16	0.22
30-day use[b]	0.14	0.07	0.15
Hallucinogens			
Negative attitude	−0.32[c]	−0.19	−0.34
Ever used[b]	0.29	0.21	0.29
30-day use[b]	0.23	0.18	0.23
Cocaine/Crack			
Negative attitude	−0.15	−0.10	−0.18
Ever used[b]	0.17	0.13	0.18
30-day use[b]	0.12	0.11	0.12

[a] All *r*s are statistically significant at $P < 0.01$.
[b] Scored as 0 = "no" and 1 = "yes."
[c] Coefficients differ for African–American and White subsamples.

all were statistically significant and more than half did not differ significantly from the corresponding coefficient for Whites.

4. General discussion

We evaluated the reliability and validity of the Brief Sensation Seeking Scale, a self-report measure of trait sensation seeking suitable for research involving adolescents and young adults. The BSSS has solid psychometric characteristics that hold up across sex, age, and ethnic categories. Moreover, correlations between BSSS scores and drug-related outcomes are robust and apparent for all the major categories of licit and illicit substances. Finally, sensation seeking as measured by the BSSS fits nicely in the nomological network of risk and protective factors for drug use and other problem behaviors.

In addition to the findings reported here, other published findings attest to the construct validity of the BSSS. Using an earlier version of the BSSS, Donohew, Zimmerman, Cupp, Novak, Colon, and Abell (2000) found that inner-city high school students high on sensation seeking were substantially more likely than their low sensation-seeking counterparts to have used alcohol and marijuana, become sexually active, and had unwanted sex under pressure or when drunk. Using the same preliminary version of the BSSS, Stephenson, Palmgreen, Hoyle, Donohew, Lorch, and Colon (1999) reported strong effects of sensation seeking on marijuana use, attitudes toward and beliefs about marijuana use, and intention to use marijuana in a large sample of junior-high and high-school students. And Palmgreen, Donohew, Lorch, Hoyle, and Stephenson (2001) found that marijuana use by adolescents who scored high on the current form of the BSSS was curbed by a televised anti-drug campaign that featured high sensation-value public service announcements. Adolescents in the sample who scored low on the BSSS evinced low levels of marijuana use that remained constant across the four years of the study. In each of

Table 4
Correlations between BSSS score and scores on other risk and protective factors[a]

Factor	Full sample	African–American	White
Risk factors			
Perceived lack of opportunity	0.12	0.10	0.13
Deviance	0.34 [b]	0.26	0.36
Perceived peer use of marijuana	0.40 [b]	0.25	0.44
Perceived family use of marijuana	0.22 [b]	0.13	0.26
Perceived community use of marijuana	0.23 [b]	0.16	0.26
Protective factors			
Absence of depression	−0.20	−0.19	−0.20
Self-acceptance	−0.18	−0.15	−0.17
Quality of home life	−0.29	−0.24	−0.30
Law abidance	−0.41 [b]	−0.29	−0.44
Religiosity	−0.24	−0.17	−0.25
Perceived sanctions against marijuana use	−0.39	−0.32	−0.41

[a] All *r*s are statistically significant at $P < 0.01$.
[b] Coefficients differ for African–American and White subsamples.

these studies, sensation seeking was but one of many constructs assessed by a lengthy survey; hence, the brevity of the BSSS was an asset.

A strength of the BSSS is its reflection of the full content domain of the original sensation seeking scale. In light of this feature, researchers who use the BSSS as a measure of sensation seeking should feel confident deriving predictions from published findings based on Form V of the Sensation Seeking Scale. Moreover, when models including sensation seeking are evaluated using structural equation modeling, it is possible to combine pairs of items representing each of the four content domains and use the resultant composites as indicators of a sensation seeking latent variable (e.g. Newcomb & McGee, 1991). Follow-up analyses of our own data indicate that this strategy results in a very good latent variable representation of the sensation seeking construct (average loading = 0.63, nonsignificant χ^2 value, RMSEA = 0.017). Thus, when the goal is to keep the number of indicators to a minimum, as in large models with numerous latent variables, the composition of the BSSS provides a straightforward basis for deriving an optimal number of parcels.

A concern with behaviorally-oriented measures such as the BSSS and other measures of sensation seeking is that the reliability and validity of the measures hold for all subgroups of the population for which the measure was intended. The relatively small number of studies that have taken into account sex and ethnicity in psychometric studies of sensation seeking measures typically find lower scores for African-Americans compared to other ethnic groups (Russo et al., 1993) and higher scores for males compared with females (Arnett, 1994; Russo et al., 1991). Other psychometric properties of sensation seeking measures have not been compared as a function of sex, age, and ethnicity. Our analyses revealed no differences in any psychometric characteristic of the BSSS as a function of age (spanning the range from 11 to 18 years) and sex. Reliability of the BSSS is somewhat lower for African–American males than for other respondents; however the difference is not great and the value for African–American males is, in an absolute sense, within the acceptable range. African–American respondents in general scored lower on the BSSS than other respondents. Again the difference was small and, as with other measures of sensation seeking, the difference was largely attributable to the thrill and adventure seeking items. Perhaps the most striking finding in our comparisons across age, sex, and ethnicity were the uniformly lower correlations between BSSS scores and measures of variables sensation seeking for African–American compared with White respondents. It is important to note that, all correlations were significant and in the expected direction for African–American respondents. Hence, this finding does not indicate that the BSSS is invalid for African–American respondents. Rather, it is consistent with the finding from previous research (e.g. Kaestner, Rosen, & Appel, 1977) that sensation seeking is a weaker predictor of problem behavior for African–American adolescents compared with their White counterparts. This finding prompts us to recommend that subsequent research on sensation seeking and problem behavior — particularly drug use — include ethnicity as a moderator.

The analyses reported here indicate that the BSSS is a viable measure of sensation seeking for adolescents and young adults. Internal consistency of the scale is sufficient to conclude that items are good indicators of the sensation seeking construct. Comparisons across sex, grade, and ethnic category suggest that the measure should work equally well for respondents regardless of sex, age, or ethnicity. BSSS scores correlate as expected with an array of drug-related outcomes as well as risk and protective factors for problem behaviors. And the items mirror the content of the adult measure that has given rise to a voluminous literature on sensation seeking and problem behavior.

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