

AN ABSTRACT OF THE THESIS OF

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Title: An Assessment of the Efficiency of the Zuckerman  
Sensation Seeking Scale in Indicating Substance Abuse  
Tendencies Among Early Adolescents

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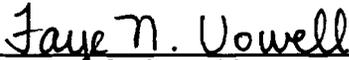
Individuals involved in the assessment of drug abuse with preadolescents need to have a test that can be used for screening. Zuckerman's Sensation Seeking Scale could be such a test. Prior to its use as an appropriate measure for possible drug abuse with preadolescents, its validity must be established with this population.

The present study was designed to establish the construct validity of the Sensation Seeking Scale-V (SSS-V) by looking at the characteristics of preadolescents scoring very high or very low on the SSS-V. Preadolescents with high scores are hypothesized to be at-risk for involvement in drug experimentation, while those obtaining low scores were hypothesized to be not-at-risk. The children participating in the study were labeled at-risk or not-at-risk by their school counselors using a list of operant descriptors of youth who are at-risk of becoming involved in alcohol/substance abuse. An established database with a sample of 1169 preadolescents was used.

The SSS-V yielded four subscale scores (Experience Seeking, Thrill and Adventure Seeking, Boredom Susceptibility, and Disinhibition). However, the researcher was only interested in the ES and Dis subscales. For both risk and not-at-risk groups the mean scores obtained were higher for males than females.

Two 2 X 2 analyses of variance were conducted to examine differences in gender (male, female), risk (at-risk, not-at-risk) and subscale scores (ES, Dis). Significant main effects were found on the ES subscale for both sex and risk. Risk was the only significant main effect on the Dis subscale. Due to the representative and large sample this study can be widely generalized.

  
Approved for the Major Division

  
Approved for the Graduate Council

An Assessment of the Efficiency of the  
Zuckerman Sensation Seeking Scale in  
Indicating Substance Abuse Tendencies  
Among Early Adolescents

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A Thesis

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Master of Science

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by

Amy L. Mangual

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## Chapter 1

### Introduction

Since its creation in 1964, the Sensation Seeking Scale (SSS) (Zuckerman, Kolin, Price, & Zoob, 1964) has been used to investigate stimulus seeking behavior. Researchers have struggled to explain peoples' behavior which seems to be motivated by a desire to increase one's state of tension and stimulation which is an individual's biological and/or psychological need for excitement. Activities such as hang gliding, wind surfing and experimentation with hallucinogenic drugs are examples of sensation seeking behavior.

There are marked differences in the level of arousal, the amount of stimulation that each individual needs to maintain to remain comfortable. If the level of stimulation is too low, the sensation seeker will experience a need for increased sensory experience. A sensory experience is the effect of external stimulation on a person's individual sensory needs. According to Zuckerman's sensation seeking model (1979), individuals have differences in their biological and psychological need for stimulation which is known as their optimal level of arousal. All human activity is an attempt to either increase or decrease stimulation. A high sensation seeker (HSS), a person with a high optimal level of arousal, would seek out exciting and novel experiences while a low sensation seeker (LSS) would seek less arousing experiences or even avoid some activities all

together. Therefore, sensation seeking describes the need of an individual to explore a variety of experiences in order to maintain a level of stimulation that is comfortable.

The relationship between a HSS and his or her environment varies, resulting in a wide range of behaviors. A HSS can satisfy his or her need for stimulation in either socially acceptable or unacceptable ways. On the positive side, a HSS can be creative artistically or involved in risky sports, while on the negative side a HSS individual can become involved in drugs, gambling, and promiscuous sex. HSSs become bored easily and often have trouble with school because the manner in which the lessons are taught do not provide enough arousal to keep them interested.

Different arousal types can be measured by the SSS. The construction of this scale includes 4 subtests labeled Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (Dis), and Boredom Susceptibility (BS) each of which measures different attributes of sensation seeking. These will be discussed in detail later. Four subscores as well as a total sensation seeking scale score are included within the scoring procedures (Zuckerman, 1979).

#### Statement of Problem

The field of psychology has received criticism for focusing on treatment of the problem society faces after individuals have become chronic substance abusers instead of

focusing on prevention. The drug abuse problem in the United States has certainly reached a chronic state and is affecting the lives of overwhelming numbers of people, especially the youth of society. Psychologists and educators need an instrument that can single out students who are at-risk for drug abuse while students are at an age where prevention techniques have a chance of making a difference. At this point the field is lacking a quick, valid screening instrument. Zuckerman's Sensation Seeking Scale Form V (1979) (SSS-V) is easy to administer and only takes 10 minutes to complete. It could be put to use easily in the public school system and community mental health clinics.

#### Purpose of Study

Some researchers (Andrussi, Archer, Pancoast, & Gordon, 1989; Pedersen, Clausen, & Lavik, 1989) have correlated drug experimentation and/or drug abuse with the sensation seeking trait. Unfortunately, drug abuse is becoming an epidemic with preadolescents in the United States. If the SSS could be used to screen children, those who are at-risk for drug abuse could be identified and prevention methods be administered. For this reason it was necessary to establish the validity of the SSS with a preadolescent population.

The researcher designed a construct validity study using Form V of Zuckerman's Sensation Seeking Scale to determine if the scale can predict substance abuse

propensity in 12 year old junior high school students. The purpose of the study was to assess validity by looking at the characteristics of those scoring very high or very low on the SSS-V. Students with high scores were hypothesized to be at-risk for involvement in drug experimentation, while those obtaining low scores would not be at-risk. The children participating in the study had been labeled at-risk or not-at-risk by their school counselors using a list of operant descriptors of youth who are at-risk of becoming involved in alcohol/substance abuse.

### Research Questions

The researcher wondered if the SSS-V had validity with preadolescents. Previous research with adolescents and undergraduates had shown that males scored higher than females on the Total score and on the subscores as well (Wechsler, 1982; Zuckerman, 1979). Would male preadolescent subjects score higher than female preadolescents on the subscores in this study? Also, would the Dis or ES subscales differentiate between those preadolescents who are at-risk for drug experimentation and those who are not-at-risk?

### Significance of Problem

As discussed earlier in this chapter HSSs can satisfy their need for stimulation in either socially acceptable or unacceptable ways. It is those who turn to unacceptable ways that are of concern.

By studying sensation seeking and its effect on preadolescents, researchers can establish a personality profile for HSS preadolescents. This profile can be used to identify children who are at-risk for involvement in socially unacceptable behavior. It is important to establish this at-risk profile for early identification because delinquent behavior often starts on a small scale and escalates quickly if not stopped. This delinquent behavior now often starts at a very young age as children in today's society are exposed to so many negative influences such as drugs and gangs while still in elementary school. This study focused on drug experimentation as an unacceptable behavior.

#### Literature Review

Zuckerman's Sensation Seeking Scale (Zuckerman, Kolin, Price, & Zoob, 1964) is a self-report personality test. In developing personality tests many approaches have been used to formulate, assemble, select, and group items. Anastasi (1988) stated that the current procedures in use are content validation, empirical criterion keying, factor analysis, and personality theory. The SSS uses both factor analysis and personality theory. Factor analysis is a way to group personality items into independent and homogeneous clusters. The personality theory Zuckerman focused on was the existence of a sensation seeking trait.

The sensation seeking trait theory expanded upon

earlier drive reduction models which defined behavior as an effort to reduce an individual's internal state or drive or tension. Earlier models stated that behavior was a direct result of needing to reduce a state of physiological or social drive (Zuckerman, 1979). For example, a person will seek food in order to reduce a physiological drive for hunger. A person who has a high need for popularity seeks recognition in order to relieve the state of tension produced by this drive. Current models are investigating the relationship between sensation seeking and genetic, hormonal, and neurological factors.

