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Sensation seeking and involvement in chess

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Abstract

The present study examined the relationship between scores on the Sensation Seeking Scale [SSS; Zuckerman, M. (1979). *Sensation seeking; beyond the optimal level of arousal*. Hillsdale, NJ: Erlbaum.] and involvement in chess within a sample of 112 college students. Students who reported having played chess, and those with more chess experience, evidenced higher scores on both the Total SSS and the Thrill and Adventure Seeking (TAS) subscale, effects which were independent of gender. Higher scores on Disinhibition were also associated with greater chess experience. The present results provide further support for the validity of the TAS scale with regard to involvement in sports, and suggest that more attention be directed to the link between sensation seeking and involvement in low-risk, but theoretically relevant, sporting activities.

Keywords: Chess; Games; Sensation Seeking; Sports

> Chess is, as every one knows, a mimic battle fought upon a field of sixty-four squares with pieces moved according to an elaborate system having powers suggestive of a variety of fighting units. Cleveland (1907, p. 270).

A number of studies have demonstrated that individuals engaged in high-risk sports score higher on various subscales of Zuckerman's (1979) Sensation Seeking Scale (SSS; for reviews, see Jack & Ronan, 1998; Zuckerman, 1983, 1994). The list of sports associated with sensation seeking (e.g. skydiving, hang-gliding, scuba diving, kayaking, skiing, and mountaineering) suggests that physically taxing, exciting, and risky sporting activities are the ones that appeal to the high sensation seeker. While consistent with Zuckerman's (1994) definition of sensation seeking, this

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collection of findings does not seem to fully capture the richness of the sensation seeking construct.

Zuckerman (1994) defines sensation seeking as "...a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences and the willingness to take physical, social, legal, and financial risks for the sake of such experiences." (p. 27). Because risky behavior is more likely to result in significant personal and/or social harm, it is understandable that much of the research on sensation seeking has focused on such risky activities. At the same time, it seems important to recognize that Zuckerman's definition does not imply that sensation seekers *must* take physical risks to meet their needs, only that they are *willing* to take such risks to meet their needs. Indeed, as Zuckerman (1994) notes, sensation seekers appear to be attracted to high-risk sports due to the sensations they provide, rather than their inherent risk. The primary importance of exciting sensations, rather than risk per se, suggests that sensation seeking might also be related to involvement in challenging and stimulating, yet less physically risky sports.

The present study tests this general hypothesis by examining the relationship between sensation seeking and involvement in chess. As Zuckerman (1983) has noted, any attempt to predict a link between sensation seeking and involvement in a particular sport must involve an analysis of the sport in question, in order to determine whether the sport possesses characteristics which would likely attract or repel sensation seekers. To that end, we briefly review the sensation seeking construct, and subsequently consider whether chess might have any appeal to the high sensation seeker.

Originally developed as an individual difference measure which might predict differential response to sensory deprivation (Zuckerman, 1979), the SSS evolved into a multi-dimensional measure, consisting of four interrelated subscales. The subscales, each comprised of 10 forced-choice items, include *boredom susceptibility* (BS; an aversion to repetitive and/or boring tasks and/or people), *disinhibition* (DIS; seeking release and/or disinhibited social behavior via alcohol, partying, sex etc.), *experience seeking* (ES; pursuit of an unconventional lifestyle via unplanned activities and/or hallucinatory drugs), and *thrill and adventure seeking* (TAS; seeking unusual sensations via exciting and risky sporting activities). A Total SSS score is also frequently employed in studies of sensation seeking. Of these scales, the DIS, TAS, and Total scales tend to show the highest internal reliability, factor replicability, and test–retest reliability, with ES to some degree, and BS to a greater degree, demonstrating somewhat lower replicabilities and reliabilities (Zuckerman, 1979).

While much research exists on the relationship between sensation seeking and involvement in risky sports, little is known about its relation with less risky sports. To our knowledge, no study has examined its relationship with involvement in chess. How might sensation seeking be related to involvement in chess?

