

DEVELOPMENT AND VALIDATION OF A NEW  
SENSATION SEEKING MEASURE: SENSATION  
SEEKING ADJECTIVE MARKERS

By

VICTORIA H SPOONER

Bachelor of Science in Psychology

Abilene Christian University

Abilene, Texas

2018

Submitted to the Faculty of the  
Graduate College of the  
Oklahoma State University  
in partial fulfillment of  
the requirements for  
the Degree of  
MASTER OF SCIENCE  
July, 2022

DEVELOPMENT AND VALIDATION OF A NEW  
SENSATION SEEKING MEASURE: SENSATION  
SEEKING ADJECTIVE MARKERS

Thesis Approved:

Dr. Shelia Kennison

---

Thesis Adviser

Dr. James Grice

---

Dr. Jennifer Byrd-Craven

---

## ACKNOWLEDGEMENTS

I am extremely grateful to Dr. Shelia Kennison, whose expertise, patience, and understanding made all of this possible. I would also like to thank the other members of my committee, Dr. James Grice and Dr. Jennifer Byrd-Craven, for generously providing their time, effort, and knowledge to make this the best project it could be.

I am grateful to my department for their understanding and assistance during what has been a very difficult time, and to my friends for providing unending support and encouragement.

Finally, I would like to thank my family for continuing to push me to finish when I would have rather given up. I am especially grateful to Patricia and Bud Spooner. I am sorry that you never got to see the end result, but I hope you would have been proud regardless. I miss you.

Name: VICTORIA H SPOONER

Date of Degree: JULY, 2022

Title of Study: DEVELOPMENT AND VALIDATION OF A NEW SENSATION  
SEEKING MEASURE: SENSATION SEEKING ADJECTIVE  
MARKERS

Major Field: PSYCHOLOGY

Abstract: Sensation seeking is the pursuit of varied, novel, and complex experiences and has been the subject of many studies in the last several decades. Sensation-seeking traits predict multiple types of risk-taking, such as physical, social, and financial (Zuckerman, 1994). Some of the most frequently used scales to measure sensation-seeking traits include the Sensation Seeking Scale – Form V (SSS-V; Zuckerman et al., 1978; Zuckerman, 1994) and the Arnett Inventory of Sensation Seeking (AISS; Arnett, 1994). However, these measures have multiple shortcomings, such as including items that may be biased towards those of certain ages or physical conditions, using outdated or colloquial language, and/or referring to scenarios that may not be familiar to all participants. The purpose of the present study is to create and validate a new measure of sensation seeking that avoids these problems. I ran a series of pilot studies to create the new scale, followed by an assessment of the new scale alongside established measures of sensation seeking and risk-taking propensity. Benefits of the creation of a new scale are discussed.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Sensation Seeking and Risk-Taking .....	2
Existing Measures of Sensation Seeking .....	7
Introduction to the Present Study.....	12
II. METHODOLOGY.....	14
Participants.....	14
Materials and Procedure .....	14
Pilot Study A.....	14
Pilot Study B.....	15
The Primary Study .....	16
III. RESULTS .....	19
IV. DISCUSSION.....	21
REFERENCES .....	24
APPENDICES .....	42
Appendix A .....	42
Appendix B.....	44
Appendix C.....	46
IRB Approval Letter.....	52

## LIST OF TABLES

Table	Page
Inter-Item Correlations for Adjectives from Pilot Study B .....	40
Factor Loadings for SSAM.....	41
Summary of Correlation Results.....	42
Mean Ratings of Adjectives Across Four Components of Sensation Seeking .....	46

## LIST OF FIGURES

Figure	Page
1.....	50
2.....	50
3.....	51

## CHAPTER I

### INTRODUCTION

Sensation seeking (SS) is defined as the pursuit of varied, novel, and complex experiences (Zuckerman, 1994). First identified as a named concept in the 1960s, high SS is frequently associated with taking physical, social, legal, and financial risks in order to pursue an optimal level of stimulation (see Zuckerman, 2007a for review). Numerous measures have been created to assess sensation seeking. Among the most widely used measures are the Sensation Seeking Scale (SSS-V; Zuckerman et al., 1978) and the Arnett Inventory of Sensation Seeking (AISS; Arnett, 1994), although many others have used different methods to measure the construct (e.g., Hoyle et al., 2002; Huba et al., 1981; Morrongiello & Lasenby, 2006; Russo et al., 1993). Many of these measures have some critical disadvantages, including (but not limited to) outdated language, forced choice formats, and questions that are reliant on behavioral ability. The purpose of the present study is to attempt to create and validate a new measure of sensation seeking, one that avoids some of the shortcomings of these existing measures.

## **Sensation Seeking and Risk-Taking**

When Zuckerman and colleagues (1964) initially developed the Sensation Seeking Scale (SSS), it was to measure personality traits associated with achieving an optimal level of stimulation, a concept proposed by previous researchers (Berlyne, 1960; Fiske & Maddi, 1961; Hebb & Thompson, 1954; Leuba, 1955). The theory stems from the idea that too little stimulation will cause the individual to seek more, while too much will result in the individual engaging in stimulus reduction, or avoidant, behavior (Zuckerman et al., 1964). The original version of the SSS included items related to a variety of stimulus reduction/seeking behavior, including preferences for extreme sensations (heat, cold, noise, smells, etc.), the unfamiliar versus the familiar, the regular versus the irregular, and the enjoyment of dangerous activities. Zuckerman (1971) wrote additional items for the SSS in response to Farley's (1967) suggestion that the scale could include factors beyond the general one identified by Zuckerman and colleagues (1964). The new form was described as having four factors: a) thrill and adventure seeking (TAS), which represents a desire to engage in activities involving speed or danger; b) experience seeking (ES), which involves seeking out atypical experiences – often through travel or a generally nonconforming lifestyle; c) disinhibition (Dis), which represents a desire for being out of control, typically including drinking, drugs, partying, and a variety of sexual activities; and d) boredom susceptibility (BS), which is expressed as a desire to avoid repetition and routine.

Zuckerman (2007a) observed a relationship between SS and risk-taking, with high SS individuals taking more risks than others. Sensation seeking is also highly related to other traits like extraversion and impulsivity, which similarly features individuals prone to participate in more “adventurous”, or highly stimulating, activities (Aluja et al., 2003). Other researchers have found correlations between high SS and increased consumption of various substances, including cannabis, alcohol, cigarettes, amphetamines, and LSD (LaSpada et al., 2020; Newcomb & McGee, 1991; Popham et al., 2011, Satinder & Black, 1983; Stacy et al., 1993; Zuckerman et al.,

1970; Zuckerman et al., 1972). Sensation seekers also typically begin using substances earlier and tend to increase their use with age (Crawford et al., 2003; Flory et al., 2004; Quinn & Harden, 2013). Zuckerman and colleagues (1990) found that, in addition to increased likelihood of smoking tobacco, those high in sensation seeking also indicated that they inhale more of the smoke, which the researchers proposed could be a result of a stronger need for nicotine. Researchers have also found links between sensation seeking and making unsafe choices while driving (e.g. driving while intoxicated, speeding, following too closely, etc.; Arnett, 1990b; Arnett, 1994; see Jonah, 1997 for a full review). Although they did not find SS to be related to general psychopathology, Zuckerman and Neeb (1979) did find a relationship between high SS and a history of manic- depressive or sociopathic spectrum disorders (the latter of which included alcoholism and drug abuse).

High SS is also associated with increased social, sexual, and relational risk-taking (Arnett, 1990a; Hoyle et al., 2000; Popham et al., 2011; Thornquist et al., 1991; Wiederman & Hurd, 1999; Zuckerman & Neeb, 1980). There appears to be a correlation between SS and relationship satisfaction, such that high SSs are more likely to get divorced (Zuckerman & Neeb, 1980), report liking and loving their partners less, are more likely to seek alternatives outside of their relationships, and are less satisfied with their relationships in general (Thornquist et al., 1991). SS has also been associated with sexual risk-taking, such as sex with multiple partners, unprotected sex, and high-risk sexual encounters (Arnett, 1990a; Hoyle et al., 2000, Popham et al., 2011). High SSs are also more likely to participate in extradyadic dating and sexual behavior than their low SS counterparts (Wiederman & Hurd, 1999).

Nussio (2020) argues that those with sensation seeking personalities are more likely to join violent armed groups like militias or terrorist organizations. Schumpe and colleagues (2018) found that, although SS is correlated with a tendency to participate in political violence, providing sensation seekers with a peaceful alternative that is still exciting will reduce their tendency

towards extremism. High sensation seeking also appears to be related to more “adventurous” tourism (e.g. a desire to visit and explore remote national parks; Galloway & Lopez, 1999), choosing high risk occupations (e.g. firefighters; Kusyzyyn et al., 1974), higher rates of athletic participation, particularly in contact sports (Hartman & Rawson, 1992; Schroth, 1995), and obtaining body modifications like tattoos or piercings (Roberti et al., 2004). There is also some evidence to suggest that the trait of sensation seeking is inversely related to disgust sensitivity, indicating that low sensation seeking makes one more susceptible to feelings of disgust (Haidt et al., 1994).

In general, sensation seeking has also been found to be associated with aspects of antisocial behavior, such as increased criminal behavior (i.e., shoplifting, selling drugs, vandalism; Farley & Farley, 1972; Farley & Sewell, 1976; Perez & Torrubia, 1985; Zuckerman, 2007a) and various violations of social rules, including cursing (Kennison & Messer, 2017), aggressive humor (Kennison & Messer, 2019), and narcissistic tendencies (Farley, 1973). High sensation seekers are also more likely to reject conventional religious practices outright or to participate in unconventional religions, while those who attend conventional religious services regularly were found to be generally lower in sensation seeking (Zuckerman & Neeb, 1980). Zuckerman and colleagues (1967) also found that those who volunteered for strange experiments (i.e., hypnosis) scored higher in sensation seeking than non-volunteers.

High SS individuals may also take more financial risks, such as participating in risky forms of gambling and becoming addicted to gambling (Coventry & Brown, 1993; Breen & Zuckerman, 1999; Kennison et al., 2016; Kuley & Jacobs, 1988; Raylu & Oei, 2002; Zuckerman & Kuhlman, 1978; Waters & Kirk, 1968; Wong & Carducci, 1991). High SSs have also been found to more frequently participate in activities like stock trading (Grinblatt & Keloharju, 2009) and make riskier decisions involving personal investments (i.e., stocks, bonds) and household affairs (i.e., maintaining adequate funds in a bank account; Wong & Carducci, 1991). Worthy and

colleagues (2010) found that high SS in college students (specifically a higher score on the disinhibition subscale of the SSS-V) was associated with problematic financial behaviors, including spending student loans or scholarship money on non-school items or activities, maxing out credit cards, writing bad checks, and over-drafting their bank accounts. Wong and Carducci (2015) found that increased SS is also related to increased financial risk tolerance, indicating that high sensation seekers are, overall, willing to accept more potential losses in their financial planning.

