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"Hit Me, Maybe, One More Time": Brief measures of impulsivity and sensation seeking and their prediction of blackjack bets and sexual promiscuity ☆

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ABSTRACT

We sought to construct an efficient, reliable, and valid self-report measure of impulsivity and sensation-seeking. We used item response theory to identify the 8 best items (ImpSS-8) from the 19-item Impulsivity and Sensation-Seeking Scale (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993; Study 1). The ImpSS-8 interacted with a manipulated ego threat to predict blackjack bets: in a weak situation (no ego threat), individual differences were strong (a positive ImpSS-8–bets relationship); in a strong situation (ego threat), individual differences were weak (no relationship; Study 2). The ImpSS-8's 4-item impulsivity and sensation-seeking subscales related differentially to the Balloon Analogue Risk Task (Study 2) as well as trait measures of openness and conscientiousness, hostility and physical aggression, and sexually promiscuous attitudes and timing (Study 3).

Introduction

Individual differences in impulsivity and sensation seeking shape important decisions. For example, some people are more likely than others to text while driving (impulsivity) or go skydiving (sensation seeking). Though related, impulsivity and sensation seeking are not the same. Impulsivity involves acting without considering future consequences, whereas sensation seeking involves pursing novel, stimulating, and risky experiences (Zuckerman, 1994). For example, although texting while driving is an impulsive behavior, it would not be considered sensation seeking. In contrast, skydiving is a sensation seeking behavior that is not impulsive because forethought and preparation are essential for successful parachuting. Nevertheless, some behaviors such as gambling may involve both, especially when people have budgeted neither time nor money toward gambling, yet gamble anyway (impulsivity), and when they get thrills from winning (sensation seeking). Thus, impulsivity and sensation seeking are related but distinct concepts.

Measuring impulsivity and sensation seeking: when less is more

A popular self-report measure of impulsivity and sensation seeking is the 19-item Impulsivity and Sensation Seeking (ImpSS) scale (Zuckerman et al., 1993). As of March 2012, it has been cited between 432 (Web of Science) and 693 (Google Scholar) times. Although many social science researchers have adopted the ImpSS (e.g., psychologists, sociologists, health scientists), a shorter measure may be more appropriate for settings that require efficiency, such as daily-diary/experience-sampling studies, mass-testing/prescreening questionnaires, and research with special populations (e.g., at-risk youth, clinical samples). Shorter measures can reduce respondent fatigue, which may be especially relevant when assessing impulsivity. Brief measures of longer, established measures have enjoyed recent success, including brief measures of personality (Donnellan, Oswald, Baird, & Lucas, 2009; Gosling, Rentfrow, & Swann, 2003; Rammstedt & John, 2007), aggression (Bryant & Smith, 2001; Webster et al., 2012), narcissism (Ames, Rose, & Anderson, 2005), and the Dark Triad (Jonason & Webster, 2010). Given recent increasing demand for efficient measures, we believe researchers would benefit from a brief version of the ImpSS. Although other brief measures of sensation seeking have been proposed (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002; Stephenson, Hoyle, Palmgreen, & Slater, 2003), to our knowledge, the present research is the first to incorporate both impulsivity *and* sensation seeking items, *or* to use item response theory (IRT).

The present research

The current investigation had three goals. The first goal was to construct brief, reliable, and valid measures of impulsivity and

☆ Different analyses of some of the data presented here, which are based on data from Crysel, Crosier, and Webster (in press). This research was presented at the 32nd annual meeting of the Society for Judgment and Decision Making in Seattle, Washington (November, 2011).

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sensation seeking using the ImpSS (Studies 1 and 2). The second goal was to examine whether impulsivity and sensation seeking would predict risky traits and behaviors such as gambling, aggression, and sexual promiscuity (Studies 2 and 3). The third goal was to test whether an experimentally manipulated ego threat would interact with impulsivity and sensation seeking to predict gambling behavior (Study 2). To these ends, we began by using IRT to identify the "best" ImpSS items in Study 1.

Study 1: Developing brief measures using item response theory

Method

Participants

Participants were 1097 undergraduates (36% men, 64% women) at a large public research university in the southeastern U.S. who received course credit for participating (age range: 17–24 years, *Mdn* = 18.0, *M* = 18.5, *SD* = 1.0).

Measures and procedure

Participants completed the 19-item ImpSS (Zuckerman et al., 1993; Table 1) as part of an online pre-screening session for introductory psychology students. Response scales were binary; participants chose "true" (1) or "false" (0) for each item. Responses were averaged; higher scores reflected more impulsivity and sensation seeking.

Results and discussion

Descriptive statistics

Tables 1 and 2 show item- and scale-level descriptive statistics for the ImpSS and the new scales based on it (respectively), which we describe below.