On the surface, chess may not appear to be a sensation seekers' sport. The game requires a tremendous amount of concentration, frequently over extended periods of time. Moreover, during the course of a game, chess players are likely to remain relatively inactive as they consider their next move, or wait for their opponent to move, and neither player is likely to sustain any major injuries. Thus, the long and relatively inactive game of chess may potentially be aversive to those who (1) get bored easily, (2) would prefer to act in a disinhibited manner, and/or (3) enjoy thrilling activities like skydiving.

A re-examination of the game of chess, however, suggests that various elements of the game may appeal to the high sensation seeker. To begin, chess is, as Cleveland (1907) notes, a "mimic battle," which is likely to be viewed as an exciting opportunity to demonstrate dominance. In addition, while often lengthy, chess requires a level of concentration that can be very stimulating, given the many possible moves and counter-moves one can consider. On a related note, players who cannot predict what their partner might do may make moves that entail some eventual risk, a feature which might add to the excitement of the game. Finally, while perhaps not as important, the game pieces themselves are often artistic and of intricate design, and, as Cleveland notes, move according to an "elaborate system." In sum, the game of chess may have a certain appeal to individuals who enjoy new, varied, and unpredictable sensations, potential risk, and the thrill of capturing the king.

At least two studies investigating involvement in chess lend some initial empirical support to the hypothesis that sensation seekers should be attracted to the game of chess. First, more competitive chess players have been shown to score higher on unconventional thinking and paranoia (Avni, Kipper, & Fox, 1987), both of which in turn have been shown to relate to sensation seeking (Zuckerman, 1979). Second, testosterone levels rise after men win a game of chess, especially when the game is close (Mazur, Booth, & Dabbs, 1992), which suggests that winning a game of chess is an exciting opportunity to demonstrate dominance. Excitement seeking, by definition, is fundamentally related to sensation seeking, and previous research has revealed that sensation seekers score higher on measures of dominance, capacity for status, and aggression (Zuckerman, 1979, 1994). Taken together, our analysis of the game itself, combined with the literature on involvement in chess, suggest that sensation seekers are likely to play chess.

Having forwarded that general hypothesis, an important question remains. Given their need for varied and new sensations, it is possible that sensation seekers may simply be more likely to try chess, but less likely to persist at the game (cf. Rowland, Franken, & Harrison, 1986). Our analysis leads us to believe that this is not characteristic of the game of chess. Rather, given the nature of the game, we believe that sensation seekers will be more likely to have tried chess (*Hypothesis 1*) and to have pursued chess to a greater degree (*Hypothesis 2*).

1. Method

1.1. Participants and procedure

Introductory psychology students (42 men, 69 women, one unidentified; median age = 19), most of whom were Caucasians (85%), participated in exchange for extra credit. As part of a larger study, participants completed Zuckerman's (1979) SSS — Form V. With the exception of the BS subscale ($\alpha = 0.45$), all remaining scales, including the Total SSS, demonstrated acceptable reliabilities (ranging from 0.69 for ES to 0.81 for the Total SSS). In addition to completing the SSS, participants indicated whether they had ever played chess, and if so, what their (subjectively judged) level of chess experience was using three categories labeled *beginner* ($n = 65$), *intermediate* ($n = 17$), or *expert* ($n = 2$). Given the small number of experts, we combined the intermediate and expert groups into a group of *more advanced* players ($n = 19$).

2. Results

2.1. Gender differences in sensation seeking and involvement in chess

Initial analyses revealed that men scored higher than women on the Total SSS, and on each of the SS subscales (all Ps < 0.05). Further analyses revealed a relationship between gender and chess playing (no vs. yes), χ^2 (1) = 13.12, $P < 0.001$, and between gender and level of chess playing experience (beginner vs. more advanced), χ^2 (1) = 4.26, $P < 0.05$. In both analyses, relative to women, men reported having had more experience with chess. Whereas 95% of men reported having played chess, only 65% of women reported having played chess. Likewise, whereas 33% of men reported being at a more advanced level of chess playing experience, only 14% of women reported being at a more advanced level of chess playing experience. Given that gender was related to both involvement in chess and sensation seeking, gender was used as a covariate in the logistic regression analyses reported below, so as to eliminate gender as a confounding variable in the relationship between sensation seeking and involvement in chess.