Although much of the research in SS has focused on the negative aspects of sensation seeking (e.g., risky sexual behavior, consumption of drugs and/or alcohol, taking financial risks, etc.), researchers also acknowledge the potential benefits of risk-taking (Leather, 2009; Strang et al., 2013). During adolescence, risk-taking is considered a normal, healthy, and even necessary component of development, promoting autonomy and generally improving risk appraisal ability later in life (Leather, 2009; Strang et al., 2013). Increased participation in sports and outdoor adventures (i.e., kayaking, climbing, rafting) can be considered more positive forms of risk-taking (Hansen & Breivik, 2001). In addition, Wymer and colleagues (2008) found that although high sensation seekers did not generally report future intention to volunteer, they did report a stronger desire to work with activists and protestors to make change.

Yoneda and colleagues (2019) conducted a longitudinal study examining the relationship between sensation seeking, impulsivity, and positive outcomes, finding that individuals who scored low to moderate in sensation seeking (and low in impulsivity) had more positive outcomes than their high sensation seeking (and highly impulsive) peers. These low SS individuals had higher educational and occupational achievement, lower financial strain, and higher levels of well-being.

The proposed connection to biology may be related to the inherent sex differences that seem to exist in SS. Several studies have found that sex of the participant appears to be the most important variable for SS, such that males are generally higher in sensation seeking (Zuckerman & Neeb, 1980; Zuckerman et al., 1978). Kurtz and Zuckerman (1978) found that females scored lower than males specifically on the subscales of thrill and adventure seeking, disinhibition, and boredom susceptibility, but were generally lower in SS than their male counterparts. Cross and colleagues (2013) determined that, while sex differences in overall scores (as well as in disinhibition and boredom susceptibility) have remained relatively stable over the years, the sex differences in thrill and adventure seeking have declined. They propose that SS could reflect genetic predispositions interacting with social expectations, rather than one or the other (for a full review of sex differences in sensation seeking, see Cross et al., 2013).

The link between sensation seeking and risk-taking likely stems from biological processes. Horvath and Zuckerman (1993) suggest that high SSs are more attracted to the kinds of rewards, both physical and emotional, that traditionally risky activities provide. Zuckerman (1994) states that high SSs are rewarded through increased dopaminergic activity when they participate in these intense and novel actions, resulting in increased willingness to undertake substantial risk for stimulation. Low SSs, on the other hand, receive little to no positive impact from those intense and novel situations, and so they have less motivation to take the same risks. Other researchers argue that the differences in risk-taking may be less about who is willing to approach these risky situations but is instead about who is most likely to avoid them altogether, based on findings that low SSs experience greater anxious reactivity to risky situations and generally show higher levels of risk appraisal (Lissek et al., 2005; Blankstein, 1975; Breivik et al., 1998; Franken et al., 1992; Furnham & Saipe, 1993; Zuckerman, 1979; Heino et al., 1996). Thus, it could be that high SSs assess risk differently than low SSs - in essence, believing themselves to be bulletproof in many of these risky situations (Weinstein, 1980).

Some studies have indicated that the trait is predominantly heritable, with relatively strong genetic control over the personality trait and the biological phenomena associated with it (Fulker et al., 1980; Zuckerman, 1979; Zuckerman et al., 1980). In an extended twin design, Stoen and colleagues (2006) found that individual levels of sensation-seeking are relatively heritable, with some environmental influence. Specifically, they found the highest heritability for males in experience seeking (60%) and disinhibition (59%). Zuckerman (1996b) suggests a model that proposes an interaction between various behavioral mechanisms (i.e., approach, inhibition, and arousal) and biological processes (i.e., neurotransmitters, enzymes, and hormones). Other work has demonstrated a relatively strong connection between SS and other biologically based processes (see Roberti, 2004 for a full review).

Many researchers have found the construct of sensation seeking to be related to other personality traits, namely extraversion. Extraversion is one of the Big Five personality traits (Saucier, 1994). Farley and Farley (1967) found that extraverts scored higher on sensation seeking than their introverted counterparts, and Eysenck (1990) identified sensation seeking as a trait inherent to extraversion. Aluja and colleagues (2003) found that extraversion and openness to experience were positively correlated with sensation seeking. Quay (1965) hypothesized that psychopathic behavior (highly impulsive and lacking the ability to delay gratification, creating excitement without regard for possible future consequences) is an extreme form of sensation seeking behavior, a finding that is echoed by Eysenck and Zuckerman (1978) and Zuckerman and Glicksohn (2016), who determined that there was a relationship between sensation seeking, extraversion, psychoticism, and impulsivity.

### **Existing Measures of Sensation Seeking**

In the past several decades of research on SS, psychologists have developed multiple scales to measure the trait of sensation seeking (Arnett, 1994; Hoyle et al., 2002; Huba et al.,

1981; Zuckerman et al., 1978; Zuckerman et al., 1993). The most frequently used is the Sensation Seeking Scale Form V (SSS-V), which was an improved version of an earlier measure (Zuckerman et al., 1978). The SSS-V is widely considered to be a good measure of sensation seeking, with overall reliability of approximately .80 (Zuckerman et al., 1978). Although it is not the only measure of consistency that should be used in scale development,  $\alpha \geq .70$  is generally considered sufficient (Cortina, 1993). The SSS-V (and earlier versions of the measure; Zuckerman, 1964) also assesses four subcomponents of SS. Internal reliability for the four subscales in the SSS-V (i.e., TAS, Dis, BS, and ES) are varied, with Cronbach's alpha coefficients falling between .56 (for the boredom susceptibility subscale) and .82 (for the thrill and adventure seeking subscale) (Zuckerman et al., 1978). Since SS is frequently defined as the willingness to take different kinds of risks in order to achieve optimal level of sensation, it is critical that I examine both the broad personality traits it is associated with and the different types of behavior that it contributes to.

Although it is the most widely used measure by far, the SSS-V has been criticized by other researchers for several reasons. One of the primary criticisms is the scale's use of dated and colloquial language (e.g., *hippies*, *jet set*, *queer*, *swingers*) in Form V of the scale and its predecessors, claiming that it has the potential to confuse participants and contaminate the data (Arnett, 1994). Zuckerman (1994) clarified some of the language from Form V (e.g., replacing *queer* with *gay or lesbian*, defining *swingers* as *people who are uninhibited and free about sex*) to update the scale and make sure it was still measuring the construct of sensation seeking accurately, which he indicates did not ultimately change the established reliability of the scale. Zuckerman (1996a, 2007b) recommended that researchers should be sure that they are using the revised version of the scale that featured changes or clarifications for the language used. However, even in the edited version of the scale (Zuckerman, 1994), the questions still include specific references to sexual orientation (*I stay away from anyone I suspect of being 'gay' or*

*lesbian*'), and many of the laws and cultural norms surrounding sexual orientation have shifted dramatically since the development of the scale.

Other criticisms of the SSS-V include its use of the forced choice format, as respondents must choose between two extreme items when there is a possibility that neither would apply. Further, the items refer to some scenarios involving strenuous physical activity like mountain climbing, skiing, or surfing (Arnett, 1994). The first may result in participants making choices that they normally would not, while the second has the potential to allow confounds like age or physical condition to have an impact on an individual's sensation seeking score. In addition, many of the items include direct references to alcohol or drug use and sexual behavior, which is the focus of many of the studies utilizing the measure (Arnett, 1994). The use of these items introduces another possible source of bias into many of these studies, as researchers may not be able to identify whether the items are reflecting traits, or simply how often they participate in a particular activity or behavior. Items that mention specific behaviors (e.g. drinking, drug use, sexual behavior) reflect risk-taking themselves, thus weakening the possibility that the measure only captures the trait of sensation-seeking. It is difficult to discern, in these cases, what construct is actually being captured by the included items. Although Zuckerman (1983) attempts to address this criticism by claiming that researchers have still found moderate correlations between subscales and that the subscales can predict activities unrelated to the actual item content of the subscale, many still criticize the use of items directly related to these risk-taking behaviors. Much like the norms around sexual behavior, the laws and cultural norms surrounding some substances (i.e., marijuana) have also changed in the years since the development and updating of the scale.

To address many of these concerns, Arnett (1994) developed the AISS, a 20-item measure that asks respondents to indicate on a 4-point scale how well a scenario describes them (*describes me very well to does not describe me at all*). The AISS consists of items that are not necessarily related to antisocial behavior or norm-breaking behavior, although the items do still

reference some level of physical capability (i.e., *When the water is very cold, I prefer not to swim even if it is a hot day* and *If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides*). Arnett (1994) also noted that Zuckerman's original scale was developed with the idea that sensation seeking was a predisposition to seek novelty and complexity, but that the idea of complexity in sensation seeking was not adequately defined. Thus, he chose to develop his measure of sensation seeking with subscales for intensity and novelty. The overall reliability of the AISS was found to be .70, with reliability for the subscales falling at .64 and .50, although Arnett (1994) also indicates that it is more highly correlated with actual risk-taking behavior than the SSS-V is. Although the AISS eliminates the forced-choice format of the SSS-V, removes the outdated language, and removes references to specific socially undesirable behaviors (i.e., drinking, drug use), the measure still focuses on behaviors overall, something that the measure created in the present study will avoid.

In an attempt of his own to address some of the criticisms cast on the SSS-V, including the forced-choice format and outdated language (Gray & Wilson, 2007), Zuckerman (1996, 2007b) suggested that researchers could instead utilize the Impulsive Sensation Seeking Scale (ImpSS) – a 19-item component of the Zuckerman Kuhlman Personality Questionnaire (ZKPQ) that includes all the factors of SS in addition to impulsivity (Zuckerman et al., 1993). The ImpSS is a concise list of true or false questions, and features many of the same constructs found in the SSS-V (*I like to explore a strange city or section of town by myself, even if it means getting lost* or *I tend to enjoy 'wild' uninhibited parties*) without the use of colloquial terms, overly specific scenarios, or forcing respondents to choose an option that may not apply to them (Zuckerman et al., 1993). The ImpSS is reliable, with alpha coefficients ranging from .74 to .82 (Zuckerman et al., 1993). Although the ImpSS is briefer than the SSS-V and removes the outdated language, it also still focuses on the behavioral aspects of sensation seeking.