#### Definition of Sensation Seeking

Zuckerman (1979) described sensation seeking as a trait defined 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. The term sensation refers to the importance of the sensory effects of external stimulation in defining their value as primary reinforcement. A HSS actively seeks this type of stimulation.

As mentioned before, people differ in the optimal level of arousal that they must maintain due to their biological and psychological chemistry. Recent investigations have focused on the relationship between genetic, hormonal and neurological factors and sensation seeking. In a 1986 study, Zuckerman found that sensation seeking was related to

the enzyme monoamine oxidase which is related to drug use and other risk taking activities (Zuckerman, 1986; Zuckerman, 1989). The suggestion was also made that HSSs might have higher levels of testosterone. A negative significant correlation was found between sensation seeking and acetylcholinesterase which is a hormone in the body that has been associated with aggressive arousal in human subjects. Zuckerman looks positively toward the future of neurology and sensation seeking with the development of the Positron Emission Tomography. This machine lets researchers watch brain activity as it occurs and will resolve many of the unanswered questions that exist.

Researchers have also studied the effects of dopamine in addiction. According to Routtenberg (1978) there is a connection between mood-altering drugs and the catecholamines and also between the catecholamines and the brain-reward system (self-stimulation). A catecholamine neurotransmitter is a substance that transmits the nerve impulse from one nerve cell to another. Routtenberg and his colleagues suspected that neurotransmitters were involved in self-stimulation. Dopamine is a major catecholamine neurotransmitter in the brain and when a nerve cell in a catecholamine system is activated, it releases one of these substances.

Drugs that manipulate the catecholamine system have a powerful effect on mood. The drugs modify the catecholamine

transmission at the synapse, altering the neurotransmitter's ability to influence other nerve cells. These drugs elevate the catecholamine levels or mimic the action of catecholamine facilitating self-stimulation (Routtenberg, 1978).

Self-stimulation is increased by the injection of amphetamine, which enhances dopamine transmission. These results indicated that drugs influence brain reward by acting on nerve cells. Amphetamines, imipramine, and apomorphine all increase the effect of self-stimulation by enhancing the release of catecholamines into the synapse, preventing the next synapse from picking up the catecholamines from the current synapse and stimulating the dopamine receptors (Routtenberg, 1978).

#### Development and Construction of the SSS

The SSS was first developed by Zuckerman, Kolin, Price and Zoob in 1964 in an attempt to make optimal stimulation levels quantifiable. Zuckerman thought that the differences in peoples' optimal level of arousal would influence the type of activities in which they participated.

Form I of the SSS consisted of 54 items written in forced-choice form. The breakdown of items was as follows: 14 items dealt with preference for extremes of sensation; 8 items pertained to preferences for the new and unfamiliar as opposed to the familiar; 12 involved the enjoyment of danger, thrills, or "kicks"; 6 related to social values

based on their stimulation value; 4 were preferences for security as opposed to adventure; and 2 items dealt with the need for general excitement. Form I was given to 268 male and 277 female undergraduates at Brooklyn College (Zuckerman, Kolin, Price, & Zoob, 1964). After completing a factor analysis a general factor was found and was reliable for both males and females. Form II was then developed. It included an additional 12 items that were significant to either males or females. Form II had 34 items, but most researchers used the common 22 item general scale (Zuckerman, 1978).

Form III consisted of 50 items from Form I and 63 new items; it was given to 160 male and 172 female undergraduate students at Temple University. The results identified four specific factors which were used to develop four new subscales to be used on Form IV (Zuckerman, 1979). The first factor has been labeled Thrill and Adventure Seeking (TAS). The items describe a desire for activities or sports involving speed, moderate danger or adventure. Examples would be parachute jumping or motorcycle riding. The second factor was called Experience Seeking (ES) and the items describe the seeking of new experiences through music, art, drugs, and unconventionality in dress or behavior. The third factor, Disinhibition (Dis) describes release seeking behaviors such as drinking, partying, and sexual variety. The final factor, Boredom Susceptibility (BS), is a dislike

for repetition of experience and a desire for change and novel things and people (Zuckerman, 1972). Form IV contains 72 forced-choice items consisting of the 4 subscales, the 22 item general scale from Form II, and 10 filler items. It was administered to 156 undergraduates from the University of Delaware to establish reliability and validity (Stewart & Mac Griffith, 1975).

Zuckerman (1979) experienced several problems such as significant gender differences with Form IV and soon developed a new form of the SSS. It was felt that a total score would be more beneficial because the general scale was not balanced in its representation of each of the four factors. Form V was constructed to include 10 items from each of the four subscales. The sum of the raw scores on the 40 items results in a total sensation seeking score. Form V is the form currently used in research.

### Reliability

Internal reliability studies for Form IV report moderate to good reliability coefficients ranging from the low .70s to the high .80s. A study to check for internal reliability was conducted with a student sample from the University of North Carolina using Form IV. Again, the reliability coefficients ranged from the low .70s to high .80s (Zuckerman, 1979).

The internal reliability of the new 40 item Total score on Form V ranged from .83 to .86. The reliability of the

Form V subscales was expected to be lower because the scales were shorter; however, this was shown to not influence the reliability of Form V (Zuckerman, 1979).

Other researchers have found high reliability coefficients with Form V. Madsen, Das, Bogen, and Grossman (1987) created a short form of Form V and conducted four studies with 94 ninth graders and 538 college students. They found that the short form demonstrated high retest reliability and concluded that the short form provided a reliable and valid measure of sensation seeking.

Another study using an adolescent sample was done by Wechsler (1982). Her sample consisted of 95 maladaptive subjects and 100 normals, 89 were male and 106 were female. Her results indicated that the SSS-V has moderate to high internal consistency and good test-retest correlation coefficients for the male and female subjects included within the sample population. The results of the study suggested that the SSS-V is a valid and reliable instrument for use with an adolescent population. In summary, research has shown that the internal reliability of the SSS is generally in the moderate to high range when used with normal adolescents or undergraduates.

### Validity

Anastasi (1988) defined construct validity as the extent to which the test may be said to measure a theoretical construct or trait. Construct validity requires

the gradual accumulation of information from a variety of sources. Construct validity was addressed from two angles. First, the comparison of the SSS to other trait measures or self-report personality instruments. Second, the relationship between sensation seeking and several behaviors such as drinking, smoking, and promiscuous sexual activity.

The SSS has been correlated with the results of several personality tests. Correlations between the SSS and the Minnesota Multiphasic Personality Inventory developed by Hathaway and McKinley (1951) in studies with college students (Norman & Fenson, 1970; Zuckerman, Bone, Neary, Mangelsdorff, & Brustman, 1972) revealed a consistent relationship between the SSS and the Hypomania scale. Items on this scale express high energy levels and the need for excitement; this is consistent with the sensation seeking construct. The college students also scored high on the F scale (nonconformity of general response) and the Psychopathic Deviate scale (nonconformity to social norms and rebellion against parental and societal authority) also tend to correlate with the SSS, especially with the Dis and ES subscales.

Foerstner and Schuerger (1982) revealed the relationship between the SSS and Cattell's High School Personality Questionnaire. The following patterns emerged: sensation seeking is significantly related to cheerfulness and negatively related to conscientiousness and

individualism. The sensation seeking factors of Disinhibition and Boredom Susceptibility were negatively correlated with sensitivity and being self-sufficient. The sensation seeking factors of Disinhibition and Experience Seeking were negatively related to control. Sensation seeking was related to the general personality of adolescence in that the HSS is low in anxiety and control.