2.2. Sensation seeking and involvement in chess

To assess the relationship between sensation seeking and involvement in chess, we conducted a series of logistic regressions. While ANOVAs comparing the various groups on the SS subscales would also have been possible, such analyses would not have allowed us to evaluate the unique contribution of each SS scale to involvement in chess, an arguably important piece of information, given the inter-correlation between the various SS subscales. Hence, we opted instead to conduct logistic regressions. First, we regressed chess playing (no = 1, yes = 2) and chess experience (beginner = 1, more advanced = 2), respectively, on gender and the Total SS score. Second, we regressed chess playing and chess experience, respectively, on gender and the four SS subscales.

The first set of analyses revealed that those scoring higher on the Total SSS were more likely to have played chess ($B = 0.11$, $Wald = 4.23$, $P < 0.05$; Non-Player's $M = 14.14$; Chess Player's $M = 17.05$)[1] and were more likely to report being at a more advanced level of chess experience ($B = 0.15$, $Wald = 6.58$, $P < 0.01$; Beginner's $M = 16.49$; More Advanced Player's $M = 20.87$). The second set of analyses, using the SS subscales, revealed one significant relationship: those scoring high on TAS were more likely to have played chess ($B = 0.31$, $Wald = 6.91$, $P < 0.01$; Non Player's $M = 5.64$; Chess Player's $M = 7.40$). When entered as a set, none of the SS subscales predicted chess experience (all Ps > 0.19). However, four additional exploratory logistic regressions, using each SS scale individually, with gender as a covariate, revealed that higher scores on both DIS ($B = 0.26$, $Wald = 4.80$, $P < 0.05$; Beginner's $M = 2.38$; More Advanced Player's $M = 3.90$) and TAS ($B = 3.09$, $Wald = 3.76$, $P = 0.05$; Beginner's $M = 7.28$; More Advanced Player's $M = 8.15$) were associated with greater chess experience.

[1] Mean sensation seeking scores in parentheses are adjusted means for the respective groups after having controlled for gender.

3. Discussion

The present results reveal that sensation seekers are attracted to the game of chess. Those scoring high on the Total SSS were more likely than those scoring low to have tried chess (Hypothesis 1), and to have had more experience with the game (Hypothesis 2). Our analysis of the SS subscales suggests that the primary determinants of such involvement include a desire to seek unusual sensations via exciting and oftentimes risky activities (i.e. TAS), and a tendency to act in a disinhibited manner (i.e. DIS). As discussed below, the present study supports previous research on involvement in chess, extends work on the relationship between sensation seeking and involvement in sports, and raises several interesting questions for future research.

By one analysis, chess could be viewed as a long, drawn-out, inactive game, which offers little opportunity for thrills and adventure. Previous research, and our own analysis of the game, however, suggested that chess may serve as an exciting opportunity for experiencing relatively novel experiences and demonstrating dominance. That those scoring high in sensation seeking were attracted to chess, and reported more experience with chess, is consistent with past work demonstrating that chess players score higher on unconventional thinking and paranoia (Avni et al., 1987), both of which are linked with sensation seeking. Our findings are also consistent with recent research indicating that winning a game of chess is associated with a rise in testosterone (Mazur et al., 1992), suggesting that winning a game of chess corresponds to an experience of excitement and dominance, both of which are presumably attractive to those scoring high in sensation seeking.

In the present study, higher scores on the TAS subscale were associated with an increased likelihood of having tried chess and greater chess experience, providing further evidence that chess is an exciting game. Higher scores on the DIS subscale were also associated with greater chess experience, though they were not associated with an increased probability that people had tried chess.