Huba and colleagues (1981) developed an even briefer measure of SS by selecting four high-loading items from each of Zuckerman's four dimensions. They also eliminated the forced-choice format of the SSS by asking participants to respond to the question *How often do you feel the following way?* Participants responded using a 5-point scale (*1 = never, 5 = always*). The resulting 16-item scale has Cronbach alpha's ranging from .43 to .70 (Huba et al., 1981), which is below the general acceptable threshold of  $\alpha \geq .70$ . In addition, some items also referenced risky behaviors, as the SSS-V does. A second brief measure of SS was developed by Hoyle and colleagues (2002). The Brief Sensation Seeking Scale (BSSS) is an 8-item measure that featured two items for each of Zuckerman's (1971) four dimensions of SS, with an alpha coefficient of .76 for the overall scale. While addressing some of the problems of the SSS-V, this brief scale is still behaviorally oriented (e.g., *I would like to take off on a trip with no pre-planned routes or timetables* and *I would like to try bungee jumping*).

Viken and colleagues (2005) aimed to use a pre-existing scale from which questions about sensation seeking could be drawn, making it easier to incorporate into new studies or allowing researchers to detect the trait in existing data sets on individual differences. Therefore, they examined the Minnesota Multiphasic Personality Inventory (MMPI-2; Butcher et al., 1989) and selected items relevant to the construct of sensation seeking, using both the SSS and Zuckerman's (1994) descriptions to guide their choices. This resulted in an 18-item scale (MMPI Sensation Seeking Scale; MSS) that allows researchers to examine sensation seeking in existing data sets that used the MMPI and (since it is briefer than the 40-item SSS-V) could be easily incorporated into new studies, with a Cronbach's alpha of .72 and a test-retest reliability of .93 (Viken et al., 2005). Although Viken and colleagues (2005) did not include items related to substance abuse, they still chose to include items referencing specific behavioral choices that may not reflect a more generalized experience (e.g., *I would like to hunt lions in Africa, I never attend a sexy show if I can avoid it, I enjoy a race or game better when I bet on it*).

Some researchers have developed ways to measure SS in younger age groups. For example, Russo and colleagues (1991), created the revised version of the Sensation Seeking Scale for Children (SSSC; Russo et al., 1993), with items selected to be more relevant to children and teens and targeted specifically at elementary- and middle-school aged adolescents. It also includes modified items pertaining to substance use and sexual activity, designed with a teen and pre-teen population in mind. On analysis, their scale yielded three factors rather than Zuckerman's four: thrill and adventure seeking, drug and alcohol attitudes, and social disinhibition. The overall coefficient alpha for the SSSC is .83, with alphas for the three factors ranging from .67 and .81 (Russo et al., 1993). Morrongiello and Lasenby (2006) developed a questionnaire measuring aspects of physical risk-taking in children 7-12 years of age. Their version of the Sensation Seeking Scale for Children (SSSC; Morrongiello & Lasenby, 2006) was designed with five dimensions of SS: thrill seeking, behavioral control, behavioral intensity, boredom susceptibility, and novelty seeking, although they suggest that the first three dimensions may be more relevant to physical risk-taking in children. The Cronbach's alphas of each subscale are generally acceptable ( $\alpha > .70$ ), although boredom susceptibility ( $\alpha = .63$ ) and novelty seeking ( $\alpha = .32$ ) both fell below this threshold (Morrongiello & Lasenby, 2006). However, these measures were designed specifically with children in mind, and therefore would not necessarily be suitable for detection in adults. In addition, the majority of the items included in this measure are still behaviorally based.

### **Introduction to the Present Study**

The aim of the present study was to attempt to develop a new measure of SS for adults. The present scale utilizes an adjective checklist, similar to other personality measures (e.g., Goldberg, 1992; Saucier, 1994). The creation of a new measure may be useful for several reasons, including replacing outdated language in existing measures (Zuckerman et al., 1978; Zuckerman et al., 1993), capturing a more complete range of sensation-seeking factors and the

complexity of the trait (Arnett, 1994; Huba et al., 1981; Hoyle et al., 2002; Russo et al., 1993), avoiding descriptions of specific behaviors that may exclude some groups due to sensory or physical limitations (Arnett, 1994; Viken et al., 2005), and having good psychometric properties (Morrongiello & Lasenby, 2006). By using adjectives in the scale, I can avoid the use of outdated language in the items of prior measures. The use of adjectives also avoids the forced-choice format in which statements refer to specific behaviors, which some participants may find less familiar than others. In addition, using adjectives allows the new measure to avoid asking questions that are reliant on behavioral ability. This new measure may lead to the detection of high sensation seekers missed by existing measures of SS. A second aim of the present study was to finalize and validate the SSAM by analyzing responses to it in comparison to other measures of SS (SSS-V and AISS), as well as several measures of risk-taking (DOSPERT and YRBS). I tested the hypothesis that both the existing measures of sensation seeking and the SSAM would predict self-reported risk-taking, with higher levels of SS predicting higher levels of risk-taking, as has been observed in prior research (Zuckerman, 2007). I also tested the hypothesis that extraversion would be related to all measures of sensation seeking and risk-taking (Aluja et al., 2003; Eysenck, 1990; Farley & Farley, 1967).

## CHAPTER II

### METHODOLOGY

#### **Participants**

538 undergraduates at Oklahoma State University participated in the study for class credit. There were more men than women (58%) and our sample primarily consisted of white individuals (73.5%). Pilot Studies A and B initially collected data from 106 undergraduates (66% female) and 73 undergraduates (70% female), respectively. The data from those 106 participants are not included in the analysis of the final measure.

#### **Materials and Procedure**

*Pilot Study A.* I followed the model for scale development outlined by Barry and colleagues (2011), which includes 1) outlining the construct, 2) developing the scale design and structure, 3) generating sample items, and 4) pretesting the scale. I first generated a list of 66 adjectives that appeared strongly related to the four dimensions of sensation seeking as outlined in previous studies. Following the pattern of Zuckerman and colleagues (1964) and Zuckerman and colleagues (1972), I conceptualized TAS as involving a desire to participate in activities involving *elements of speed or danger*, Dis as involving *uninhibited hedonism*, BS as involving a *dislike of repetition and routine*, and ES as involving a need for a *broad variety of inner experiences* (including resistance to authority and conformity).

For each of those four categories, I then created a list of adjectives that theoretically described the core trait of that factor, paying special care to avoid describing specific behaviors. After creating the initial set of adjectives, I expanded into synonyms and closely related words and phrases to broaden the scope of the measure slightly. I also included words to describe inverse characteristics within each category and noted that these items are meant to be reverse coded. This list was administered to 106 undergraduate students who did not participate in any other data collection related to this project. Participants were given a brief description of each factor, asked to think of an example of that factor (either from fiction or real), and to indicate how accurately they thought each adjective described that example (from *extremely unlike them* to *extremely like them*, along with an option to indicate that they did not know the word). Appendix A contains the list of sixty-six adjectives and each set of instructions. Adjectives were eliminated from this list if the average mean rating for the word was 3.5 or below, or if multiple students indicated that they did not know the word. Thirty-seven adjectives were identified for further testing.

*Pilot Study B.* I assessed the means for the thirty-seven adjectives for the four sensation-seeking categories with an additional group of 73 undergraduates following a similar procedure to Pilot Study A. As a general rule, I used a mean rating of 5.0 as a cutoff, with adjectives falling below that mean either being eliminated (if the means were consistently below 5.0 across the four categories) or examined more closely (if the means were mixed across the categories). The mean ratings for each adjective in each condition are displayed in Appendix B. The 16 adjectives initially selected for the Sensation Seeking Adjective Markers (SSAM) were pleasure-seeking, fearless, courageous, active, excitable, thrill-seeking, fearful, reckless, cowardly, daring, adventurous, boring, curious, wild, fun-loving, and unadventurous. The initial Cronbach's alpha for the SSAM was  $\alpha = .834$ , which is an acceptable value.

*The Primary Study.* In the study, participants were asked to complete multiple measures of sensation-seeking, including the SSS-V, the AISS, and the new scale (SSAM), along with items to measure risk-taking. The 16 adjectives for the new scale selected were presented to participants in a 7-point Likert-type format. They were asked to indicate the extent to which they believe a given adjective describes them, ranging from *extremely inaccurate* to *extremely accurate*.

In addition to the SSAM, participants were also asked to complete the SSS-V (Zuckerman et al., 1978), a 40-item, forced choice measure that assesses SS tendencies in four categories: thrill and adventure seeking, experience seeking, boredom susceptibility, and disinhibition. Participants are presented with two options (e.g., *I like "wild" uninhibited parties* and *I prefer quiet parties with good conversation*) and asked to select which of the scenarios they would prefer. Although overall Cronbach's alpha is relatively strong ( $\alpha = .80$ ), the reliability of the subscales is somewhat varied, with coefficients falling anywhere between  $\alpha = .56$  (BS) and  $\alpha = .82$  (TAS) (Zuckerman et al., 1978). In the present study, however, internal consistency was slightly lower, ranging from  $\alpha = .41$  (BS) to  $\alpha = .68$  (TAS).

Participants also completed the Arnett Inventory of Sensation Seeking (Arnett, 1994), which is a 20-item measure of SS tendencies on two subscales: intensity (e.g., *When I listen to music, I like it to be loud*) and novelty (e.g., *When taking a trip, I think it is best to make as few plans as possible and just take it as it comes*). Participants indicate the extent to which an item describes them on a 4-point scale (with 1 indicating that it *describes them very well* and 4 indicating that it *does not describe them at all*). Reliability for the AISS is low, but generally considered acceptable (intensity:  $\alpha = \sim .53$ , novelty:  $\alpha = \sim .52$ , Total:  $\alpha = .61$ ; Arnett, 1996; Roth, 2003; Zarevski et al., 1998), and it is one of the most used measures of SS currently in existence. In the present study, the overall Cronbach's alpha was  $\alpha = .704$ .

I also included three measures of risk-taking. The Domain-Specific Risk-Taking Scale (DOSPERT) is a 40-item scale that measures risk-taking propensity in five domains: ethics (*passing off someone else's work as your own*), finance (*betting a day's income at a high-stake poker game*), health and safety (*driving a car without wearing a seat belt*), recreation (*taking a skydiving class*), and social risk-taking (*speaking your mind about an unpopular issue in a meeting at work*) (Weber et al., 2002). Participants rate their likelihood of engaging in various risk-taking behaviors on a 5-point scale (with 1 being *very unlikely* and 5 being *very likely*). Higher scores indicate more likely self-reported risk-taking. A recent meta-analysis from Shou and Olney (2020) indicated that, across studies, the overall coefficient alphas were satisfactory, with subscale coefficient alphas ranging from .68 to .80, indicating that it appears to be a relatively reliable measure of risk-taking propensity. In the present study, adequate internal consistency was observed with an overall Cronbach's alpha of  $\alpha = .894$ .