The SSS has been correlated with several personality measures over the years including the Minnesota Multiphasic Personality Inventory, Edwards Personal Preference Scale, Cattell's High School Personality Questionnaire, and the Adjective Check List. Overall, research investigating the relationship between the SSS and other personality instruments indicated good support for the construct of sensation seeking (Zuckerman, 1979).

#### SSS and Maladaptive Behavior

In addition to the personality traits found on previous personality tests, the traits described in the Foerstner and Schuerger study (1982) also correlated with several behaviors. The HSS student is often disruptive in school according to two studies. Wechsler (1982) found that as SSS-V scores increased, GPA tended to decrease. The results of Wasson and Dionne's study (1982) indicated that HSS engage more frequently in deviant behavior than LSS in the school climate.

Several studies have revealed that the HSS is often

involved in deviant or delinquent behavior. Farley and Sewell (1976) matched 32 delinquent black adolescents and 32 nondelinquents on age, sex, race, and SES. They hypothesized that the delinquents would be significantly greater in sensation seeking than nondelinquents. Their results verified the hypothesis.

The relationship of drug and alcohol abuse and other addictive behaviors and sensation seeking have been studied by Zuckerman et al. (1970) and others (Newcomb & McGee, 1991; Wechsler, 1982). One study conducted by Zuckerman, Ball and Black (1990) evaluated the relationship between the trait of sensation seeking and smoking. The sample consisted of 1071 male and female undergraduates - 279 indicated they were past or current smokers. The past or current smokers then completed a Smoking Questionnaire, while the entire group took the SSS. HSSs inhaled more of the smoke than the LSSs. Smoking was viewed as a risky behavior by the students, but the risk was not associated with sensation seeking. Men smoked more in situations when close attention to a task was necessary. Women smoked more in emotional and social situations as was true for all HSSs (Zuckerman, Ball, & Black, 1990).

Zuckerman, Neary, and Brustman (1970) correlated the SSS with several addictive behaviors like smoking, drugs, alcohol, and promiscuous sex. Form V of the SSS was given to 505 undergraduates in an introductory psychology course.

The students who scored in the upper and lower extremes were brought back for additional testing in small groups. The results were rather predictable. Both male and female HSS scored significantly higher than LSS on drug usage. Marijuana, hashish, amphetamines, and LSD were reported as the drugs used with the greatest frequency. Both male and female HSS smoked more cigarettes than LSSs; however, the results were only significant for females. Alcohol is more frequently used by male and female HSSs than LSSs. Finally, a significant difference was found for both sexes who are HSSs and sexually active.

Von Knorring, Oreland, and von Knorring (1987) ran a study on a Swedish population of 18 year old males. One-thousand-two-hundred-and-nineteen subjects completed an inventory consisting of the SSS, Eysenck Personality Inventory, and questions about drug consumption. The 96 subjects with drug abuse had high scores on subscales related to ability to stand boredom, impulsivity and high scores in SSS Thrill and Adventure Seeking and Experience Seeking. Newcomb and McGee (1991) found similar results when assessing the sensation seeking construct in a sample of 595 adolescents. The subjects were assessed three times over a five year period from late adolescence to early adulthood. Those who had high sensation seeking scores repeatedly reported use of drugs and a substantial minority had engaged in other delinquent or criminal activities.

Andrucci, Archer, Pancoast and Gordon (1989) assessed adolescent drug use across several categories. The subjects were 51 male and 72 female high school students between the ages of 14-18. Drug abuse was measured using adolescent self-reports on the Segal Alcohol Drug Use Research Survey. Scores from the Minnesota Multiphasic Personality Inventory and the SSS were used to examine drug use outcomes. Results demonstrated significant relationships between personality measures and drug use among adolescents. The SSS had very strong, consistent findings for measuring drug abuse outcomes. Pedersen, Clausen, and Lavik (1989) obtained similar results with 1027 male and female Norwegian seniors in high school, ages 16-19. The data indicated that sensation seeking scores were moderate to strong predictors of both legal and illegal drug use.

Just as many adolescents experiment with addictive behaviors like smoking and drugs, several experiment with the drug alcohol as well. This appears to be a big problem with HSSs as the following studies suggest. Arnett (1990b) investigated the relationship of drunk-driving behavior to sensation seeking among 181 male high school juniors and seniors. The subjects completed the SSS and questions about drunk-driving behavior. The results showed that drunk-driving was significantly related to the Total score on the SSS and to three of the subscales, Thrill and Adventure Seeking, Disinhibition, and Boredom Susceptibility. A

similar study involved 245 male 14-19 year old students in the completion of the SSS and questions about alcohol consumption. As in the other study, there was a correlation between the Total score, the two subscales BS and Dis and alcohol use (Cardenas & Moreno, 1989). Earleywine and Finn (1991) corroborated the findings of earlier studies. The relationship between behavioral disinhibition and drinking can be accounted for by sensation seeking.

As mentioned earlier, sensation seeking has been related in some studies to gambling and promiscuous sex. Kuley and Jacobs (1988) divided a group of gamblers into two groups based on their gambling behavior and responses to a questionnaire. The groups were problem gamblers and social gamblers. After this division everyone was administered the SSS. Results showed that problem gamblers scored significantly higher than social gamblers on their Total SSS score and on the Boredom Susceptibility, Experience Seeking, and Disinhibition subscales.

Arnett (1990a) investigated the relationship among contraceptive use, sensation seeking, and adolescent egocentrism among 145 female high school juniors and seniors. Sex without contraception was significantly related to scores on the SSS including the Dis and BS subscale. Sex without contraception was also related to egocentrism, especially to the subjects estimates of the probability of becoming pregnant as a result of engaging in

unprotected sex.

Studies summarized above suggest that HSSs engage in several risky or addictive behaviors. Adolescents are involved in deviant behaviors like drug and alcohol abuse, drunk-driving, smoking, gambling, and unprotected sex. Studies have shown that all of these behaviors are related to the sensation seeking trait. The data resulting from these investigations have suggested the construct validity of the SSS-V through its correlation with other personality instruments and sensation seeking behaviors.

#### SSS and Age

Zuckerman's optimal level of arousal theory suggested that sensation seeking increases with age until some time in adolescence then declines with age (Lubin, B., Zuckerman, M., Breytspraak, L.M., Bull, N.C., Gumbhir, A.K., & Rinck, C.M., 1988; Zuckerman, 1979). Because the SSS was normed on undergraduates, it is important to see if the SSS will produce comparable scores with other populations. A study of subjects with an age range of 17 to 71 showed that all SSS scores decline as age increases (Haapasalo, 1990). Zuckerman suggested that experience in life may lead to increasing conservatism and decreased risk taking. Alternatively, explanations for the age decline may stem from biological correlates of sensation seeking (1979).

In the past decade several studies have emerged using the SSS with an adolescent population ranging in age from

14-18 (Farley & Sewell, 1976; Foerstner & Schuerger, 1982; Wechsler, 1982). These studies have proved through moderate to good coefficients of reliability and validity that the SSS is suitable for use with an adolescent population.

### SSS and Gender

As discussed earlier, Zuckerman (1979) had problems with Form IV of the SSS. The sample of University of Delaware undergraduates used for norming Form IV had gender differences on the General scale and on all four subscales with the largest difference on the Dis scale. Differences were found in scores for males and females, especially on subscale Dis in other studies as well (Stewart and MacGriffith, 1975; Zuckerman, 1986).

Wechsler (1982) found that on the Dis subscale, the relationship between drug involvement and delinquent charges was significantly different for males and females. The males scored significantly higher than females for all categories representing drug experimentation or involvement. For delinquent females, a significant correlation was found between the number of runaway attempts and the severity of drug/alcohol use on the Total, ES, and Dis subscales.