Exploratory factor analysis

Using Mplus 6 (Muthén & Muthén, 2010), we conducted an exploratory factor analysis (EFA) with two factors to distinguish between impulsivity (7 items) and sensation seeking items (12 items; see Table 1 for loadings and subscales). Based on this EFA, we ran separate IRT models on each subscale.

Item response theory

We used IRT to refine the ImpSS by identifying the "best" items within each subscale (for an IRT primer, see Morizot, Ainsworth, & Reise, 2007; for examples, see Ackerman, Donnellan, & Robins, 2012; Fraley, Waller, & Brennan, 2000). We ran two-parameter logistic models (2PLMs; Morizot et al., 2007) using Mplus 6 (Muthén & Muthén, 2010). See Table 1 for the discrimination (α) and difficulty (β) parameters. Item *discrimination* represents the degree to which an item can differentiate between people with similar levels of the same latent trait; higher αs are desirable. Item *difficulty* reflects the amount of the latent trait necessary to have a 50% chance of endorsing the item; a wide range of βs is desirable. We used the criteria described below to choose the best items from each subscale.

We sought to choose the four best items for each subscale. Why four? Given the ImpSS's binary response format, four items is arguably the minimum number of items one can use to preserve range and normality. For example, given the ImpSS's binary response format, the possible response ranges for a two-, three-, or four-item abbreviated version are three, four, and five, respectively. Whereas a response range of only three might be insufficient, a response range of five can show individual differences and produce reasonably normal error distributions in analyses

Table 1
Items, descriptive statistics, IRT results, and exploratory and confirmatory factor analysis loadings for impulsivity and sensation seeking scales.

	Item	Descriptives		EFA results			IRT results		CFAs	
		M	*SD*	1	2	Sub.	α	β	1	2
1.	I tend to begin a new job with much advance planning on how I will do it	0.34	0.47	0.47	0.11	Imp	0.56	0.82		
2.	**I usually think about what I am going to do before doing it**[a]	0.17	0.37	0.86	−0.12	Imp	1.18	1.27	0.64	0.72
3.	**I often do things on impulse**	0.42	0.49	0.74	0.26	Imp	2.12	0.22	0.88	0.73
4.	**I very seldom spend much time on the details of planning ahead**	0.30	0.46	0.64	0.02	Imp	0.80	0.83	0.59	0.52
5.	I like to have new and exciting experiences and sensations even if they are a little frightening	0.84	0.37	−0.25	0.90	SS	1.36	−1.24		
6.	Before I begin a complicated job, I make careful plans[a]	0.22	0.42	0.73	−0.16	Imp	0.76	1.25		
7.	I would like to take off on a trip with no pre-planned or definite routes or timetable	0.58	0.49	−0.01	0.56	SS	0.66	−0.36		
8.	**I enjoy getting into new situations where you cannot predict how things will turn out**	0.55	0.50	0.09	0.69	SS	1.03	−0.17	0.72	0.69
9.	**I like doing things just for the thrill of it**	0.77	0.42	−0.00	0.83	SS	1.69	−0.85	0.80	0.72
10.	I tend to change interests frequently	0.45	0.50	0.27	0.36	SS	0.50	0.29		
11.	I sometimes like to do things that are a little frightening	0.76	0.43	−0.15	0.81	SS	1.14	−0.94		
12.	I will try anything once	0.51	0.50	0.00	0.55	SS	0.66	−0.60		
13.	I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement	0.53	0.50	0.07	0.58	SS	0.76	−0.12		
14.	**I sometimes do "crazy" things just for fun**	0.66	0.47	0.17	0.65	SS	1.03	−0.58	0.73	0.74
15.	**I like to explore a strange city or section of town by myself, even if it means getting lost**	0.43	0.50	0.10	0.53	SS	0.70	0.29	0.56	0.65
16.	I prefer friends who are excitingly unpredictable	0.65	0.48	0.17	0.54	SS	0.76	−0.60		
17.	**I often get so carried away by new and exciting things and ideas that I never think of possible complications**	0.33	0.47	0.46	0.42	Imp	0.87	0.66	0.73	0.67
18.	I am an impulsive person	0.34	0.48	0.67	0.39	Imp	1.74	0.46		
19.	I like wild and uninhibited parties	0.40	0.49	0.26	0.38	SS	0.52	0.54		

Note: EFA = exploratory factor analysis; 1 and 2 refer to factors. Sub. = subscale. Imp. = impulsivity (seven items). SS = Sensation seeking (12 items). IRT = item response theory results within each subscale. α = Discrimination. β = Difficulty. **Bold** = selected ImpSS-8 items; those with the highest discrimination parameters within each subscale's difficulty parameter quartile; this assured selection across a wide spectrum of latent trait. CFAs = confirmatory factor analyses for Studies 1 (N = 1,096) and 2 (N = 325); two-factor model loadings are shown.

[a] Reverse-scored item.