Risk-taking was also assessed using some questions from the Youth Risk Behavior Survey (YRBS; CDC, 2021), which was developed by the Center for Disease Control and Prevention. Here, I utilize a subset of questions regarding drinking, smoking, drug use, and risky sexual behavior, including the frequency of participation in the last 30 days and the age of onset of participation. Previous versions of the questionnaire have been shown to be relatively reliable (kappa = 61% - 100%) and is generally considered a valid measure of self-reported risk-taking (Brenner, et al., 2003; CDC, 2013). Past studies indicate that internal consistency is relatively high for each of the risk-taking categories assessed (ranging from .70 to .91; Popham et al., 2011).

The final risk-taking scale is the Passive Risk-Taking Scale (PRT; Keinan & Bereby-Meyer, 2012), which measures a personal tendency to forego actions that can reduce risk in three domains: resources (*check the credit card bill in detail every month*), health and safety (*immediately go to the doctor's when something in my body is aching or bothering me*), and ethics (*go through customs without declaring about goods I am bringing, which are supposed to*

*be taxed*). Participants are asked to assess how likely they are to act in the way described in each item, ranging from 1 (*very unlikely*) to 7 (*very likely*). The overall alpha coefficient for the PRT is acceptable at .82 (Keinan & Bereby-Meyer, 2012).

Participants were also given the Mini-Markers, a 40-item adjective list used to assess the Big Five personality traits (Saucier, 1994). Participants were given the list of adjectives and asked to rate how accurately each word describes them from 1 (*extremely inaccurate*) to 9 (*extremely accurate*). The overall alpha coefficients of the brief scale are satisfactory, ranging from .76 to .86 (Saucier, 1994).

I also included the Scale of Protective Factors (SPF; Ponce-Garcia et al., 2015), a measure that assesses the four protective factors shown to be determinants of resilience: social support (*My friends and family keep me up to speed on important events*), social skills (*I am good at socializing with new people*), planning behavior (*When working on something, I can see the order in which to do things*), and goal efficacy (*I am confident in my ability to achieve goals*). Participants were asked to indicate their level of agreement with each item, from 1 (*disagree completely*) to 7 (*completely agree*). Internal consistency for the SPF is good, ranging from .83 to .93.

Following IRB approval of the study, I recruited participants through the Department of Psychology's SONA system, a system that allows undergraduates to complete research studies for class or extra credit. They were asked to provide informed consent and assured of the anonymity of their data. The questionnaire was administered using Qualtrics, and, in addition to all of the measures described above, also collected basic demographic information (including age, sex, race, and socioeconomic status). All items and scales were given in randomized order.

## CHAPTER III

### RESULTS

I eliminated 31 participants from the data set due to excessive missing or suspicious (i.e. extremely repetitive) responses. Our analysis consists of the remaining 328 participants (185 men, 130 women, and 4 transgender or non-binary individuals). In order to determine which items were suitable for the final version of the new measure, I first conducted reliability statistics and inter-item correlations. Table 1 displays the inter-item correlations. However, upon further investigation of the inter-item correlations, I chose to eliminate an additional 9 adjectives with consistently lower inter-item correlations, using 0.3 as the general cutoff value (Cristobal et al., 2007). This resulted in a final list of 7 adjectives: *pleasure-seeking*, *fearless*, *excitable*, *thrill-seeking*, *daring*, *adventurous*, and *wild*. An exploratory principal component analysis indicated that the 7 items of the final scale made up a single factor. The factor explained 48% of the variance with loadings ranging from 0.501 to .808. Factor loadings for each item are displayed in Table 2. The Cronbach's alpha for the final 7 items was  $\alpha = .819$ .

To test the hypothesis that higher levels of sensation-seeking as assessed using the SSAM would be related to higher levels of sensation-seeking levels as assessed using the SSS-V and AISS and also higher levels of risk-taking, a series of Pearson's correlations were conducted. The results indicated that the hypothesis was supported. The results showed that the SSAM positively correlated with the SSS-V [ $r(326) = .47, p < .001$ ], the AISS [ $r(326) = .32, p < .001$ ], the DOSPERT [ $r(323) = .38, p < .001$ ] and components of the YRBS, particularly the questions regarding alcohol use [ $r(317) = .22, p < .001$ ]. The results also supported the hypothesis that extraversion would be correlated with the SSAM [ $r(326) = .47, p < .01$ ] and the AISS [ $r(326) = .205, p < .01$ ], as well as the DOSPERT [ $r(323) = .233, p < .01$ ] and the YRBS [ $r(317) = .145, p < .01$ ]. Table 3 displays a summary of all of these results.

In order to more directly compare the three SS scales used in the present study, I also analyzed the results in the Observation Oriented Modeling software, a novel approach to examining data on the individual level (Grice, 2011). OOM allows researchers to analyze data without making many of the assumptions required for null hypothesis significance testing, and allows us to examine the results of each individual participant rather aggregates (Grice et al., 2012). The complete results of this exploratory analysis are provided in Appendix C.

## CHAPTER IV

### DISCUSSION

The aim of the present study was to develop and validate a new measure for the trait of sensation seeking because existing measures have multiple shortcomings. The measure is an adjective rating scale containing seven adjectives. Participants indicated how well each adjective describes them. The new measure improves on the existing measures of sensation seeking in multiple ways, including the exclusion of outdated, colloquial, and biased language. The new measure is also brief and easy to administer, in comparison with existing scales, which are often lengthy and confusing to participants. The new measure has adequate internal consistency, and a principal component analysis, along with examination of the scree plot, revealed that the measure involves a single factor. I tested the hypotheses that the new measure would be strongly related to other measures of sensation-seeking (i.e., the SSS-V and AISS) and strongly related to measures of risk-taking (i.e., DOSPERT and questions from the YRBS), which were both supported. In addition, I also tested the hypothesis that extraversion would be positively correlated with each of the sensation seeking and risk-taking measures, which was partially supported (excepting the SSS-V).

The SSAM, the new brief measure of sensation-seeking, may have several advantages over existing ones. First, existing measures like the AISS and SSS-V may fail to consider environmental factors (such as the execution of SS-related behaviors being limited or enhanced by socioeconomic status and/or physical accessibility). By eliminating references to specific behaviors, the SSAM may avoid this issue and provide researchers with a way to detect sensation seeking in these populations. Second, the use of an adjective checklist with rather than a forced-choice response like the SSS-V, the SSAM allows a more nuanced approach to measuring the prevalence of a trait.

Several limitations are worth noting. First, the present study is self-report. This method of data collection always has the potential to be influenced by additional motives, like social desirability or consistency seeking (Van de Mortel, 2008). Some individuals may view high sensation-seeking traits and related behaviors to be socially undesirable, and may therefore respond in the negative to avoid being associated with socially undesirable behaviors. Future research should include at least one measure of social desirability to control for this. In addition, self-report methods have been criticized by researchers who claim that participants struggle with introspection, often misleading themselves when trying to analyze the reasons for their own actions (Wilson, 2002). The study involved a sample from a population of undergraduates at a public university in the Midwestern United States, meaning that our sample was fairly homogenous in terms of race, age, and socioeconomic status. It is unclear how SS compares in college populations versus non-college populations, and the results may therefore be difficult to generalize. In addition, our sample featured a perhaps unusually high number of high sensation seekers. Given that more than half of the sample consisted of college-aged males, a population that is especially prone to risk-taking behavior, that is one possible reason for the high number of sensation seekers in the present sample. More research and comparison to other populations is needed to determine if this is due to the sample itself or if the measure is detecting something

broader, but related to, sensation seeking. Finally, the present study does not completely parse out the concepts of sensation seeking and extraversion. Further research is necessary to determine if these are, in fact, different constructs, or just related facets of one overall construct.

Future research is also needed to determine whether the new measure generalizes to samples beyond those tested in the present research. Future studies could involve examining sensation seeking in groups that were traditionally excluded from existing measures - namely, individuals who are elderly, differently abled, deaf or hard of hearing, or blind. More thorough research is necessary to determine if these individuals can be high sensation seekers, and if the trait looks different in these populations. In addition, future studies could specifically assess sensation seeking in individuals who fall into one of these categories presently but did not always, such as an adult who develops blindness as a teenager. This may help determine whether the trait is stable across the lifespan or if it can develop later in life, or lessen with age.

## REFERENCES

- Aluja, A., García, O., & García, L. F. (2003). Relationships among extraversion, openness to experience, and sensation seeking. *Personality and Individual Differences, 35*, 671-680. [https://doi.org/10.1016/S0191-8869\(02\)00244-1](https://doi.org/10.1016/S0191-8869(02)00244-1)
- Arnett, J. (1990a). Contraceptive use, sensation seeking, and adolescent egocentrism. *Journal of Youth and Adolescence, 19*(2), 171-180. <https://doi.org/10.1007/BF01538720>
- Arnett, J. (1990b). Drunk driving, sensation seeking, and egocentrism among adolescents. *Personality and Individual Differences, 11*(6), 541-546. [https://doi.org/10.1016/0191-8869\(90\)90035-P](https://doi.org/10.1016/0191-8869(90)90035-P)
- Arnett, J. (1994). Sensation seeking: A new conceptualization and a new scale. *Personality and Individual Differences, 16*(4), 289-296. [https://doi.org/10.1016/0191-8869\(94\)90165-1](https://doi.org/10.1016/0191-8869(94)90165-1)
- Arnett, J. (1996). Sensation seeking, aggressiveness, and adolescent reckless behavior. *Personality and Individual Differences, 20*, 693-702. [https://doi.org/10.1016/0191-8869\(96\)00027-X](https://doi.org/10.1016/0191-8869(96)00027-X)
- Barry, A. E., Chaney, E. H., Stollefson, M. L., & Chaney, J. D. (2011). So you want to develop a survey: Practical recommendations for scale development. *American Journal of Health Studies, 26*(2), 97-105.

- Berlyne, D. E. (1960). Conflict, arousal, and curiosity. New York: McGraw-Hill. <https://doi.org/10.1037/11164-000>
- Blais, A., & Weber, E. U. (2006). A domain-specific risk-taking (DOSPERT) scale for adult populations. *Judgement and Decision Making*, 1(1), 33-47.
- Blankstein, K. R. (1975). The sensation seeker and anxiety reactivity: Relationships between the sensation-seeking scales and the Activity Preference Questionnaire. *Journal of Clinical Psychology*, 31, 677– 681.
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Breen, R. B., & Zuckerman, M. (1999). ‘Chasing’ in gambling behavior: Personality and cognitive determinants. *Personality and Individual Differences*, 27, 1097-1111. [https://doi.org/10.1016/S0191-8869\(99\)00052-5](https://doi.org/10.1016/S0191-8869(99)00052-5)
- Brevik, G., Roth, W. T., & Jorgensen, P. E. (1998). Personality, psychological states and heart rate in novice and expert parachutists. *Personality and Individual Differences*, 25, 365–380. [https://doi.org/10.1016/S0191-8869\(98\)00058-0](https://doi.org/10.1016/S0191-8869(98)00058-0)
- Brener N. D., Billy J. O. G., & Grady W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. *Journal of Adolescent Health*, 33, 436–57. [https://doi.org/10.1016/S1054-139X\(03\)00052-1](https://doi.org/10.1016/S1054-139X(03)00052-1)
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A. M., & Kaemmer, B. (1989). *Minnesota Multiphasic Inventory-2 (MMPI-2): Manual for administration and scoring*. Minneapolis: University of Minnesota Press.
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125(3), 367-383.