Madsen, et al. (1987) correlated a short form of the SSS with Form V. Even with their short form they found that men scored higher than women just as they did on the long form. The difference between scores for men and women was again found when Gundersheim (1987) gave the SSS-IV to 123

male and 51 female varsity and junior varsity athletes. In comparisons on all scales, males had a significantly higher sensation seeking need. There is a difference between high male and female sensation seeking scores. One has to wonder if the difference is in the trait itself or just the way the different sexes act out that trait.

### SSS and Preadolescence

Very little research has been done with the SSS and a preadolescent population. In 1982 the SSS was administered to a sample of 12 to 13 year old Swedish children (Bjorck-Akesson, 1982). The researcher changed the questions that referred to adults, jobs, and preferences for different kinds of art. Fourteen of the items were kept in original form. The test was administered to 874 children in the sixth grade. The researcher concluded that even though there were basic differences between boys and girls that sensation seeking is a unitary concept. Therefore, sensation seeking in sixth graders is not constructed of the four different factors. This might suggest that the four factors of sensation seeking do not develop until early adolescence and peak in late adolescence.

Perez, Ortet, Pla, and Simo (1986) created a junior sensation seeking scale which has been translated into Spanish and French. In 1986, Perez, Ortet, Pla and Simo constructed the 50 item Spanish junior version of the SSS. They used ten items from each subscale of the SSS-V and a

ten item lie scale and administered it to 277 primary and secondary students. The test showed acceptable one month test-retest reliability and acceptable validity.

In 1991, Simo, Santana, and Perez administered the French translation of the 50 item Spanish scale to 280 primary and secondary students from six French speaking schools in Belgium. As in Spain, the test showed acceptable reliability and validity. While in Belgium in 1991, Simo and Perez administered their French junior SSS and a self-reported delinquency scale to 169 students ages 11-15. The subjects attended four schools in two French speaking cities. The data showed a positive correlation between the Total score and the three subscales, Dis, ES, and TAS with the delinquency scale.

Russo, Lahey, Christ, and Frick (1991) developed a preliminary SSS for children. This tool was used with 126 normal children and 176 clinic-referred children all of whom were ages 7-12. The parents of the clinic-referred children also completed the adult SSS. The results supported sensation seeking as a quantifiable trait in children and suggested that the tool can be used to predict conduct problems. The SSS for children was a reliable and valid measure in normal and clinic-referred subjects. An interesting finding indicated a significant positive correlation between sensation seeking scores of children and their mothers.

There are differences of opinion regarding whether or not children younger than 13 have developed the sensation seeking trait. While some believe the trait has not developed into four different factors, others (Perez, et al., 1986; Simo, et al., 1991; Russo, 1991) have assessed children with valid and reliable results that the trait does exist. What one must keep in mind is that all of the studies performed with preadolescent samples have created childrens' or junior scales. The adult form, SSS-V, has never been tested for validity with a preadolescent sample. The results might be very different than those reported using the junior scales.

#### Summary

Past research indicated that a relationship exists between sensation seeking behavior and substance abuse. However, all of the data have been collected using adolescents and undergraduates as the sample. The literature review classified adolescents as ranging in age from 14-18 and undergraduates as 17-47 years of age with a mean age of 18. The current study is an attempt to prove the construct validity of the SSS-V using a preadolescent sample. In this study preadolescents were defined as 12-13 year olds. Preadolescents in the literature review ranged in age from 7-15. The preadolescent stage is starting at a much younger chronological age than a decade ago. Activities such as dating and wearing make-up once started

when a child reached 16, but now children 11 or 12 years of age participate in these activities. The problem lies in the fact that maladaptive activities such as drug usage, alcohol abuse, and promiscuous sex now take place at 11 or 12 years of age and younger ages as well.

This chapter presented information pertaining to the definition of sensation seeking, the development and construction of the SSS, the reliability and validity of the SSS, the interaction of the SSS with age and gender, and the research on the SSS and pre-adolescents. Chapter II will present the database, research procedures, and the design of the study.

## Chapter 2

### Method

The following chapter explains the database, research procedures, and the design of the study. It also describes the statistical techniques used to analyze data.

#### Database

For this study the researcher used a database from a study conducted by Mehring, Tompkins, and Johnson (1992). The subject pool consisted of all children who were in the seventh grade in a unified school district in eastern Kansas ( $N = 1169$ ). The community in which this school district is located is a middle-class, suburban area with a student population of approximately 16,000 (K-12). The majority of the students' families were in the lower middle-class and the upper middle-class socioeconomic bracket. The Hollingshead protocol was used for socioeconomic status (SES) classification purposes (Hollingshead & Redlich, 1958). The students were drawn from the five junior high schools in the district. The global population for this study was all seventh graders across the United States whose circumstances are similar to those of the sample population. The target population was all seventh graders in this eastern Kansas school district.

This sample sought to be representative of all middle-class, suburban school districts across the United States with student populations of approximately 16,000. However, not all cities have the same middle-class population as the

sample so caution must be applied before generalization takes place. Informed consent forms were declared to be unnecessary by the school district as all seventh graders participated in the study and it was presented as part of the instructional process.

### Research Type

The current study was psychometric in nature. Psychometricians investigated the actual testing instrumentation for proof of validity and reliability. This study focused on construct validity which is the extent to which a test is said to measure a theoretical construct or trait. This study's purpose was to show whether or not the SSS-V accurately classifies students at-risk and not at-risk for substance abuse.

### Internal Validity

This researcher examined construct validity to evaluate the Sensation Seeking Scale's (Form V) (SSS-V) appropriateness for use with a preadolescent sample. Due to the large sample size, many of the usual threats to internal validity (mortality, subject characteristics, history, and location) that are confounding variables were spread equally across the sample. The threat of time was not an issue as all students took the test in their individual classes in one setting. The testing procedure for all classes was completed over a period of two weeks.

However, as with all studies there are a few threats to

internal validity that must be addressed. First, the Zuckerman SSS-V uses a self-report format. The subjects are asked to be honest when answering the test questions, but some subjects read into the true meaning of the test and become dishonest. This is known as subject faking. Subject faking takes place as the person answering the test questions plays another role instead of answering the questions honestly.

Preadolescents in seventh grade are very susceptible to this type of role changing. At this age (12 years old) preadolescents are entering a time of rite of passage. They are no longer children in elementary school, but now have peers their age and two years older. Students of this age change their personalities to fit in with the group they happen to be with at that particular time. Therefore, there was the possibility that the subjects were playing an alternative role when answering the test questions.

A final threat to internal validity was the assumption that the database is complete and was gathered accurately and efficiently. A possible threat involved the administration of the test by individual classroom teachers. However, to protect internal validity, the teachers were given specific scripts to follow during the administration. Again, with a sample size of over 1,000 the researcher was confident that the database extinguished any internal reliability threat.

### External Validity

The results of this study reflected what seventh graders attending junior high in a middle-class, suburban school district of approximately 16,000 students would produce under these circumstances. Due to the very representative sample, which also happened to be large, this study can be widely generalized. One must keep in mind the limitations of generalizability due to the specifics of the definition of middle-class as not all middle-class suburbs were on exactly the same SES level. This sample consisted mainly of lower middle-class and upper middle-class SES students using the Hollingshead classification system.