It is interesting, and arguably important, that scores on the TAS subscale predicted involvement in chess, because the content of items on the TAS deals exclusively with high-risk sports (e.g. skiing, mountain climbing, parachuting, etc.). Considering the content of the TAS items, Zuckerman (1983) has posed an important question, namely, ''How can we therefore claim that we are measuring anything more than a specific trait involving (in the case of TAS) an attraction to risky sports or activities?'' (p. 286). Assuming that chess does not qualify as a high-risk sport in the traditional sense of the term, the present results provide support for the claim that TAS may, indeed, be tapping more than an exclusive attraction to high-risk sports. Our findings help to provide further evidence for the validity of the TAS scale, beyond its overlap with high-risk sports, and suggest that researchers interested in involvement in low-risk sports may wish to reconsider the importance of the sensation seeking construct.

Increased attention to the possible link between sensation seeking and involvement in low-risk sports has both theoretical and practical implications. First, on a theoretical level, recognizing that sensation seeking can predict involvement in low-risk sports like chess may aid in better predicting involvement in other low-risk sports, assuming such sports have characteristics which are theoretically attractive to sensation seekers. As Zuckerman (1983) notes, links between any given sport and sensation seeking should be based on an analysis of the sport in question. Second, on a practical level, the link between TAS and involvement in chess suggests that, while perhaps

not as exciting as parachute jumping, chess offers an opportunity to meet the needs of a high sensation seeker via less risky, and perhaps more cognitively beneficial, routes. One interesting question, which could serve as the basis for a future study, is whether chess is perceived as an exciting or a dull sport. To the extent that individuals misperceive chess as a relatively unexciting game, they may prematurely dismiss involvement in a sport which could serve their sensation seeking needs. Of course, it is possible, and entirely consistent with our findings, that nature will simply take its course, encouraging high sensation seekers to try a variety of new sports including chess, and once involved, to find that the rewards meet their needs.

Before closing, we wish to discuss several limitations of the present study and suggest a number of possible directions for future research. First, because we asked participants to self-classify into one of three broad categories of chess experience, and because our sample did not include many "expert" chess players, it would be appropriate to extend these results by sampling individuals with a broader range of chess playing experience, and to gauge chess experience with more universally accepted criteria (e.g. ranking). Albeit exploratory, an examination of our two expert chess players, who both scored higher than the intermediate group on boredom susceptibility, disinhibition, experience seeking, and the Total SSS (Ps < 0.05 using a Tukey test), suggests that a broader sampling of chess players may reveal the importance of additional dimensions of sensation seeking beyond TAS and Dis. Second, while suggesting some possible mechanisms linking sensation seeking and involvement in chess, the present results leave open the question of exactly which elements of the game of chess specifically attract those who score high on TAS and Dis. Accordingly, future research might wish to examine such mechanisms. Finally, the present results do not directly address whether high sensation seekers are more or less capable at chess. High sensation seekers' greater self-classification into the more advanced level suggests that they probably are more capable, but it would be interesting to test that hypothesis more directly in order to better understand the precise mechanisms which may potentially be involved.

In conclusion, the present study, in addition to contributing to the literature on sensation seeking and involvement in sports, would seem to point to a number of interesting avenues for future research on the relationship between various dimensions of sensation seeking and involvement in low-risk sports. Beyond additional research on involvement in chess, it would be interesting, for example, to explore whether sensation seekers are more or less attracted to certain video games, and if so, whether arousal may serve as a mediating factor in the relationship between sensation seeking and attraction to certain video games. It would also be interesting to examine whether sensation seekers are, like highly aggressive individuals, more likely to translate their experience with violent video games into real-life aggression (cf. Anderson & Dill, 2000). Given the link between sensation seeking and aggression (Zuckerman, 1979, 1994), this would seem a plausible hypothesis.

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