- Cann, A., & Cann, A. T. (2013). Humor styles, risk perceptions, and risky behavioral choices in college students. *Humor: International Journal of Humor Research*, 26(4), 595-608. <https://doi.org/10.1515/humor-2013-0033>
- Centers for Disease Control and Prevention (2013). Methodology of the Youth Risk Behavior Surveillance System – 2013. *Morbidity and Mortality Weekly Report (MMWR)*, 62(1), 1- 20.
- Centers for Disease Control and Prevention (2021). Youth Risk Behavior Survey Questionnaire. Available at: [www.cdc.gov/yrbs](http://www.cdc.gov/yrbs). Accessed on January 27, 2021.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98–104. doi:[10.1037/0021-9010.78.1.98](https://doi.org/10.1037/0021-9010.78.1.98).
- Coventry, K. R., & Brown, R. I. F. (1993). Sensation-seeking, gambling and gambling addictions. *Addictions*, 88, 541-554. <https://doi.org/10.1111/j.1360-0443.1993.tb02061.x>
- Crawford, A., Pentz, M., Chou, C., Li, C., & Dwyer, J. (2003). Parallel developmental trajectories of sensation-seeking and regular substance use in adolescents. *Psychology of Addictive Behaviors*, 17, 179-192. <https://doi.org/10.1037/0893-164X.17.3.179>
- Cristobal, E., Flavian, C., & Guinaliu, M. (2007). Perceived e-service quality (PeSQ): Measurement validation and effects on consumer satisfaction and web site loyalty. *Managing Service Quality: An International Journal*, 17(3).
- Cross, C. P., Cyrenne, D. M., & Brown, G. R. (2013). Sex differences in sensation-seeking: A meta-analysis. *Scientific Reports*, 3(1), 1-5. <https://doi.org/10.1038/srep02486>
- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 24(4), 349-354. <https://doi.org/10.1037/h0047358>

- Eysenck, H. J. (1990). Biological dimensions of personality. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (244–276). The Guilford Press.
- Eysenck, S., & Zuckerman, M. (1978). The relationship between sensation-seeking and Eysenck's dimensions of personality. *British Journal of Psychology*, *69*(4), 482-487. <https://doi.org/10.1111/j.2044-8295.1978.tb02125.x>
- Farley, F. H. (1967). Social desirability and dimensionality in the Sensation Seeking Scale. *Acta Psychologica*, *26*, 89-96. [https://doi.org/10.1016/0001-6918\(67\)90009-1](https://doi.org/10.1016/0001-6918(67)90009-1)
- Farley, F. H. (1973). A theory of delinquency. Paper presented at the Annual Meeting of the American Psychological Association, Montreal, Quebec, Canada.
- Farley, F. H., & Farley, S. V. (1967). Extroversion and stimulus-seeking motivation. *Journal of Counseling Psychology*, *31*(2), 215-216. <https://doi.org/10.1037/h0024418>
- Farley, F. H., & Farley, S. V. (1972). Stimulus-seeking motivation and delinquent behavior among institutionalized delinquent girls. *Journal of Consulting Clinical Psychology*, *39*, 94-97. <https://doi.org/10.1037/h0033204>
- Farley, F. H., & Sewell, T. (1976). Test of an arousal theory of delinquency: Stimulation-seeking in delinquent and non-delinquent Black adolescents. *Criminal Justice and Behavior*, *3*, 175-185. <https://doi.org/10.1177/009385487600300402>
- Fischer, D. G., & Fick, C. (1993). Measuring social desirability: Short forms of the Marlowe-Crowne Social Desirability Scale. *Educational and Psychological Measurement*, *53*, 417-424. <https://doi.org/10.1177/0013164493053002011>
- Fiske, D. W., & Maddi, S. R. A. (1961). A conceptual framework. In D. W. Fiske & S. R. Maddi (Eds.), *Functions of varied experience*. Homewood, Ill.: Dorsey Press. Pp. 11-56.
- Flory, K., Lynam, D., Milich, R., Leukefeld, C., & Clayton, R. (2004). Early adolescent through young adult alcohol and marijuana use trajectories: Early predictors, young adult outcomes, and predictive utility. *Development and Psychopathology*, *16*(1), 193-213.

doi:10.1017/S0954579404044475

Franken, R. E., Gibson, K. J., & Rowland, G. L. (1992). Sensation seeking and the tendency to view the world as threatening. *Personality and Individual Differences*, 13, 31–38.

[https://doi.org/10.1016/0191-8869\(92\)90214-A](https://doi.org/10.1016/0191-8869(92)90214-A)

Fulker, D. W., Eysenck, S. B. G., & Zuckerman, M. (1980). A genetic and environmental analysis of sensation seeking. *Journal of Research in Personality*, 14, 261-281.

[https://doi.org/10.1016/0092-6566\(80\)90033-1](https://doi.org/10.1016/0092-6566(80)90033-1)

Furnham, A., & Saipe, J. (1993). Personality correlates of convicted drivers. *Personality and Individual Differences*, 14, 329–338.

[https://doi.org/10.1016/0191-8869\(93\)90131-L](https://doi.org/10.1016/0191-8869(93)90131-L)

Galloway, G., & Lopez, K. (1999). Sensation seeking and attitudes to aspects of national parks: A preliminary empirical investigation. *Tourism Management*, 20, 665-671.

[https://doi.org/10.1016/S0261-5177\(99\)00031-X](https://doi.org/10.1016/S0261-5177(99)00031-X)

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure.

*Psychological Assessment*, 4(8), 26-42. <https://doi.org/10.1037/1040-3590.4.1.26>

Gray, J. M., & Wilson, M. A. (2007). A detailed analysis of the reliability and validity of the sensation seeking scale in a UK sample. *Personality and Individual Differences*, 42,

641- 651. <https://doi.org/10.1016/j.paid.2006.08.019>

Grice, J. W. (2011). *Observation oriented modeling: Analysis of cause in the behavioral sciences*. Academic Press.

Grice, J. W., Barrett, P. T., Schlingens, L. A., & Abramson, C. I. (2012). Toward a brighter future for psychology as an observation oriented science. *Behavioral Sciences*, 2, 1-22.

doi:10.3390/bs2010001

Grinblatt, M., & Keloharju, M. (2009). Sensation seeking, overconfidence, and trading activity.

*The Journal of Finance*, 64(2), 549-578. [https://doi.org/10.1111/j.1540-](https://doi.org/10.1111/j.1540-6261.2009.01443.x)

[6261.2009.01443.x](https://doi.org/10.1111/j.1540-6261.2009.01443.x)

- Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences, 16*(5), 701-713. [https://doi.org/10.1016/0191-8869\(94\)90212-7](https://doi.org/10.1016/0191-8869(94)90212-7)
- Hansen, E. B., & Breivik, G. (2001). Sensation seeking as a predictor of positive and negative risk behaviour among adolescents. *Personality and Individual Differences, 30*(4), 627-640. [https://doi.org/10.1016/S0191-8869\(00\)00061-1](https://doi.org/10.1016/S0191-8869(00)00061-1)
- Hartman, M. L., & Rawson, H. E. (1992). Differences in and correlates of sensation seeking in male and female athletes and nonathletes. *Personality and Individual Differences, 13*(7), 805-812. [https://doi.org/10.1016/0191-8869\(92\)90054-S](https://doi.org/10.1016/0191-8869(92)90054-S)
- Hebb, D. O., & Thompson, W. R. (1954). The social significance of animal studies. In G. Lindzey (Ed.), *Handbook of social psychology*. Cambridge, Mass.: Addison-Wesley. Pp. 551-552.
- Heino, A., van der Molen, H. H., & Wilde, G. J. S. (1996). Differences in risk experience between sensation avoiders and sensation seekers. *Personality and Individual Differences, 20*(1), 71-79. [https://doi.org/10.1016/0191-8869\(95\)00152-V](https://doi.org/10.1016/0191-8869(95)00152-V)
- Horvath, P., & Zuckerman, M. (1993). Sensation seeking, risk appraisal, and risky behavior. *Personality and Individual Differences, 14*(1), 41-52. [https://doi.org/10.1016/0191-8869\(93\)90173-Z](https://doi.org/10.1016/0191-8869(93)90173-Z)
- Hoyle, R. H., Fejfar, M. C., & Miller, J. D. (2000). Personality and sexual risk taking: A quantitative review. *Journal of Personality, 68*(6), 1203-1231. <https://doi.org/10.1111/1467-6494.00132>
- Hoyle, R. H., Stephenson, M. T., Palmgreen, P., Lorch, E. P., & Donohew, R. L. (2002). Reliability and validity of a brief measure of sensation seeking. *Personality and Individual Differences, 32*, 401-414. [https://doi.org/10.1016/S0191-8869\(01\)00032-0](https://doi.org/10.1016/S0191-8869(01)00032-0)
- Huba, G. J., Newcomb, M. D., & Bentler, P. M. (1981). Comparison of canonical correlation

and interbattery factor analysis on sensation seeking and drug use domains. *Applied Psychological Measurement*, 5(3), 291-306.

<https://doi.org/10.1177/014662168100500302>

Jonah, B. A. (1997). Sensation seeking and risky driving: A review and synthesis of the literature. *Accident Analysis & Prevention*, 29(5), 651-665.

[https://doi.org/10.1016/S0001-4575\(97\)00017-1](https://doi.org/10.1016/S0001-4575(97)00017-1)

Keinan, R., & Bereby-Meyer, Y. (2012). "Leaving it to chance": Passive risk taking in everyday life. *Judgment and Decision Making*, 7(6), 705-715.

Kennison, S. M., & Messer, R. H. (2017). Cursing as a form of risk-taking. *Current Psychology*, 36(1), 119-126. <https://doi.org/10.1007/s12144-015-9391-1>

Kennison, S. M., & Messer, R. H. (2018). Humor as social risk-taking: The relationships among humor styles, sensation-seeking, and the use of curse words. *Humor: International Journal of Humor Research*, 32(1), 1-21. <https://doi.org/10.1515/humor-2017-0032>

Kennison, S. M., Wood, E. E., Byrd-Craven, J., & Downing, M. L. (2016). Financial and ethical risk-taking by young adults: A role for family dynamics during childhood. *Cogent Economics & Finance*, 4(1), 1-13.