### Hypotheses

It was hypothesized that male preadolescents would score higher on the Experience Seeking (ES) subscale than female preadolescents. A second hypothesis was that the ES subscale would differentiate between preadolescents at-risk and not-at-risk for drug experimentation. The third hypothesis was that the null hypothesis would be rejected and the alternate hypothesis accepted which stated that the four populations in question, not-at-risk males, not-at-risk females, at-risk males, and at-risk females, were equivalent. The fourth hypothesis stated that male preadolescents would score higher than females on the Disinhibition (Dis) subscale. The fifth hypothesis was that the Dis subscale would differentiate between preadolescents

at-risk and not-at-risk for abusive substance experimentation. The sixth hypothesis was the same as the third hypothesis, but examined the Dis subscale. The overall research hypothesis stated that the SSS-V would have validity with preadolescents.

For the statistical hypotheses the following abbreviations were used:

Not at risk male = NRM

Not at risk female = NRF

At risk male = ARM

At risk female = ARF

$H_0$ : NRM = NRF = ARM = ARF

$H_A$ : NRM  $\neq$  NRF  $\neq$  ARM  $\neq$  ARF

It was hypothesized that those students who are at-risk would be high sensation seekers and those not-at-risk would be low sensation seekers. It is also known from the literature that there are differences in the SSS-V scores of males and females with males consistently scoring higher on the Total and subscale scores. Therefore, the researcher wanted to reject the null hypothesis and accept the alternate hypothesis which stated that the groups are not equivalent.

### Steps and Procedures

The instrumentation employed in this research was Form V of the SSS which is a 40 item forced-choice questionnaire which requires test takers to indicate which of the two alternative statements for each item was most descriptive of their behavior. Scoring yields a Total score and four subscale scores. Each subscale is comprised of ten items. The Thrill and Adventure Seeking (TAS) subscale is composed of items which indicate a desire to engage in sports or activities involving elements of risk. The Experience Seeking (ES) subscale reflects the extent to which a person seeks new experiences through involvement in a nonconforming style of life. The Disinhibition (Dis) subscale expresses a traditional pattern of non-conformity through rebellion against strict codes about acceptable social behavior. The Boredom Susceptibility (BS) subscale reflects a dislike of any repetition of experience, dull or boring people, and a restlessness when things are unchanging. The Total score is reflective of the overall sensation seeking trait. A description of the construction and development of the SSS was presented in Chapter I.

The internal reliability and validity of the SSS-V were also presented in Chapter I. The internal reliabilities of the new 40 item Total score in Form V ranged from .83 to .86. Lower reliability scores have been reported, but only when the sample consisted of psychiatric patients. The test

was reliable with an adolescent and undergraduate population. Adolescents were defined as students ranging in age from 14-18 and undergraduates ages were reported in the literature review as those 17-47 with a mean age of 18. There was limited information on Form V and reliability using preadolescents as the sample. Preadolescents in this study had a mean age of 12, although preadolescents described in the literature review ranged in age from 7-15.

### Statistical Design

Two 2 X 2 analyses of variance (ANOVA) were used in the analysis of data. The independent variables were the at-risk students versus not-at-risk students, and gender. The dependent variables were the Dis and ES subscale scores. Each of the dependent variables was analyzed in an individual 2 X 2 ANOVA design. The ANOVA technique was particularly suited to this study because more than two groups were being analyzed.

The individual scores of every student had been loaded into a computer system as part of a study conducted by Mehring, Tompkins, and Johnson (1992). The students had been labeled at-risk or not-at-risk by their school counselors using a list of operant descriptors of youth who are at-risk of becoming involved in alcohol/substance abuse. After the statistical information was loaded into the database the list of students' names was destroyed. By studying the risk characteristics of those who scored very

high and very low on the SSS-V, validity was assessed. Those who scored high were high sensation seekers who thrive on risk and adventure. They seek out novel experiences and become bored with the same people and activities. Those who scored on the low end were not sensation seeking and avoid situations in which risk might be involved.

## Chapter 3

### Results

The dependent variables of the study were two subscale scores, Experience Seeking (ES) and Disinhibition (Dis), of the Sensation Seeking Scale (SSS). Behaviors associated with the ES subscale include seeking new experiences through music, art, drugs, and unconventionality in dress or behavior. Disinhibition describes release seeking behaviors such as drinking, partying, and sexual variety. Independent variables were gender and risk classification. Due to differences in cell size, it was necessary to check the variances between groups. This was done by running a Box test. Table 1 shows the differences in cell sizes with the appropriate subscale and group.

No significant differences were found between the group variances. Therefore, it was determined that analysis of variance (ANOVA) was an appropriate technique. The means and standard deviations of the study are presented in Table 2. Males showed more of the sensation seeking trait measured by the ES and Dis subscales than females.

Before beginning the research study the researcher developed hypotheses about the possible findings of the study. Two 2 X 2 analyses of variance were conducted to examine differences in gender (male, female) and risk (at-risk, not-at-risk). The hypotheses were analyzed individually by subscale.

Table 1

Cell Sizes and Box Test Results for ES and Dis by Gender and Risk

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Code	<u>n</u>	<u>F</u>
Male		
At-risk	68	1.067
Not at-risk	363	
Female		
At-risk	39	1.128
Not at-risk	385	

---

Table 2

Cell Means and Standard Deviations for ES and Dis by Gender and Risk

Code	<u>Mean</u>	<u>SD</u>
<b>ES</b>		
Male		
At-risk	9.926	2.500
Not-at-risk	9.554	2.353
Female		
At-risk	9.308	2.341
Not-at-risk	8.582	2.266
<b>Dis</b>		
Male		
At-risk	7.574	2.083
Not-at-risk	6.937	1.954
Female		
At-risk	7.256	2.185
Not-at-risk	6.556	1.819

### Hypothesis 1

The first hypothesis stated that male preadolescents would score higher on the ES subscale than female preadolescents. The first ANOVA investigated the ES subscale scores Table 3 presents the ANOVA results. Results indicated that male scores were significantly higher than female scores on this subscale. Table 3 presents the gender main effects in the ES ANOVA. When a significant  $F$  has been found it is important to check the effect magnitude using omega squared ( $\omega^2$ ).  $F$  is dependent on sample size, and often becomes inflated. Omega squared is not affected by sample size. The  $\omega^2$  for the gender main effect on the ES subscale was .008 which is a small effect.

These results support what other researchers have found (Gundersheim, 1987; Madsen, et al., 1987; Wechsler, 1982). There is a significant difference between male and female sensation seeking scores on the ES subscale.

### Hypothesis 2

The second hypothesis stated that the ES subscale would differentiate between preadolescents at-risk and not-at-risk for drug experimentation. There was a significant difference between risk categories. Therefore, this hypothesis was also supported. The  $\omega^2$  for the risk main effect was .002, a small effect.

Students who are at-risk for substance abuse are those who have high scores on the SSS. The ES subscale separated

Table 3

ANOVA Summary Table for ES

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Sex	1	55.37	55.37	10.24 *
Risk	1	26.41	26.41	4.88 *
Risk X Gender	1	2.73	2.73	.50
Error	851	4602.32	5.41	
Total	854	4686.83	89.92	

$p \leq .05$

those individuals who are at-risk for drug abuse propensity from those students who are not-at-risk.

### Hypothesis 3

The null hypothesis stated that the four populations in question, not-at-risk males, not-at-risk females, at-risk males, at-risk females, were equivalent. The alternate hypothesis stated that the four populations were not equivalent. Past research indicated that there were differences between the groups. The ANOVA summary for ES Table 3 supports past research proving that there are differences between the four populations. The  $\omega^2$  was .014 on the ES subscale which is a small effect.

On the ES subscale, significance was found for the gender and risk main effects. This established a difference between males and females and those at-risk and not-at-risk, indicating that the four populations are not the same.

