Sensation Seeking Adjective Markers (SSAM):

Development and Validation of a New Sensation Seeking Measure

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Abstract

Sensation seeking is the pursuit of varied, novel, and complex experiences and has been the subject of many studies since the 1950s. Research has demonstrated sensation seeking traits are related to risk-taking, including use and abuse of substances as well as physical risk-taking such as participation in extreme sports. Researchers have developed multiple measures to assess individual differences in sensation seeking. The most used measures for adults have weaknesses, such as conflating traits with behaviors, using out-of-date language, and low internal consistency. In the present research we carried out a series of studies in which we developed and validated a brief measure of sensation. The final version of the measure contained seven adjectives that participants rated how accurately each described them. The results showed that scores on the new measure were positively related to scores on two popular measures of sensation-seeking (i.e., the SSS-V and the AISS) as well as to two measures of risk-taking (i.e., DOSPERT and YRBS).

Keywords: Sensation-seeking, Risk-taking, Validation, Big Five, Personality Traits

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Sensation seeking (SS) is defined as the pursuit of varied, novel, and complex experiences (Zuckerman, 2007a). Those high in sensation-seeking traits seek out experiences to achieve an optimal level of stimulation. Numerous studies have demonstrated positive relationships between sensation seeking traits and risk-taking, which can lead to adverse outcomes. Multiple measures exist to assess sensation seeking traits for adults (Arnett, 1994; Hoyle et al., 2002; Huba et al., 1981; Zuckerman et al., 1978; 1993) as well as for children (Morrongiello & Lasenby, 2006; Russo et al., 1991; 1993). In the present research, we aimed to develop and validate a new brief measure of sensation seeking for adults that avoids shortcomings found in existing measures.

Individual differences in sensation seeking relate to biological processes (See Roberti, 2004, for review). 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 show higher levels of risk appraisal (Lissek et al., 2005; Blankstein, 1975; Breivik et al., 1998; Franken et al., 1992; Furnham & Saipe, 1993; Heino et al., 1996). Thus, it could be that high SSs assess risk differently than low SSs believing themselves to be bulletproof in many of these risky situations (Weinstein, 1980).  Research suggests that SS traits are heritable (Fulker et al., Stoel et al., 2006; 1980; Zuckerman et al., 1980). Numerous studies have observed higher levels of SS traits in males than in females (Cross et al., 2013; Kennison & Messer; 2017; 2019; Kennison et al., 2016; Kurtz & Zuckerman, 1978; Zuckerman & Neeb, 1980; Zuckerman et al., 1978). Cross and colleagues (2013) determined that, while sex differences in overall scores (as well as in disinhibition and boredom susceptibility) have remained 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.

There has been sustained interest in SS traits due to their demonstrated relationship with individual differences in behavior, particularly behavior that can lead to death and injury to the individual, but also social and economic losses for society. Numerous studies have shown links between SS traits and risk-taking. Those high in SS traits use and abuse substances (e.g., alcohol, tobacco, cannabis, amphetamines, and LSD: LaSpada et al., 2020; Newcomb & McGee, 1991; Popham et al., 2011, Satinder & Black, 1983; Stacy et al., 1993; Zuckerman et al., 1990), making unsafe choices while driving (e.g., driving while intoxicated, speeding, following too closely: Arnett, 1990b; Arnett, 1994; see Jonah, 1997 for review); and taking sexual risks (Arnett, 1990a; Hoyle et al., 2000; Popham et al., 2011; Thornquist et al., 1991; Wiederman & Hurd, 1999; Zuckerman & Neeb, 1980). High SS traits have also been associated with higher rates of athletic participation, particularly in contact sports (Hartman & Rawson, 1992; Schroth, 1995), more adventurous tourism (e.g., visiting and explore remote national parks; Galloway & Lopez, 1999), participation in high-risk occupations (e.g. firefighting: Kusyzyn et al., 1974), taking financial risks (Coventry & Brown, 1993; Breen & Zuckerman, 1999; Kennison et al., 2016; Kuley & Jacobs, 1988; Raylu & Oei, 2002; Waters & Kirk, 1968; Wong & Carducci, 1991), and involvement in criminal activities (i.e., shoplifting, selling drugs, vandalism; Farley & Farley, 1972; Farley & Sewell, 1976; Perez & Torrubia, 1985; Zuckerman, 2007a).