<https://doi.org/10.1080/23322039.2016.1232225>

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. <https://doi.org/10.1007/BF01018332>

Kurtz, J. P., & Zuckerman, M. (1978). Race and sex differences on the sensation seeking scales. *Psychological Reports*, 43, 529-530.

<https://doi.org/10.2466/pr0.1978.43.2.529>

Kusyszyn, I., Steinberg, P., & Elliot, B. (1974). Arousal seeking, physical risk taking, and personality. In *18th International Congress of Applied Psychology, Montreal, Canada*.

- LaSpada, N., Delker, E., East, P., Blanco, E., Delva, J., Burrows, R., Lozoff, B., & Gahagan, S. (2020). Risk taking, sensation seeking, and personality as related to changes in substance use from adolescence to young adulthood. *Journal of Adolescence*, 82, 23-31. <https://doi.org/10.1016/j.adolescence.2020.04.011>
- Leather, N. C. (2009). Risk-taking behavior in adolescence: A literature review. *Journal of Child Health Care*, 13(3), 295-304. <https://doi.org/10.1177/1367493509337443>
- Lejuez, C. W., Read, J. P., Kahler, C. W., Richards, J. B., Ramsey, S. E., Stuart, G. L., Strong, D. R., & Brown, R. A. (2002). Evaluation of a behavioral measure of risk taking: The balloon analogue risk task (BART). *Journal of Experimental Psychology: Applied*, 8(2), 75-84. <https://doi.org/10.1037/1076-898X.8.2.75>
- Leuba, C. (1955). Toward some integration of learning theories: The concept of optimal stimulation. *Psychological Reports*, 1, 27-33.
- Lissek, S., Baas, J. M. P., Pine, D. S., Orme, K., Dvir, S., Rosenberger, E., & Grillon, C. (2005). Sensation seeking and the aversive motivational system. *Emotion*, 5(2), 396-407. <https://doi.org/10.1037/1528-3542.5.4.396>
- Morrongiello, B. A., & Lasenby, J. (2006). Finding the daredevils: Development of a sensation seeking scale for children that is relevant to physical risk taking. *Accident Analysis & Prevention*, 38(6), 1101-1106. <https://doi.org/10.1016/j.aap.2006.04.018>
- Musolino, R. F., & Hershenson, D. B. (1977). Avocational sensation seeking in high and low risk-taking occupations. *Journal of Vocational Behavior*, 10, 358-365. [https://doi.org/10.1016/0001-8791\(77\)90069-0](https://doi.org/10.1016/0001-8791(77)90069-0)
- Newcomb, M. D., & McGee, L. (1991). Influence of sensation seeking on general deviance and specific problem behaviors from adolescence to young adulthood. *Journal of Personality and Social Psychology*, 61(4), 614-628. <https://doi.org/10.1037/0022-3514.61.4.614>

- Nussio, E. (2020). The role of sensation seeking in violent armed group participation. *Terrorism and Political Violence*, 32(1), 1-19. <https://doi.org/10.1080/09546553.2017.1342633>
- Perez, J., & Torrubia, R. (1985). Sensation seeking and antisocial behaviour in a student sample. *Personality and Individual Differences*, 6(3), 401-403. [https://doi.org/10.1016/0191-8869\(85\)90068-6](https://doi.org/10.1016/0191-8869(85)90068-6)
- Ponce-Garcia, E., Madewell, A. N., & Kennison, S. M. (2015). The development of the scale of protective factors: Resilience in a violent trauma sample. *Violence and Victims*, 30(5), 735-755. <http://dx.doi.org/10.1891/0886-6708.VV-D-14-00163>
- Popham, L. E., Kennison, S. M., & Bradley, K. I. (2011). Ageism, sensation-seeking, and risk-taking behavior in young adults. *Current Psychology*, 30, 184-193. <https://doi.org/10.1007/s12144-011-9107-0>
- Quay, H. C. (1965). Psychopathic personality as pathological stimulation-seeking. *The American Journal of Psychiatry*, 122(2), 180-183. <https://doi.org/10.1176/ajp.122.2.180>
- Quinn, P. D., & Harden, K. P. (2013). Differential changes in impulsivity and sensation seeking and the escalation of substance use from adolescence to early adulthood. *Development and Psychopathology*, 25(1), 223-239. doi:10.1017/S0954579412000284
- Raylu, N. & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22(7), 1009-1061. [https://doi.org/10.1016/S0272-7358\(02\)00101-0](https://doi.org/10.1016/S0272-7358(02)00101-0)
- Roberti, J. W. (2004). A review of behavioral and biological correlates of sensation seeking. *Journal of Research in Personality*, 38, 256-279. [https://doi.org/10.1016/S0092-6566\(03\)00067-9](https://doi.org/10.1016/S0092-6566(03)00067-9)
- Roberti, J. W., Storch, E. A., & Bravata, E. A. (2004). Sensation seeking, exposure to psychosocial stressors, and body modifications in a college population. *Personality and Individual Differences*, 37(6), 1167-1177. <https://doi.org/10.1016/j.paid.2003.11.020>
- Roth, M. (2003). Validation of the Arnett Inventory of Sensation Seeking (AISS): Efficiency to

predict the willingness towards occupational chance, and affection by social desirability.

*Personality and Individual Differences*, 35(6), 1307-1314. [https://doi.org/10.1016/S0191-8869\(02\)00351-3](https://doi.org/10.1016/S0191-8869(02)00351-3)

Russo, M. F., Lahey, B. B., Christ, M. G., Frick, P. J., McBurnett, K., Walker, J. L., Loeber, R., Stouthamer-Loeber, M., & Green, S. M. (1991). Preliminary development of a sensation seeking scale for children. *Personality and Individual Differences*, 12, 399-405.

Russo, M. F., Stokes, G. S., Lahey, B. B., Christ, M. G., McBurnett, K., Loeber, R., Stouthamer-Loeber, M., & Green, S. M. (1993). A sensation seeking scale for children: Further refinement and psychometric development. *Journal of Psychopathology and Behavioral Assessment*, 15(2), 69-86. <https://doi.org/10.1007/BF00960609>

Satinder, K. P., & Black, A. (1984). Cannabis use and sensation-seeking orientation. *The Journal of Psychology*, 116(1), 101-105. <https://doi.org/10.1080/00223980.1984.9923623>

Saucier, G. (1994). Mini-markers: A brief version of Goldberg's unipolar big-five markers. *Journal of Personality Assessment*, 63(3), 506-516.

[https://doi.org/10.1207/s15327752jpa6303\\_8](https://doi.org/10.1207/s15327752jpa6303_8)

Schmidt, V., Molina, M. F., & Raimundi, M. J. (2017). The Sensation Seeking Scale (SSS-V) and its use in Latin American adolescents: Alcohol consumption pattern as an external criterion for its validation. *Europe's Journal of Psychology*, 13(4), 776-793. doi: 10.5964/ejop.v13i4.1198

Schroth, M. L. (1995). A comparison of sensation seeking among different groups of athletes and nonathletes. *Personality and Individual Differences*, 18(2), 219-222.

[https://doi.org/10.1016/0191-8869\(94\)00144-H](https://doi.org/10.1016/0191-8869(94)00144-H)

Schumpe, B. S., Bélanger, J. J., Moyano, M., & Nisa, C. F. (2018). The role of sensation seeking in political violence: An extension of the significance quest theory. *Journal of Personality and Social Psychology*, 118(4), 743-761.

<https://doi.org/10.1037/pspp0000223>

Schwarz, R. M., Burkhart, B. R., & Green, S. B. (1978). Turning on or turning off: Sensation seeking or tension reduction as motivational determinants of alcohol use. *Journal of Counseling and Clinical Psychology, 46*(5), 1144-1145. <https://doi.org/10.1037/0022-006X.46.5.1144>

Shou, Y., & Olney, J. (2020). Assessing a domain-specific risk-taking construct: A meta-analysis of reliability of the DOSPERT scale. *Judgment and Decision Making, 15*(1), 112-134.

Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1993). Cognitive motivations and sensation seeking as long-term predictors of drinking problems. *Journal of Social and Clinical Psychology, 12*(1), 1-24. <https://doi.org/10.1521/jscp.1993.12.1.1>

Steinberg, L. (2004). Risk-taking in adolescence: What changes, and why? *Annals of the New York Academy of Sciences, 1021*, 51–58. <https://doi.org/10.1196/annals.1308.005>

Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current Directions in Psychological Science, 16*(2), 55-59. <https://doi.org/10.1111/j.1467-8721.2007.00475.x>

Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review, 28*(1), 78-106. <https://doi.org/10.1016/j.dr.2007.08.002>

Stoel, R. D., De Geus, E. J. C., & Boomsma, D. I. (2006). Genetic analysis of sensation seeking with an extended twin design. *Behavior Genetics, 36*, 229-237. <https://doi.org/10.1007/s10519-005-9028-5>

Strahan, R., & Gerbasi, K. C. (1972). Short, homogenous versions of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology, 28*(2), 191-193.

Thompson, B. (2004). *Exploratory and confirmatory factor analysis*. Washington, DC: American Psychological Association. doi: 10.1177/0146621606290168

Thornquist, M. H., Zuckerman, M., & Exline, R. (1991). Loving, liking, looking and sensation

- seeking in unmarried college couples. *Personality and Individual Differences*, 12, 1283-1292. [https://doi.org/10.1016/0191-8869\(91\)90202-M](https://doi.org/10.1016/0191-8869(91)90202-M)
- Van de Mortel, T. F. (2008). Faking it: Social desirability response bias in self-report research. *Australian Journal of Advanced Nursing*, 25(4), 40-48.
- Viken, R. J., Kline, M. P., Rose, R. J. (2005). Development and validation of an MMPI-based sensation seeking scale. *Personality and Individual Differences*, 38, 619-625.  
<https://doi.org/10.1016/j.paid.2004.05.016>
- Waters, L. K., & Kirk, W. E. (1968). Stimulus-seeking motivation and risk-taking behavior in a gambling situation. *Education and Psychological Measurement*, 28, 549-550.  
<https://doi.org/10.1177/001316446802800242>
- Weber, E. U., Blais, A.-R., Betz, E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, 15, 263-290.  
<https://doi.org/10.1002/bdm.414>
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 806-820. <https://doi.org/10.1037/0022-3514.39.5.806>
- Wiederman, M. W., & Hurd, C. (1999). Extradynamic involvement during dating. *Journal of Social and Personal Relationships*, 16, 265-274.  
<https://doi.org/10.1177/0265407599162008>
- Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious*. Cambridge, MA: Harvard University Press.
- Wong, A., & Carducci, B. J. (1991). Sensation seeking and financial risk taking in everyday money matters. *Journal of Business and Psychology*, 5(4), 525-530.  
<https://doi.org/10.1007/BF01014500>
- Wong, A., & Carducci, B. (2015). Do sensation seeking, control orientation, ambiguity, and dishonesty traits affect financial risk tolerance? *Managerial Finance*, 42(1),

34-41. <https://doi.org/10.1108/MF-09-2015-0256>

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist, 34*(6), 806-838.