### Hypothesis 4

The fourth hypothesis stated that male preadolescents would score higher than females on the Dis subscale. As indicated in Table 4, this hypothesis was not supported by the evidence from the ANOVA. The Dis subscale did not differentiate between males and females. These results do not support previously summarized literature.

### Hypothesis 5

The fifth hypothesis stated that the Dis subscale would differentiate between preadolescents at-risk and not-at-risk

Table 4

ANOVA Summary Table for Dis

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Sex	1	10.66	10.66	2.90
Risk	1	39.14	39.14	10.66 *
Sex X Risk	1	.09	.09	.02
Error	851	3124.66	3.67	
Total	854	3174.55	53.56	

p ≤ .05

for abusive substance experimentation. The results showed that the Dis subscale separated those individuals who are at-risk for drug propensity from those students who are not-at-risk. The  $\omega^2$  for the Dis ANOVA revealed that there was a very small effect, .0089, for the risk main effect.

This revealed that students who are at-risk obtain significantly different scores on the Dis subscale than those who are not-at-risk. The at-risk group scored higher than the not-at-risk students.

#### Hypothesis 6

As in Hypothesis 3, the null hypothesis stated that the four groups in question, not-at-risk males, not-at-risk females, at-risk males, and at-risk females, were equivalent. The alternate hypothesis stated that the four populations were not equivalent. The ANOVA summary of the Dis analysis partially supported the results of previous research which indicated that there are differences between the groups. Table 4 presents the ANOVA results for the Dis subscale. The  $\omega^2$  for the Dis subscale was .0122, a small effect.

The Dis subscale analysis indicated that only the risk main effect was significant. The Dis subscale does not differentiate males and females within the population. Therefore, the null hypothesis could not be rejected because two of the four groups were not significantly different.

### Overall Research Hypothesis

The overall research hypothesis stated that the SSS-V would have validity with preadolescents. Preadolescents who were at-risk would be high sensation seekers and those not-at-risk would be low sensation seekers. This hypothesis is in a sense, a summative hypothesis. It was necessary to analyze Hypotheses 1-6 and confirm their results before the researcher could assess the validity of the SSS-V with preadolescents. Although the results establish statistical validity for the SSS, in view of the small effect size of  $\omega^2$ , the researcher cannot conclude that the SSS-V has practical validity with preadolescents. Effect magnitude is a measure of the meaningfulness of the results. Meaningfulness is important because it influences the application of the results. In this case the results are significant, but not meaningful.

### Summary

In conclusion, seven hypotheses were tested and six were found to be statistically significant. Male preadolescents scored higher on the Experience Seeking subscale. The Dis, as well as the ES, subscale differentiated between preadolescents at-risk and not at-risk for substance abuse. Both of the subscales resulted in higher scores for the students who are at-risk than those not at-risk. The researcher rejected the null hypothesis and accepted the alternate hypothesis which stated that the

four groups were not equivalent. Finally, although the data supported the first six hypotheses, due to the small effect size the researcher cannot conclude that the SSS-V has practical validity with a preadolescent sample.

## Chapter 4

### Discussion

Since its creation in 1964, the Sensation Seeking Scale (SSS) (Zuckerman, Kolin, Price, & Zoob, 1964) has been used to investigate stimulus seeking behavior. Form V is the form currently used in research. Studies involving the SSS have yielded interesting results. The SSS divides subjects into groups of high sensation seekers (HSS) and low sensation seekers (LSS). HSS has been correlated with several socially unacceptable behaviors such as drinking, smoking, drug use, and promiscuous sexual activity (Farley & Sewell, 1976; Wechsler, 1982; Zuckerman, Neary, & Brustman, 1970).

It has been found that sensation seeking increases with age until sometime in adolescence then declines with age (Zuckerman, 1979). In the past decade, several studies have emerged using the SSS with an adolescent population ranging in age from 14-18 (Andrussi, Archer, Pancoast, & Gordon, 1989; Severson, Benthin, & Slovic, 1989). These studies have proved that the SSS-V is suitable for use with an adolescent population. Studies have also been conducted using preadolescent samples. Like the adolescent studies, the results have been valid and reliable stating that the SSS can be used with this age group. However, in all cases the SSS has been modified for children or a "junior" scale was created and administered.

Gender differences have also been found when using the

SSS. Males consistently scored higher than females on the Total score and the four subscales. Males scored significantly higher than females in all categories representing drug experimentation or involvement in several studies (Wechsler, 1982; Zuckerman, et al., 1970).

The present study was designed to establish the validity of the SSS-V as a screening tool for tendency toward substance abuse. Scores of those labelled at-risk or not-at-risk of being or becoming abusers as rated by school counselors were compared with very high/low scores on the SSS-V. Subjects with high scores were hypothesized to be at-risk for involvement in drug experimentation, while those obtaining low scores were expected to not be at-risk. An established database with a sample of 1169 preadolescents was used. This experiment was the first time the SSS-V had been used with a preadolescent sample to determine whether or not the instrument could assess tendencies toward substance abuse.

The SSS-V yielded four subscale scores, Experience Seeking (ES), Thrill and Adventure Seeking (TAS), Boredom Susceptibility (BS), and Disinhibition (Dis). However, the researcher was only interested in the ES and Dis subscales because previous research supports their connection with substance abuse.

Two 2 X 2 analyses of variance were conducted to examine differences in gender (male, female) and risk (at-

risk, not-at-risk). Significant main effects were found on the ES subscale for both gender and risk. The Dis subscale, however, only identified risk as significant. The results of the two ANOVAs provide evidence to support the hypotheses in question. Male preadolescents scored higher than females on the ES subscale. The Dis, as well as the ES, subscale differentiated between preadolescents at-risk and not-at-risk for substance abuse. The researcher rejected the null hypothesis and accepted the alternate hypothesis which stated that the four populations (at-risk male, at-risk female, not-at-risk male, not-at-risk female) are not equivalent. The evidence from these six hypotheses is statistically significant; however, the researcher cannot accept the hypothesis that the SSS-V does have practical validity with preadolescents.

Although the results were statistically significant, in view of the small effect of  $\omega^2$ , the evidence does not support the use of the SSS-V as a screening instrument for the tendency towards substance abuse. While the ANOVA analysis did differentiate consistently in relation to the hypotheses, differences were small enough that it would not be possible to develop cut-off scores for predicting tendencies toward drug abuse. The ES subscale differentiated between male and female high sensation seekers and the means showed that males tended to score higher than females on every subscale. This means that even

though both males and females can be high sensation seekers, males either display the trait in more overt ways than females, or simply are even higher sensation seekers than their female counterparts.

These results are beneficial to the field of psychology because they inform psychologists that the SSS-V cannot be used as a screening instrument with preadolescents, but can be used with other age groups. The instrument can be used with preadolescents as one source of verification of those who are substance abusers. The researcher would recommend that the SSS-V be administered to those who are admitted to mental health centers and drug rehabilitation programs. The test would act as one more source of information during the in-take interview.

It is also recommended that additional research be conducted replicating this study, using a preadolescent sample from a variety of geographic areas and socioeconomic levels. The sample for this investigation consisted of a middle-class, suburban school district in the Midwest region of the United States. Therefore, a more diverse sample would enhance the generalizability of the results.