**Measures of Adult Sensation Seeking**

The most widely used measure of SS is Zuckerman et al.’s (1978) 40-item Sensation Seeking Scale Form V (SSS-V). The SSS-V has four factors: a) thrill and adventure seeking (TAS), which refers to a desire to engage in activities involving speed or danger; b) experience seeking (ES), which refers to seeking out atypical experiences – often through travel or a nonconforming lifestyle; c) disinhibition (Dis), which refers to 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. For each item in the SSS-V, participants are asked to choose one of two statements that is most like them. Each item focuses on an aspect of one of the four factors with one statement related to a high level of the trait and the other statement related to a lower level of the trait them (e.g., *I often wish I could be a mountain climber*. vs. *I can't understand people who risk their necks climbing mountains.*).

Arnett (1994) pointed out multiple shortcomings of the SSS-V. Foremost, the forced choice format of the SSS-V is problematic, as it is possible that for some participants for some items that neither choice would apply. Second, SSS-V items refer specifically to risk-taking behaviors, including using alcohol and drugs and engaging in risky sexual behavior. Thus, the measure cannot be viewed as reflecting traits in isolation from the behaviors associated with those traits. Third, many of the items of the SSS-V use expressions that are no longer familiar (e.g., *hippies, jet set, queer, swingers*). 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*) and showed that the changes did not reduce the 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, the revised version of the scale still includes specific references to sexual orientation as representing a high SS choice (*I stay away from anyone I suspect of being ‘gay’ or ‘lesbian’*).

In an attempt to improve on the SSS-V, Arnett (1994) developed the Arnett Inventory of Sensation Seeking (AISS), a 20-item measure that asks respondents to rate how well each statement best applied to them (e.g., *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*). The AISS had two factors: a) need for novelty (e.g., *If I have to wait in a long line, I am usually patient about it.*) and b) need for intense stimulation or intensity (e.g., *I like the feeling of standing next to the edge of a high place and looking down.*). In terms of advantages, the items in the AISS avoided the problematic language of the SSS-V and avoided references to extreme risk-taking. Nevertheless, many of the items are behaviorally oriented (e.g., *If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides.*)

Gary and Wilson (2007) modified the format of the SSV, eliminating the forced choice for participants. They presented the 80 statements to participants and asked them to rate how well the statement described them using x-point rating scale.

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.

Two brief measures of sensation seeking have been developed using behaviorally oriented items from Zuckerman et al.’s (19??) SSS-V (Hoyle et al., 2002; Huba et al., 1981). Huba et al. (1981) selected four high-loading items from each of the four factors. They asked participants to rate *How often do you feel the following way* using a 5-point scale (*1 = never, 5 = always*). The resulting 16-item scale had Cronbach alpha’s ranging from .43 to .70. Hoyle et al. (2002) created the Brief Sensation Seeking Scale (BSSS) using two items from the SSS-V (i.e., two from each factor). The BSSS had an internal consistency of Cronbach alpha α =.76 when analyzed as a single factor.

Viken et al. (2005) developed a measure of SS from items drawn from the Minnesota Multiphasic Personality Inventory (MMPI-2; Butcher et al., 1989) using Zuckerman’s (1994) descriptions of SS. They referred to their 18-item scale as the MMPI Sensation Seeking Scale (MSS). a Cronbach’s alpha of .72 and a test-retest reliability of .93 (Viken et al., 2005). Although the MSS did not include items related to substance use, many items were behaviorally oriented (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*).

**The Present Study**

In the present paper, we describe how we developed and validated a new measure of SS for adults, which utilizes an adjective checklist, similar to other personality measures (e.g., Goldberg, 1992; Saucier, 1994). Participants used an agreement rating scale to indicate how well each adjective describes them. Consequently, the scale avoids the use of outdated language and avoids any reference to specific risk-taking behaviors. We developed the measure in a series of pilot studies in which we reduce the number of adjectives from 66 to 16. In the validation study, we tested the hypothesis that the measure would be positively related to sensation seeking as assessed by existing measures (i.e., SSS-V and the AISS) and the hypothesis that the measure would be positively related to multiple measures of risk-taking. We utilized Weber et al.’s (2002) Domain-Specific Risk-Taking Scale (DOSPERT), which assesses likelihood of risk-taking in five domains, and 17 questions from the Youth Risk Behavior Survey (YRBS; CDC, 2021), which asked participants to indicate how often they had engaged in specific risk-taking behaviors in the last 30 days.