<https://doi.org/10.1177/0011000006288127>

Worthy, S. L., Jonkman, J., & Blinn-Pike, L. Sensation-seeking, risk-taking, and problematic financial behaviors of college students. *Journal of Family and Economic Issues, 31*, 161-170. <https://doi.org/10.1007/s10834-010-9183-6>

Wymer, W., Self, D., & Findley, C. S. (2008). Sensation seekers and civic participation: Exploring the influence of sensation seeking and gender on intention to lead and volunteer. *International Journal of Nonprofit and Voluntary Sector Marketing, 13*, 287-300. <https://doi.org/10.1002/nvsm.330>

Yoneda, T., Ames, M. E., & Leadbeater, B. J. (2019). Is there a positive side to sensation seeking? Trajectories of sensation seeking and impulsivity may have unique outcomes in young adulthood. *Journal of Adolescence, 73*, 42-52.

<https://doi.org/10.1016/j.adolescence.2019.03.009>

Zarevski, P., Marusic, I., Zolotic, S., Bunjevac, T., & Vukosav, Z. (1998). Contribution of Arnett's inventory of sensation seeking and Zuckerman's sensation seeking scale to the differentiation of athletes engaged in high and low risk sports. *Personality and Individual Differences, 25*, 763-768. [https://doi.org/10.1016/S0191-8869\(98\)00119-6](https://doi.org/10.1016/S0191-8869(98)00119-6)

Zuckerman, M. (1971). Dimensions of sensation seeking. *Journal of Counseling and Clinical Psychology, 36*, 45-52.

Zuckerman, M. (1979). *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, NJ: Erlbaum.

Zuckerman, M. (1983). Sensation seeking and sports. *Personality and Individual Differences, 4*(3), 285-293. [https://doi.org/10.1016/0191-8869\(83\)90150-2](https://doi.org/10.1016/0191-8869(83)90150-2)

- Zuckerman, M. (1994). Behavioral expressions and biosocial bases of sensation seeking. UK: Cambridge University Press.
- Zuckerman, M. (1996a). Item revisions in the Sensation Seeking Scale Form V (SSS-V). *Personality and Individual Differences*, 20(4), 515. [https://doi.org/10.1016/0191-8869\(95\)00195-6](https://doi.org/10.1016/0191-8869(95)00195-6)
- Zuckerman, M. (1996b). The psychobiological model for impulsive unsocialized sensation seeking: A comparative approach. *Neuropsychobiology*, 34(3), 125-129. <https://doi.org/10.1159/000119303>
- Zuckerman, M. (2007a). *Sensation seeking and risky behavior*. American Psychological Association. <https://doi.org/10.1037/11555-000>
- Zuckerman, M. (2007b). The sensation seeking scale V (SSS-V): Still reliable and valid. *Personality and Individual Differences*, 43, 1303-1305. <https://doi.org/10.1016/j.paid.2007.03.021>
- Zuckerman, M., Ball, S., & Black, J. (1990). Influences of sensation seeking, gender, risk appraisal, and situational motivation on smoking. *Addictive Behaviors*, 15(3), 209-220. [https://doi.org/10.1016/0306-4603\(90\)90064-5](https://doi.org/10.1016/0306-4603(90)90064-5)
- 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(2), 308-321. <https://doi.org/10.1037/h0033398>
- Zuckerman, M., Buchsbaum, M. S., & Murphy, D. L. (1980). Sensation seeking and its biological correlates. *Psychological Bulletin*, 88(1), 187-214. <https://doi.org/10.1037/0033-2909.88.1.187>
- Zuckerman, M., Eysenck, S., & Eysenck, H. J. (1978). Sensation seeking in England and America: Cross-cultural, age, and sex comparisons. *Journal of Consulting and Clinical*

- Psychology*, 46(1), 139-149. <https://doi.org/10.1037/0022-006X.46.1.139>
- Zuckerman, M., & Glicksohn, J. (2016). Hans Eysenck's personality model and constructs of sensation seeking and impulsivity. *Personality and Individual Differences*, 103, 48-52. <https://doi.org/10.1016/j.paid.2016.04.003>
- Zuckerman, M., Kolin, E. A., Price, L., & Zoob, I. (1964). Development of a sensation seeking scale. *Journal of Consulting Psychology*, 28(6), 477-482. <https://doi.org/10.1037/h0040995>
- Zuckerman, M., & Kuhlman, D. M. (1978). Sensation seeking and risk taking in response to hypothetical situations. Paper presented at the meeting of International Association of Applied Psychology, Munich, Germany.
- Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk taking: Common biosocial factors. *Journal of Personality*, 68, 999-1029. <https://doi.org/10.1111/1467-6494.00124>
- Zuckerman, M., Kuhlman, D. M., Joireman, J., Teta, P., and Kraft, M. (1993). A comparison of three structural models for personality: The big three, the big five, and the alternative five. *Journal of Personality and Social Psychology*, 65(4), 757-768. <https://doi.org/10.1037/0022-3514.65.4.757>
- Zuckerman, M., Neary, R. S., & Brustman, B. A. (1970). Sensation-Seeking Scale correlates in experience (smoking, drug, alcohol, "hallucinations", and sex) and preference for complexity (designs). Proceedings of the 78th annual convention of the American Psychological Association, 5, 317-318. (Summary)
- Zuckerman, M., & Neeb, M. (1979). Sensation seeking and psychopathology. *Psychiatry Research*, 1, 255-264. [https://doi.org/10.1016/0165-1781\(79\)90007-6](https://doi.org/10.1016/0165-1781(79)90007-6)
- Zuckerman, M., & Neeb, M. (1980). Demographic influences in sensation seeking and expressions of sensation seeking in religion, smoking and driving habits. *Personality and Individual Differences*, 1, 197-206. [https://doi.org/10.1016/0191-8869\(80\)90051-3](https://doi.org/10.1016/0191-8869(80)90051-3)

Zuckerman, M., Schultz, D. P., & Hopkins, T. R. (1967). Sensation seeking and volunteering for sensory deprivation and hypnosis experiments. *Journal of Consulting Psychology*, *31*, 358-363. <https://doi.org/10.1037/h0024763>

**Table 1***Inter-Item Correlations for Adjectives from Pilot Study B*

---

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Pleasure-seeking*	-															
2. Fearless*	.293	-														
3. Courageous	.166	.576	-													
4. Active	.074	.344	.522	-												
5. Excitable*	.183	.283	.410	.463	-											
6. Thrill-seeking*	.243	.456	.383	.377	.449	-										
7. Fearful	-.003	.347	.209	.149	.093	.094	-									
8. Reckless	.247	.226	.126	-.024	.098	.365	-.017	-								
9. Cowardly	.022	.215	.318	.267	.170	.118	.355	-.220	-							
10. Daring*	.294	.464	.425	.280	.281	.529	.131	.466	.106	-						
11. Adventurous*	.223	.428	.450	.393	.398	.571	.053	.251	.104	.464	-					
12. Boring	.141	.213	.265	.205	.326	.310	.190	.010	.332	.175	.234	-				
13. Curious	.271	.035	.073	.069	.128	.136	-.114	.083	.055	.246	.234	.083	-			
14. Wild*	.301	.312	.303	.188	.331	.497	.073	.534	.051	.543	.403	.209	.193	-		
15. Fun-loving	.133	.036	.182	.182	.408	.214	.022	.062	.162	.122	.242	.234	.130	.230	-	
16. Unadventurous	.167	.278	.338	.355	.315	.394	.143	.061	.314	.307	.577	.425	.169	.214	.228	-

---

\*Indicates that the item is part of the final version of SSAM

---

---

**Table 2***Factor Loadings for SSAM*

---

Item	Factor Loading
Pleasure-seeking	.501
Fearless	.683
Excitable	.610
Thrill-seeking	.808
Daring	.768
Adventurous	.750
Wild	.722

---

*Note.* Extraction Method: Principal Component Analysis

---

**Table 3**  
*Summary of Correlation Results*

	1.	2.	3.	4.	5.	6.
1. SSAM	-					
2. SSS-V – Total	.470**	-				
3. AISS - Total	.321**	.551**	-			
4. DOSPRT	.379**	.533**	.486**	-		
5. YRBS - Overall	.128*	.414**	.364**	.259**	-	
6. Extraversion	.405**	.052	.205**	.233**	.145**	-

\*Correlation is significant at the .05 level

\*\*Correlation is significant at .01 level

## APPENDICES

### Appendix A

For Pilot Study A, participants were asked to think of a person similar to each of the sensation- seeking types.

#### **Thrill-and-Adventure Seeking Prompt**

Take a moment and think of someone you know who is the type of person who seeks out or enjoys experiences that involve danger (e.g., physical speed).

#### **Boredom Susceptibility Prompt**

Take a moment and think of someone you know who is the type of person who dislikes repetition, especially daily routine or activities that go on for a long time. **Experience Seeking Prompt**

Take a moment and think of someone that you know who is the type of person who likes to seek out new experiences, especially sensory ones (e.g. tastes, smells, sounds, visual scenes/images, or tactile/touch experiences).

#### **Disinhibition Prompt**

Take a moment and think of someone you know who is the type of person who enjoys and seeks out pleasurable experiences without restraint.

After each prompt, they were then asked to rate a list of adjectives as being similar to each characteristic. The instructions for each were the same except for the description of the sensation-seeking trait. Participants rated how accurately they believe each adjective describes the person using a 7-point scale (1 = extremely unlike them, 2 = very unlike them, 3 = moderately unlike them, 4 = neither like nor unlike them, 5 = moderately like them, 6 = very like them, 7 = extremely like them).

Now, while thinking of this person, consider each of the following adjectives and indicate how well that adjective might describe the person you know, specifically regarding the trait of \_\_\_\_\_ .

If you do not know or understand a word, please select "I do not know this word".

## Appendix B

For Pilot Study B, Participants were asked think of a person similar to each of the sensation- seeking types.

### **Thrill-and-Adventure Seeking Prompt**

Take a moment and think of someone you know who is the type of person who seeks out or enjoys experiences that involve danger (e.g., physical speed).