## REFERENCES

- Anastasi, A. (1988). Psychological testing (6th ed.). New York: Macmillan.
- Andrucci, G.L., Archer, R.P., Pancoast, D.L., & Gordon, R.A. (1989). The relationship of the MMPI and sensation seeking scales to adolescent drug use. Journal of Personality Assessment, 53, 253-266.
- Arnett, J. (1990a). Contraceptive use, sensation seeking, and adolescent egocentrism. Journal of Youth and Adolescence, 19, 171-180.
- Arnett, J. (1990b). Drunk driving, sensation seeking, and egocentrism among adolescents. Personality and Individual Differences, 11, 541-546.
- Bjorck-Akesson, E. (1992). Development of a sensation seeking scale for preadolescent children. Molndal, Sweden: Department of Education, Goteborg University. (ERIC Document Reproduction Service No. ED 228 265).
- Cardenas, G.C., & Moreno, J.B. (1989). La busqueda de sensaciones y la ingesta de alcohol en la adolescencia [Sensation seeking and alcohol use in adolescence.] Revista de Psicologia General y Aplicada, 42, 343-349. (From Psychological Abstracts, 1982, Abstract No. 28-74713).

- Earleywine, M., & Finn, P.R. (1991). Sensation seeking explains the relation between behavioral disinhibition and alcohol consumption. Addictive Behaviors, 16, 123-128.
- Farley, F.H., & Sewell, T. (1976). Test of an arousal theory of delinquency: Stimulation seeking in adolescents. Criminal Justice and Behavior, 3, 315-321.
- Foerstner, S.B., & Schuerger, J.M. (1982). Relationship between Cattell's High School Personality Questionnaire and Zuckerman's Sensation Seeking. Psychological Reports, 51, 507-511.
- Gundersheim, J. (1987). Sensation seeking in male and female athletes and nonathletes. International Journal of Sport Psychology, 18, 87-99.
- Haapasalo, J. (1990). The Eysenck Personality Questionnaire and Zuckerman's Sensation Seeking Scale (form V) in Finland: Age differences. Personality and Individual Differences, 11, 503-508.
- Hathaway, S.R., & McKinley, J.C. (1951). The Minnesota Multiphasic Inventory Manual (rev. ed.). New York: Psychological Corporation.
- Hollingshead, A.B., & Redlich, F.C. (1958). Social class and mental illness, New York: John Wiley.

- Kuley, N.B., & Jacobs, D. F. (1988). The relationship between dissociative like experiences and sensation seeking among social and problem gamblers. Journal of Gambling Behavior, 4, 197-207.
- Lubin, B., Zuckerman, M., Breytspraak, L.M., Bull, N.C., Gumbhir, A.K., & Rinck, C.M. (1988). Affects, demographic variables, and health. Journal of Clinical Psychology, 44, 131-141.
- Madsen, D.B., Das, A.K., Bogen, I., & Grossman, E.E. (1987). A short sensation seeking scale. Psychological Reports, 60, 1179-1184.
- Mehring, T.A., Tompkins, L.D., & Johnson, D. (1992). How Good is DARE? A paper presented at the Psychological and Educational Research in Kansas Convention. Emporia, KS.
- Newcomb, M.D., & McGee, L. (1991). Influence on sensation seeking on general deviance and specific behaviors from adolescence to young adulthood. Journal of Personality and Social Psychology, 61, 614-628.
- Norman, R.D., & Fenson, J.N. (1970). Further aspects of construct validity of the Zuckerman Sensation Seeking Scale. The Journal of Psychology, 74, 131-140.
- Pedersen, W., Clausen, S.E., & Lavik, N.J. (1989). Patterns of drug use and sensation seeking among adolescents in Norway. Acta Psychiatrica Scandinavica, 79, 386-390.

- Perez, J., Ortet, G., Pla, S., & Simo, S. (1986). A junior sensation seeking scale. Personality and Individual Differences, 7, 915-918.
- Routtenberg, A. (1978). The reward system of the brain: In R.R Llinas (Ed.), The workings of the brain: Development, memory, and perception (pp. 75-87). New York: W.H. Freeman.
- Russo, M.F., Lahey, B.B., Christ, M.A., & Frick, P.J. (1991). Preliminary development of a sensation seeking scale for children. Personality and Individual Differences, 12, 399-405.
- Simo, S., & Perez, G. (1991). Sensation seeking and antisocial behaviour in a junior student sample. Personality and Individual Differences, 12, 965-966.
- Simo, S., Santana, G., & Perez, J. (1991). A French junior sensation seeking scale (J-SSS). Personality and Individual Differences, 12, 669-670.
- Stewart, D.W., & MacGriffith, G. (1975). Factor analysis of Zuckerman's Sensation Seeking Scale. Psychological Reports, 37, 849-850.
- von Knorring, L., Orelund, L., & von Knorring, A.L. (1987). Personality traits and platelet MAO activity in alcohol and drug abusing teenage boys. Acta Psychiatrica Scandinavica, 75, 307-314. (Psychological Abstracts No. 75-17275).

- Wasson, A.S., & Dionne, J.P. (1982). Relationship between stimulus seeking, school climate and self-reported deviant behavior in high school. New York, NY: Annual Meeting of the American Educational Research Association. (ERIC Document Reproduction Service No. ED 214 242).
- Wechsler, S.S. (1982). An investigation of the reliability and validity of the Sensation Seeking Scale with an adolescent population (Doctoral dissertation, University of Maryland 1982). Dissertation Abstracts International, 44, 06-A.
- Zuckerman, M. (1972). Drug usage as one manifestation of a "sensation-seeking" trait. In W. Deup (Ed.). Drug abuse: Current concepts and research (pp. 154-163). Springfield, IL: Charles C Thomas Publisher.
- Zuckerman, M. Sensation seeking. In H. London & J. Exner (Eds.), Dimensions of personality. New York: Wiley, 1978.
- Zuckerman, M. Sensation seeking: Beyond the optimal level of arousal. Hillsdale, NJ: Lawrence Earlbaum Associates, 1979.
- Zuckerman, M. (1986). Sensation seeking and the endogenous deficit theory of drug abuse. (Monograph No. 74). National Institute on Drug Abuse Research.

- Zuckerman, M. (1989). Personality in the third dimension: A psychobiological approach. Personality and Individual Differences, 10, 391-418.
- Zuckerman, M., Ball, S., & Black, J. (1990). Influences of sensation seeking, gender, risk appraisal and situational motivation on smoking. Addictive Behaviors, 15, 209-220.
- Zuckerman, M., Bone, R.N., Neary, R., Mangelsdorff, D., & Brustman, B. (1972). What is the sensation seeker? Personality trait and experience correlates of the sensation seeking scales. Journal of Consulting and Clinical Psychology, 39, 308-321.
- Zuckerman, M., Kolin, E.A., Price, L., & Zoob, I. (1964). Development of a sensation seeking scale. Journal of Consulting Psychology, 28, 477-482.
- Zuckerman, M., Neary, R.S., & Brustman, B.A. (1970). Sensation Seeking Scale correlates in experience (smoking, drugs, alcohol, "hallucinations", and sex) and preference for complexity (designs). Proceedings of the 78th Annual Convention of the American Psychological Association, 317-318.

Appendix A  
Zuckerman's Sensation Seeking Scale

## ZUCKERMAN SENSATION SEEKING SCALE

DIRECTIONS: Each of the items below contains two choices, A and B. Please circle the letter before the choice which most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or feelings. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least. Do not leave any items blank. All of your responses will be strictly confidential.

It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1. A. I like wild uninhibited parties.  
B. I prefer quiet parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even a third time.  
B. I can't stand watching a movie that I've seen before.
3. A. I often wish I could be a mountain climber.  
B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.  
B. I like some of the earthy body smells.
5. A. I get bored seeing the same old faces.  
B. I like the comfortable familiarity of everyday friends.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.  
B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who do or say things just to shock or upset others.  
B. When you can predict almost everything a person will do and say, he or she must be a bore.