We also explored how the present measure of sensation-seeking as well as the SSS-V and AISS were related to the Big Five personality traits. Eysenck (1990) suggested that sensation-seeking was a key aspect of extraversion. Zuckerman et al. (1978) observed positive correlations between sensation-seeking and extraversion in four samples drawn from England and the United States. Prior studies have observed relationships among sensation-seeking and extraversion and openness (Aluja et al., 2003; c.f., Highhouse et al., 2022). Those higher in extraversion or higher in openness also reported higher levels of sensation-seeking. De Vries et al. (2009) found that sensation-seeking was related to three of the Big Five personality traits. Higher levels of extraversion and openness were related to higher levels of sensation-seeking. Lower levels of conscientiousness were related to higher levels of sensation-seeking. Agreeableness and neuroticism/mood instability were not related to sensation-seeking. We tested the hypothesis that the present measure of sensation-seeking as well as the SSS-V and AISS would be similarly related to extraversion, openness, and conscientiousness, but unrelated to agreeableness and mood instability.

Method

**Participants**

The sample included 359 (188 men, 131 women, 2 transgender men, 2 nonbinary, 36 prefer not to respond or missing data) undergraduates who participated in the study for class credit. The average age of participants was 19.2 years (*SD* = 2.75). The sample was majority White (70%). The sample also included other groups: Native American (7%), Hispanic (6%), Black (6%), Asian (1%), and more than one category (10%).

**Procedure and Materials**

Following IRB approval of the study, we recruited participants through the Department of Psychology’s SONA system for two pilot studies in which adjectives associated with sensation-seeking were selected and the main study in which a small set of adjectives were tested. All studies were carried out online using a Professional license of Qualtrics. Data were collected between May and December 2021. Most of the students in the pilot studies were drawn from courses being taught online during the summer session. Students in the validation study were enrolled for fall semester on a campus for which most courses were taught in the traditional face-to-face courses during this time of the pandemic. Data analysis was carried out using IBM SPSS Statistics Version 26.

*Development Pilot Study A.* We followed Barry et al.’s (2011) recommendations for scale development, and first identified 66 adjectives with possible relationships with sensation seeking traits from prior research focused on adjectives related to personality traits (Goldberg, 1992). We identified adjectives semantically related to each of the four sensation seeking traits (i.e., thrill-and-adventure seeking, experience seeking, boredom susceptibility, and disinhibition) and adjective antonyms. We presented these adjectives for rating to a group of participants who were unaware of the goal of the research project. We asked an additional 106 participants to think of one matching each of four descriptions of someone who is a thrill-and-adventure seeker, a experience seeker, susceptible to boredom, and or likes to be out of control and then provide ratings for a list of adjectives indicating *how well each adjective might describe the person regarding the trait of \_\_\_\_\_.* We provided 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, and 7 = extremely like them*). Participants could also select a box the right indicating that they did not know the meaning of the word. We presented the following description of the four sensation seeking traits: thrill-and-adventure seeking - the type is of person who seeks out or enjoys experiences that involve danger (e.g., physical speed); experience seeking - the type of person who likes to seek out new experiences, especiallysensoryones (e.g. tastes, smells, sounds, visual scenes/images, or tactile/touch experiences); boredom susceptibility - the type is of person who dislikes repetition, daily routine, or activities that go on for a long time; and disinhibition - the type of person who enjoys and seeks out pleasurable experiences without restraint. The participants in this pilot study did not any other data collection related to this project. We computed the mean ratings for each adjective in each condition. We eliminated adjectives with ratings lower than or equal to 3.5 or below. We also eliminated adjectives when more than 10 participants indicated that they did not know the meaning of the adjective. Twenty-nine adjectives were eliminated, leaving 37 adjectives for further testing.

*Development Pilot Study B.* Using the same prompts and rating scale as in the pilot study, we asked an additional group of 73 participants (13 men, 51 women, 3 prefer not to disclose, and 6 missing data) to provide ratings for the 37 adjectives for each prompt. We calculated the mean rating for each adjective for each prompt condition. We identified 16 adjectives with a mean rating of 5.0 or above or 3.0 or below. Table 1 displays the mean ratings for the 16 adjectives initially selected for the Sensation Seeking Adjective Markers (SSAM) were *active, adventurous, boring, courageous, cowardly, curious, daring, excitable, fearful, fearless, fun-loving, pleasure-seeking, reckless, thrill-seeking, unadventurous*, and *wild*. Four items required reverse scoring (i.e., boring, cowardly, fearful, and unadventurous). We observed adequate internal consistency for the 16-item SSAM, as the Cronbach alpha was ɑ = .834. With an additional group of 33 additional participants, we found that the test-retest reliability for the SSAM was *r* = .71, *p* < .001, which qualifies as good (Fleiss, 1986).