### **Boredom Susceptibility Prompt**

Take a moment and think of someone you know who is the type of person who dislikes repetition, especially daily routine or activities that go on for a long time.

### **Experience Seeking Prompt**

Take a moment and think of someone that you know who is the type of person who likes to seek out new experiences, especially sensory ones (e.g. tastes, smells, sounds, visual scenes/images, or tactile/touch experiences).

### **Disinhibition Prompt**

Take a moment and think of someone you know who is the type of person who enjoys and seeks out pleasurable experiences without restraint.

After each prompt, they were then asked to rate the total list of adjectives as being similar to each characteristic. The instructions for each were the same except for the description of the sensation-seeking trait. Participants rated how accurately they believe each adjective describes the person using a 7-point scale (1 = *extremely unlike them*, 2 = *very unlike them*, 3 = *moderately unlike them*, 4 = *neither like nor unlike them*, 5 = *moderately like them*, 6 = *very like them*, 7 = *extremely like them*).

Now, while thinking of this person, consider each of the following adjectives and indicate how well that adjective might describe the person you know, specifically regarding the trait of \_\_\_\_\_.

If you do not know or understand a word, please select "I do not know this word".

**Table 4**

*Mean Ratings of Adjectives Across Four Components of Sensation Seeking*

Adjective	Mean Ratings			
	TAS	ES	BS	Dis
Fearful (RC)	5.53	5.21	5.0	5.44
Fearless	6.41	5.56	5.06	5.78
Brave	6.32	5.94	5.59	6.16
Reckless	6.6	4.15	4.91	6.43
Daring	6.99	5.84	5.56	6.38
Courageous	6.4	5.87	5.49	5.96
Overconfident	6.32	4.4	4.97	5.93
Adventurous	6.76	6.5	6.37	6.6
Excitable	6.53	6.18	6.43	6.44
Thrill-Seeking	7.04	5.81	5.79	6.56
Cowardly (RC)	6.07	5.94	5.59	5.79
Unadventurous (RC)	6.32	6.09	5.94	6.22

Busy	5.51	5.82	5.71	5.25
Active	6.41	6.03	6.01	5.87
Boring (RC)	6.28	6.1	5.96	6.13
Enthusiastic	6.35	6.4	6.16	6.31
Curious	6.5	6.41	5.87	6.44
Experimenting	6.34	6.18	5.87	6.41
Tolerant	4.79	5.53	4.82	4.69
Intolerant (RC)	5.24	5.18	4.99	4.59
Flexible	5.65	5.85	5.25	5.53
Inflexible (RC)	5.34	5.26	5.19	5.03
Judgmental	4.21	4.68	4.25	4.41
Free-Thinking	5.96	6.12	5.99	6.22
Free-Spirited	6.26	6.0	5.79	6.32
Pleasure-Seeking	6.75	6.32	6.03	6.94
Wild	6.63	5.31	5.46	6.6
Self-Indulgent	5.5	4.85	5.4	6.38
Self-Restrained (RC)	5.37	4.57	4.59	4.0
Controlled (RC)	5.43	3.93	4.81	5.56
Repressed (RC)	5.62	5.6	5.59	5.54
Fun-loving	6.32	6.29	6.16	6.24
Impatient	5.24	4.52	5.55	5.54
Unsatisfied	4.87	3.87	4.91	4.81
Unrestrained	5.6	4.49	4.82	5.76

Playful	6.06	6.1	6.07	5.99
Uninterested (RC)	5.55	5.73	5.36	5.57

---

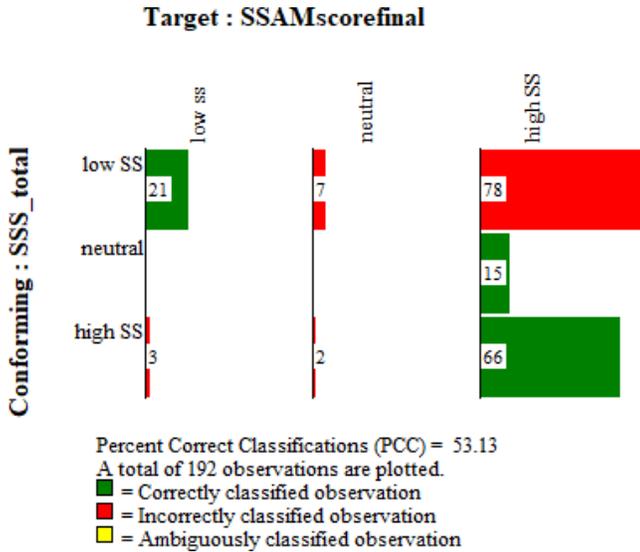
## Appendix C

In order to compare them, each of the three sensation seeking scales (SSAM, SSS, and AISS) were broken down and recoded into three ranges of scores: neutral (the exact possible midpoint of the given scale), low SS (everything below the midpoint), and high SS (everything above the midpoint). For example, for the SSAM, the lowest possible score was a 7, and the highest possible score was a 49. Neutral SS was therefore identified as a score of exactly 28, with low SS being a score of 7-27, and high SS being a score of 29-49. Participants with high scores on the SSAM were not necessarily classified as high SSs on the SSS-V, with a PCC (Percent Classification Correct) index of only 53.13 ( $c = 0.12$ , 1000 trials). The SSAM was a slightly better fit on the AISS, with a PCC index of 66.98 ( $c < .001$ , 1000 trials). Interestingly, the SSAM classified many more individuals as high sensation-seekers than both the SSS-V and the AISS. I also wanted to examine how scores for the AISS mapped onto scores from the SSS-V, and I found a PCC index of 62.30 ( $c < .001$ , 1000 trials). Figures 1-3 display the results for each comparison.

Based on the results from OOM, I believe the SSAM to be an adequate measure of sensation-seeking, but one thing in particular is worth examining further. The PCC index for the SSAM and the SSS-V is low, but given that it's higher between the SSAM and the AISS, I expect that there is more to this pattern. When examining the data on the individual level, the SSAM (a 7-point Likert scale) found more high SSs than the SSS (a forced-choice format). I expect that the SSAM simply detected more sensation-seekers than the SSS, but whether that is due to the change in answer format or the change in the questions being asked is unclear, and further investigation is necessary.

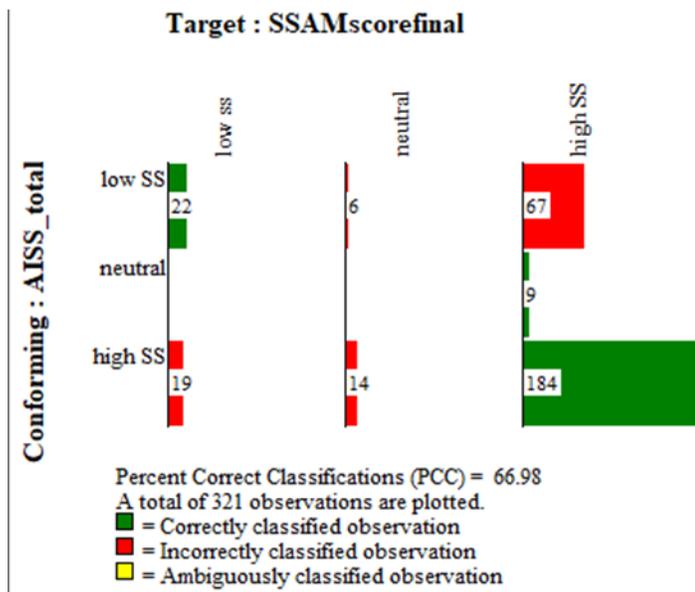
**Figure 1**

*Multi-Unit Histogram (SSAM/SSS)*



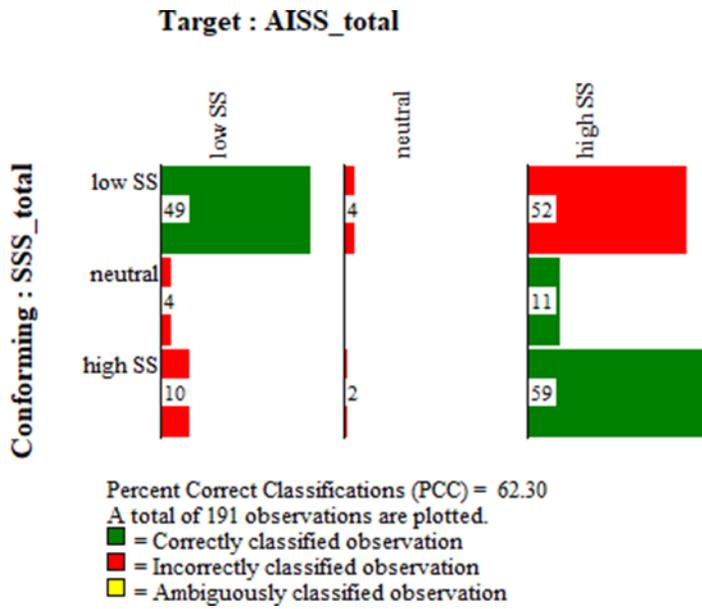
**Figure 2**

*Multi-Unit Frequency Histogram (SSAM/AISS)*



**Figure 3**

*Multi-Unit Frequency Histogram (AISS/SSS)*





## Oklahoma State University Institutional Review Board

Date: 08/31/2021  
Application Number: IRB-21-349  
Proposal Title: Individual Differences in Personality

Principal Investigator: Victoria Spooner  
Co-Investigator(s):  
Faculty Adviser: Shelia Kennison  
Project Coordinator:  
Research Assistant(s):

Processed as: Exempt  
Exempt Category:

### **Status Recommended by Reviewer(s): Approved**

---

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

**This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.**

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu).

Sincerely,  
Oklahoma State University IRB

VITA

Victoria H Spooner

Candidate for the Degree of

Master of Science

Thesis: DEVELOPMENT AND VALIDATION OF A NEW SENSATION  
MEASURE: SENSATION SEEKING ADJECTIVE MARKERS

Major Field: Psychology

Biographical:

Education:

Completed the requirements for the Master of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2022.

Completed the requirements for the Bachelor of Science in Psychology at Abilene Christian University, Abilene, Texas in 2018.

Experience: Graduate Teaching Assistant (Evolutionary Psychology, August 2021-May 2022); Graduate Teaching Assistant (Social Psychology, August 2018-May 2019); Graduate Teaching Assistant (Developmental Psychology, January 2022-May 2022); Course Instructor (Social Psychology, August 2020-December 2021); Course Instructor (Introduction to Psychology, August 2019-May 2020); Graduate Teaching Assistant (Experimental Psychology, August 2018-May 2019)

Professional Memberships: American Psychological Association, Southwest Psychological Association, Society for Personality and Social Psychology