8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.  
B. I don't mind watching a movie or play where I can predict what will happen in advance.
9. A. Using four letters words in public is vulgar and inconsiderate of the feelings of others.  
B. I sometimes use four letter words to express my feelings or to shock someone.
10. A. I would not like to try any drug which might produce strange and dangerous effects on me.  
B. I would like to try some of the new drugs that produce hallucinations.
11. A. A sensible person avoids activities that are dangerous.  
B. I sometimes like to do things that are a little frightening.
12. A. I dislike "swingers."  
B. I enjoy the company of real "swingers."
13. A. I find that stimulants make me uncomfortable.  
B. I like to get high.
14. A. I like to try new foods that I have never tasted before.  
B. I order the dishes with which I am familiar, so as to avoid disappointment and unpleasantness.
15. A. I enjoy looking at home movies and travel slides.  
B. Looking at someone's home movies or travel slides bores me tremendously.
16. A. I would like to try surf-board riding.  
B. I would not like to try surf-board riding.
17. A. When I go into a lake I like to stay close to shore.  
B. Sometimes I like to swim far out from the shore.
18. A. I would like to take off on a trip with no pre-planned or definite routes, or timetable.  
B. When I go on a trip, I like to plan my route and timetable fairly carefully.
19. A. I prefer the "down-to-earth" kinds of people as friends.  
B. I would like to make friends in some of the "far-out" groups like artist or "punkers."

20. A. I would not like to learn to fly an airplane.  
B. I would like to learn to fly an airplane.
21. A. I prefer the surface of water to the depths.  
B. I would like to go scuba diving.
22. A. I would like to hitchhike across the country.  
B. Hitchhiking is too dangerous a way to travel.
23. A. I would like to try parachute jumping.  
B. I would never want to try jumping out of a plane with or without a parachute.
24. A. I prefer friends who are excitingly unpredictable.  
B. I prefer friends who are reliable and predictable.
25. A. I am not interested in experience for its own sake.  
B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional or illegal.
26. A. The essence of good art is in its clarity, symmetry of form, and harmony of colors.  
B. I often find beauty in the "clashing" colors and irregular forms of modern paintings.
27. A. I enjoy spending time in the familiar surroundings of home.  
B. I get very restless if I have to stay around home for any length of time.
28. A. I like to dive off the high board.  
B. I don't like the feeling I get standing on the high board (or I don't go near it at all).
29. A. I like to date members of the opposite sex who are physically exciting.  
B. I like to date members of the opposite sex who share my values.
30. A. Heavy drinking usually ruins a party because some people get loud and boisterous.  
B. Keeping the drinks full is the key to a good party.
31. A. The worst social sin is to be rude.  
B. The worst social sin is to be a bore.

32. A. A person should have considerable sexual experience before marriage.  
B. It's better if two married persons begin their sexual experience with each other.
33. A. Even if I had the money I would not care to associate with flighty personas like those in the "jet set."  
B. I could conceive of myself seeking pleasures around the world with the "jet set."
34. A. I like people who are sharp witted even if they do sometimes insult others.  
B. I dislike people who have their fun at the expense of hurting the feeling of others.
35. A. There is altogether too much portrayal of sex in the movies.  
B. I enjoy watching many of the "sexy" scenes in movies.
36. A. I feel best after taking a couple of drinks.  
B. Something is wrong with people who need liquor to feel good.
37. A. People should dress according to some standards of taste, neatness, and style.  
B. People should dress in individual ways even if the effect are sometimes strange.
38. A. Sailing long distances in small sailing crafts is foolhardy.  
B. I would like to sail a long distance in a small but seaworthy sailing craft.
39. A. I have no patience with dull or boring persons.  
B. I find something interesting in almost every person I talk with.
40. A. Skiing fast down a high mountain slope is a good way to end up on crutches.  
B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.
41. A. Smoking cigarettes is a good social icebreaker.  
B. I can't understand why anyone would smoke cigarettes.

Appendix B  
At-Risk Rating Format (Used by JH Counselors)

Academic At-Risk Rating Format

April 10, 1992

Dear Counselor,

During the past two years, the Olathe District Schools in conjunction with Emporia State University have been investigating student knowledge and attitudes regarding drug and alcohol use and resistance. Studies this year have involved sixth and seventh grade students and some teachers. One of the goals of this years studies is to develop a profile of any factors which may help to identify youth at risk for drug and alcohol use. We need your assistance in helping us to complete this comprehensive study.

Enclosed with this letter, you will find lists of seventh grade student names. You will also find a descriptions of "at-risk" behaviors for student alcohol/substance abuse. If you believe that any of the descriptive statements apply to a particular student, please place a check mark or an X in the box labeled "At-Risk" following the student's name. If the student displays none of the descriptive behaviors, leave the box blank.

We realize that some schools have more than one counselor. Student names were provided to us by class roster. The counselor who has had the most contact with each student should complete the at-risk rating.

Your responses are confidential. All data collected will be analyzed using a group rather than individual statistical design. No individual responses will be provided to Olathe District personnel. A postage-paid envelope has been provided for your completed response. Only the two researchers listed below will have access to the information you provided.

I you should have any questions regarding the study, please feel free to contact us. We would appreciate receiving your response by April 20. Thank you for your participation in this very important investigation.

If you are interested in the results of this study, please contact one of the primary investigators listed below. A formal summary report will be provided to Olathe central office administrators the first week of June.

Sincerely,

Tes Mehring  
Loren Tompkins

We are attempting to develop a profile of students who are at-risk of alcohol/drug abuse which would allow school personnel to identify and target those students for early assistance. In order to do this we need to have you assist us by identifying those students who, in your best professional opinion, may fit into one or more of the descriptive categories we have noted below. What we are interested in are your perceptions of the students rather than direct knowledge and/or proof. Numerous studies have supported the concept that the most accurate indicators available of student attitudes and behavior are teacher/counselor perceptions.

When we receive your list, we will enter a code indicating those students who are at-risk into a computer file containing an extremely large number of demographic variables. As soon as these codes are entered, all identifying information along with your list will be destroyed. In the study we are interested only in statistical summaries, and have no interest in individual identification beyond matching data. No one associated with the district will see your list, and we ask that you discuss your marking with no one.

To complete the task, please read and think about the following operant descriptors, and then on the attached list, place a check next to the names of those students who you feel may be at-risk of becoming involved in one or more of the descriptive categories either now or in the future.

A youth who is at-risk of becoming involved in alcohol/substance abuse is one who you feel currently or potentially would fall into one or more of the following descriptive categories:

1. Has her/his potential diminished by use of alcohol/controlled substances.
2. Has contact with law enforcement personnel in relation to drinking/substance abuse.
3. Has or probably will develop dependence upon drugs/alcohol to the extent that external intervention will be required to break such habits.
4. Pursues high risk activities for recreation (i.e. socially frowned upon activities such as playing "chicken" or shoplifting).
5. Exhibits characteristics commonly associated with drug/alcohol abuse. Previous studies have identified a number of characteristics which correlate highly with drug/alcohol abuse among young people. These include:
  - a. Cigarette smoking

- b. Social drinking
- c. Sexual activity
- d. Lack of involvement in school activities
- e. Association with alcohol/substance abusers

TO: All Graduate Students Who Submit a Thesis or Research Problem/Project as Partial Fulfillment of The Requirements for an Advanced Degree

FROM: Emporia State University Graduate School

I, Amy L. Mangual, hereby submit this thesis/report to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.

Amy L. Mangual  
Signature of Author

January 22, 1993  
Date

An Assessment of the Efficiency of  
the Zuckerman Sensation Seeking Scale  
in Indicating Substance Abuse Tendencies  
Title of Thesis/Research Project  
Among Early Adolescents

Doug Cooper  
Signature of Graduate Office Staff Member

February 22, 1993  
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