*Validation Study.* Participants were asked to complete multiple measures of sensation-seeking, including the 16-item SSAM, the SSS-V and the AISS, two measures of risk-taking: the DOSPERT and selected questions about drug use from the YBRS, and demographic questions. We also included Saucier’s (1994) 40-item mini marker assessment of Big Five personality traits. Each set of questions was presented in separate blocks. The last two blocks were the YRBS and demographics, respectively. For the remaining blocks, the order was randomized for each participant. For the 16-item SSAM, participants were asked how well each of 16 adjectives (i.e., *active, adventurous, boring, courageous, cowardly, curious, daring, excitable, fearful, fearless, fun-loving, pleasure-seeking, reckless, thrill-seeking, unadventurous*, and *wild*) described them on a 7-point scale (*1 = extremely unlike me, 2 = very unlike me, 3 = moderately unlike me, 4 = neither like nor unlike me, 5 = moderately like me, 6 = very like me, and 7 = extremely like me*). We calculated the mean rating for the 16 items; higher scores reflect higher levels of sensation-seeking. We again observed adequate internal consistency (Cronbach ɑ = .83).

For the 40-item SSS-V (Zuckerman et al., 1978), participants chose which of a pair of statements described them best. There are eight pairs of statements for each of the four sensation-seeking traits: thrill and adventure seeking, experience seeking, boredom susceptibility, and disinhibition (e.g., *I like “wild” uninhibited parties* and *I prefer quiet parties with good conversation*). In prior research, the factors had internal consistency ranging from Cronbach ɑ = .56 (BS) to Cronbach ɑ = .82 (TAS) with an overall Cronbach ɑ = .80. In the present study, however, internal consistency ranged from ɑ = .53 (BS) to ɑ = .73 (TAS). The overall Cronbach ɑ = .78.

For the 20-item Arnett Inventory of Sensation Seeking (Arnett, 1994), participants indicate the extent to which an item describes them (e.g., *When I listen to music, I like it to be loud*.) on a 4-point scale (*1 = describes me very well,* 4=*does not describe me at all*). In prior research, the internal consistency for the overall scale was Cronbach ɑ = .70 (Arnett, 1996). In the present study, we observed sufficient internal consistency (ɑ = .70).

For Weber et al.’s (2002) 40-item Domain-Specific Risk-Taking Scale (DOSPERT), participants rated how likely they were to do the behavior described by the item on a 5-point scale (*1= very unlikely, 5 = very likely*). There were five domains of items: ethical risk-taking (e.g., *passing off someone else’s work as your own*), financial risk-taking (e.g., *betting a day’s income at a high-stake poker game*), health/safety risk-taking (e.g., *driving a car without wearing a seat belt*), recreation (*taking a skydiving class*), and social risk-taking (e.g., *speaking your mind about an unpopular issue in a meeting at work*)*.* The scores for each domain are summed with higher scores indicating greater likelihood risk-taking. Shou and Olney (2020) found that the overall Cronbach alphas across numerous studies ranged from .68 to .80. In the present study, we observed good internal consistency as the Cronbach alpha was ɑ = .89.

For the 17 questions from the Youth Risk Behavior Survey (YRBS; CDC, 2021), participants indicated how often in the past 30 days that they used alcohol, tobacco, other drugs, and engaged in risky sexual behavior. Previous versions of the questionnaire have been shown to be reliable (kappa = 61% - 100%) and is considered a valid measure of self-reported risk-taking (Brener, et al., 2003; CDC, 2013). Past studies indicate that internal consistency is high for each of the risk-taking categories assessed (ranging from .70 to .91; Popham et al., 2011). In the present study, we averaged the responses across the questions. Higher means reflected engaging in more risk-taking in the last 30 days. In the present study, we observed adequate internal consistency with a Cronbach alpha of .70.

We included Saucier’s (1994) 40-item mini-markers measure of Big Five personality traits. Participant judged how accurate each adjective in describing them on a 9-point scale (1 = extremely inaccurate, 9 = extremely accurate). The overall alpha coefficients of the brief scale are satisfactory, ranging from .76 to .86 (Saucier, 1994). In the present study, we observed the following internal consistencies: extraversion (Cronbach ɑ = .82), agreeableness (Cronbach ɑ = .84), conscientiousness (Cronbach ɑ = .81), mood instability (Cronbach ɑ = .68), and openness (Cronbach ɑ = .63).

Results

Thirty-one participants were eliminated from the dataset due to excessive missing data, leaving 328 participants (185 men, 130 women, and four other) in the dataset. Table 1 displays the inter-item correlations for the 16 items. We reduced the number of items in the SSAM from 16 to 7 (i.e., *adventurous,* *daring, excitable, fearless, pleasure-seeking, thrill- seeking,* and *wild*). We carried out an exploratory principal component analysis for the seven items. The results indicated that the seven items made up a single factor, explaining 48% of the variance with loadings ranging from 0.501 to .808. Table 2 displays these factor loadings. The seven items had adequate level of internal consistency, as the Cronbach alpha was ɑ = .82.

After confirming that that the data met the assumptions required for Pearson’s r, we carried out correlations to test the hypothesis that the SSAM would be positively correlated with other measures of sensation seeking (i.e., the SSS-V and AISS), the hypothesis that the SSAM would be positively correlated with measures of risk-taking (i.e., DOSPERT and 17 questions from the YRBS), and the hypothesis that the SSAM would not be related to agreeableness and conscientiousness. Table 3 displays these results. The results supported the hypotheses that the new measure of sensation-seeking would be positively related to the SSS-V [*r*(320) = .48, *p* < .001] and the AISS [*r*(323) = .32, *p* < .001]. The results also supported the hypotheses that the new measure would be related to the two measures of risk-taking: DOSPERT [*r*(324) = .37, *p* < .001] and YRBS [*r*(318) = .14, *p* = .013]. The results partially supported the hypothesis that the new measure of sensation-seeking would be related to three Big Five personality traits. We found that that only extraversion was positively related to the new measure of sensation-seeking, [*r*(322) = .40, *p* < .001]. Extraversion was significantly related to only one of the existing measures of sensation seeking: the SSS-V [*r*(320) = .13, *p* = .013] and the AISS [*r*(322) = .11, *p* = .052]. The existing measures of sensation-seeking were significantly related to agreeableness: SSS-V [*r*(320) = -.17, *p* = .003] and AISS [*r*(322) = -.19, *p* < .001] as well as conscientiousness: SSS-V [*r*(320) = -.21, *p* < .001] and AISS [*r*(322) = -.23, *p* < .001].

Discussion

The aim of the present study was to develop and validate a new measure for the trait of sensation seeking (i.e., the sensation-seeking adjective markers, SSAM) because existing measures have multiple shortcomings (e.g., outdated language, force choice formats, items that conflate personality with specific behaviors, as well as others). The final version of the SSAM is a 7-item adjective rating scale on which participants judge how well each adjective describes them. The new measure does not use 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 involves a single factor, has adequate internal consistency and good test-retest reliability. The results confirmed that the new measure was related to other measures of sensation-seeking (i.e., the SSS-V and AISS) and related to measures of risk-taking (i.e., DOSPERT and questions from the YRBS).

The results also showed that the new measure of sensation-seeking was related to extraversion, but not the other four Big Five personality traits (i.e., conscientiousness, openness, mood instability, and agreeableness). Extraversion was also related to the SSS-V and the AISS, which were found to be related to agreeableness and conscientiousness. These results contrast with prior research that found sensation seeking was related to extraversion and openness (Aluja et al., 2003) and other research that found sensation seeking was related to extraversion, conscientiousness, and openness (De Vries et al., 2009). More research is needed to explore further the relationships among Big Five personality traits, sensation-seeking and risk-taking. A research meta-analysis by Highhouse et al. (2022) examined 133 independent samples (N = 69,125) and concluded that risk-taking propensity is independent of Big Five personality traits. Due to the close relationship between risk-taking and sensation-personality traits, future research is needed to understand fully the relationships among sensation-seeking and Big Five personality traits.

Several limitations are worth noting. First, the present study relied on self-report measures, which can be influenced by biases, such as social desirability. Some participants may have viewed high sensation-seeking traits and related behaviors to be socially undesirable and have underestimated their levels of the traits and behaviors. A second limitation is the sample was drawn from a population of undergraduates at a public university in the central region of the United States. Lastly, the data were collected during May and November 2021, a period in which the Covid 19 pandemic was a concern worldwide. It is unclear whether this major stressor might have affected participants’ views on sensation seeking and risk-taking that may have influenced how they responded to the questions in the study.

Future research is also needed to determine whether the new measure generalizes to populations beyond those tested in the present research. Other populations, such as teenagers, may have higher levels of sensation seeking personality traits and risk-taking than others. Samples drawn from adults who are not enrolled in institutions of higher education may yield different results, as they may be affected by higher or lower levels of social desirability bias. Large scale studies would be useful in exploring how personality traits (i.e., sensation-seeking personality and Big Five) are related to risk-taking across the lifespan. It is possible that different measures of personality traits, risk-taking propensity, and risk-taking behavior may vary in their effectiveness is assessing these variables for different age groups.

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

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-](https://doi.org/10.1016/0191-8869(90)90035-P) [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

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

Barry, A. E., Chaney, E. H., Stellefson, 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.

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.

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>

Breivik, 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

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>

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.* University of Minnesota Press.

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-](https://doi.org/10.1037/0021-9010.78.1.98)

[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-](https://doi.org/10.1111/j.1360-0443.1993.tb02061.x)

[0443.1993.tb02061.x](https://doi.org/10.1111/j.1360-0443.1993.tb02061.x)

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

De Vries, R. E., de Vries, A., & Feij, J. A. (2009). Sensation seeking, risk-taking, and the

HEXACO model of personality. *Personality and Individual Differences, 47*(6), 536-540. https://doi.org/10.1016/j.paid.2009.05.029

Eysenck, H. J. (1990). Biological dimensions of personality. In L. A. De Pervin (Ed.), Handbook

of personality: theory and Research (pp. 246). Guilford.

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](https://psycnet.apa.org/doi/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](https://psycnet.apa.org/doi/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](https://doi.org/10.1177%2F009385487600300402)

Fleiss, J. L. (1986) *The design and analysis of clinical experiments*. Wiley.

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>

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>

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>

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](https://doi.apa.org/doi/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>

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>

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>

Highhouse, S., Wang, Y., & Zhang, D. C. (2022). Is risk propensity unique from the big five factors of personality? a meta-analytic investigation. *Journal of Research in Personality, 98*, 104206. https://doi.org/10.1016/j.jrp.2022.104206

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-](https://doi.org/10.1016/0191-8869(93)90173-Z)

[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>

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-seekingamong 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>

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>

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](https://psycnet.apa.org/doi/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>

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-](https://psycnet.apa.org/doi/10.1037/0022-3514.61.4.614)

[3514.61.4.614](https://psycnet.apa.org/doi/10.1037/0022-3514.61.4.614)

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-](https://doi.org/10.1016/0191-8869(85)90068-6)

[8869(85)90068-6](https://doi.org/10.1016/0191-8869(85)90068-6)

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

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-](https://doi.org/10.1016/S0092-6566(03)00067-9)

[6566(03)00067-9](https://doi.org/10.1016/S0092-6566(03)00067-9)

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). Preliminarydevelopment of asensation

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

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>

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>

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

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>

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](https://psycnet.apa.org/doi/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](https://psycnet.apa.org/doi/10.1037/0022-3514.39.5.806)

Wiederman, M. W., & Hurd, C. (1999). Extradyadic involvement during dating. *Journal of*

*Social and Personal Relationships, 16,* 265-274.

[https://doi.org/10.1177/0265407599162008](https://doi.org/10.1177%2F0265407599162008)

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

Zuckerman, M. (1971). Dimensions of sensation seeking. *Journal of Counseling and Clinical*

*Psychology, 36*, 45-52.

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://psycnet.apa.org/doi/10.1016/0191-8869(83)90150-2)

Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeki*ng. 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-](https://doi.org/10.1016/0191-8869(95)00195-6)

[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](https://psycnet.apa.org/doi/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>

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](https://psycnet.apa.org/doi/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., 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., 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., & 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

**Research Compliance Statement**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent**

Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest Statement**

The authors have no conflict of interest to report in relation to the research in this report.

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Table 1. *Correlations for the 16 Adjectives Piloted for the New Sensation-Seeking Measure.*

Variables 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. .15

1. Pleasure-seeking ---

2. Fearless  **.28\*\*\*** ---

3. Courageous **.16\*\* .58\*\*\*** ---

4. Active .07 **.34\*\*\*** .**51**\*\*\* ---

5. Excitable **.18\*\*\* .28\*\*\*** **.39\*\*\*** .**45**\*\*\* ---

6. Thrill-seeking .**23**\*\*\* .**45**\*\*\* .**36**\*\*\* .**36**\*\*\* .**44**\*\*\* ---

7. Fearful .02 -.**54**\*\*\* -.**20**\*\*\* -.**15**\*\* -.09 -.09 ---

8. Reckless .**24**\*\*\* .**21**\*\*\* .**12**\* -.03 .10 .**36**\*\*\* .04 ---

9. Cowardly -.01 -.**20**\*\*\* .**31**\*\*\* -.**26**\*\*\* -.**16**\*\* -.**11**\* .**35**\*\*\* -.**24**\*\*\* ---

10. Daring .**28**\*\*\* .**45**\*\*\* .**42**\*\*\* .**27**\*\*\* .**27**\*\*\* .**52**\*\*\* -.**32**\* .**45**\*\*\* .09 ---

11. Adventurous .**22**\*\*\* .**43**\*\*\* .**45**\*\*\* .**38**\*\*\* .**38**\*\*\* .**57**\*\*\* -.04 .**24**\*\*\* .10 .**46**\*\*\* ---

12. Boring -.**14**\* -.**20**\*\*\* -.**26**\*\*\* -.**20**\*\*\* -.**32**\*\*\* -.**31**\*\*\* .**18**\*\* .02 -.**34**\*\*\* .**16**\*\* -.**23**\*\*\* ---

13. Curious .**26**\*\*\* .01 .05 .04 .10 .**12**\* .**12**\* .06 -.05 .**23**\*\*\* .**23**\*\*\* .xx ---

14. Wild .**29**\*\*\* .**30**\*\*\* .**31**\*\*\* .**18**\*\* .**33**\*\*\* .**49**\*\*\* -.06 .**53**\*\*\* .04 .**53**\*\*\* .**40**\*\*\* .xx .xx ---

15. Fun-loving .**17**\*\* .07 .**19**\*\*\* .**20**\*\*\* .**43**\*\*\* .**23**\*\*\* -.05 .10 -.**18**\*\* .**14**\* .**25**\*\*\* .xx .xx .xx ---

16. Unadventurous -.**16**\*\*\* -.**27**\*\*\* -.**33**\*\*\* -.**36**\*\*\* -.**32**\*\*\* .**40**\*\*\* -.**14**\* -.05 .**31**\*\* -.**30**\*\*\* .**45**\*\*\* .xx .xx .xx ---

Note: \**p* < .05; \*\**p* < .01; \*\*\**p* < .001

Table 2. *Factor Loadings for the 7-item SSAM* *from Principal Component Analysis*

Item Factor Loading

Adventurous .750

Daring .768

Excitable .610

Fearless .683

Pleasure-seeking .501

Thrill-seeking .808  
Wild .722

Table 3. Summary of Correlation Analyses.

Variables 1. 2. 3. 4. 5. 6. 7. 8. 9.

1. 7-item SSAM --
2. SSS-V **.48\*\*\*** --
3. AISS **.32\*\*\* .39\*\*\*** --
4. DOSPERT **.37\*\*\* .47\*\*\* .49\*\*\*** --
5. YRBS **.14\* .26\*\*\* .36\*\*\* .26\*\***
6. Extraversion **.40\*\*\* .13\*** .11 **.16\*\*** .10
7. Agreeableness -.01 **-.17\* -.19\*\*\* -.22\*\*\*** **-.11\*** **.19\*\*\***
8. Conscientiousness .07 **-.21\*\*\* -.23\*\*\* -.15\*\*** -.10 **.25\*\*\*** **.21\*\*\***
9. Openness .10 .03 .11 .03 -.06 .03 **.20\*\*\*** **.18\*\***
10. Mood Instability .03 .05 .04 **.14\*** .08 **-.22\*\*\*** **-.15\*\*** **-.25\*\*\*** -.09

Mean 4.92 16.82 54.22 106.17 27.79 5.58 6.33 6.26 6.43 4.50

*SD* .97 5.99 8.18 28.31 12.39 1.39 .94 1.25 .98 1.16

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Note: \**p* < .05; \*\**p* < .01; \*\*\**p* < .001