How Sensation Seeking provides a common basis for functional and dysfunctional outcomes

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**Abstract**

This research determines if Mastery Goal Orientation mediates Sensation Seeking in the prediction of functional performance and if Sensation Seeking directly predicts dysfunctional behavior. Using two different measures of Sensation Seeking, a sample of full-time Australian workers was used to test the proposed learning mechanism in the prediction of supervisor rated work outcomes, self-reported work outcomes, and self-reported dysfunctional behavior. As predicted, mediation and suppression analyses provided strong support for the proposed model but with just one of the measures of Sensation Seeking. It is concluded that this mechanism of learning has much to offer our understanding of functional and dysfunctional outcomes.

**1. Introduction**

There is a substantial literature on Sensation Seeking and related traits and their relationship to dysfunctional (Digman, 1990) or rash behavior such as attention deficit disorder, alcoholism, criminality, delinquency, and poor job performance (e.g., Barkley, 1997; Eysenck & Eysenck, 1970; Levine & Jackson, 2004; McAlister, Pachana, & Jackson, 2005; Reio & Sanders-Reio, 2006; Sher & Trull, 1994). The consistent message is that high Sensation Seeking is related to many dysfunctional behaviors and should not be encouraged.

The Hybrid Model of Learning in Personality (Jackson, 2005, 2008a, summarized in 2009a) is designed to combine biological, socio-cognitive and experiential perspectives of personality. How each perspective is captured is described by Jackson, Hobman, Jimmieson and Martin (2009). In this model, Sensation Seeking is a drive for exploratory and appetitive learning opportunities. Functional learning occurs when Sensation Seeking is re-expressed through one or more socio-cognitive constructs such as Mastery Goal Orientation. Dysfunctional learning occurs when Sensation Seeking is directly expressed (O'Connor & Jackson, 2008). This kind of model has general conceptual similarities to earlier models of indirect effects presented by Elliot and Thrash (2002) and Humphries and Revelle (1984). The aim of the current research is to test this proposed learning mechanism using full-time workers across a spectrum of functional and dysfunctional work related outcomes.

Zuckerman (1994, p. 27) describes Sensation Seeking as a biosocial “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 experience”. Considerable evidence suggests that Sensation Seeking has a particularly strong heritability (Pickering, 2004) and is related to levels of dopamine, serotonin and cortisol (Davids, Zhang, Tarazi, & Baldessarini, 2003; Di Chiara, 1995; Dolan & Anderson, 2003). Moreover, Sensation Seeking is central to many theoretically based personality taxonomies (e.g., Cloninger, Svrakic, & Przybeck, 1993; Zuckerman, 1978). Sensation Seeking is widely operationalized as Zuckerman's Sensation Seeking Scale (Z-SSS; Zuckerman, 1978). The Z-SSS is generally concerned with dysfunction through its focus on thrill-seeking, risky and adventurous recreational pursuits, seeking new experiences (achieved through travel, drugs, music, art, and an unconventional style of life) and social disinhibition (through drinking, partying, and a variety of sexual experiences). Arnett (1994) and Roth, Hammelstein, and Brähler (2009) argue the Z-SSS provides just one viewpoint concerning the measurement...
of Sensation Seeking because it tends to focus on dysfunctional behavioral outcomes. It is therefore unsurprising that Sensation Seeking has rarely been proposed in the applied psychology literatures as a predictor of positive outcomes such as work performance. Instead, these literatures tend to focus on personality in terms of models derived from exploratory factor analysis such as the Big Five (e.g. Digman, 1990).

Some research however hints at the potential benefits of the Sensation Seeking. Some researchers interpret Sensation Seeking as a desire to explore and learn about the environment (e.g. Ball & Zuckerman, 1990; Jackson, 2001; Pickering, 2004) and stimulus-seeking curiosity (e.g. Raine, Reynolds, Venables, & Mednick, 2002). Jackson (2005, 2008a) argues that sensation seekers’ intrinsic urge to explore their environment leads them to create a greater number of exploratory experiences which may result in either functional outcomes (e.g., increased problem engagement and learning) or dysfunctional outcomes (e.g., workplace deviance).

This study investigates the Hybrid Model of Learning in Personality (Jackson, 2005, 2008a) as a predictor of various functional and dysfunctional work outcomes. The model argues that functional behavior occurs when Sensation Seeking is re-expressed via socio-cognitive self-regulation mechanisms including Mastery Goal Orientation. High Mastery Goal Orientation (Dweck, 1986) is related to adaptive learning in which people focus on success and development of new skills (Jackson, 2005, 2008a). Mastery goals are associated with classroom and sporting success (e.g. Duda & Nicholls, 1992; Nolen & Haladyna, 1996) and success in training and employment (e.g. Fisher & Ford, 1998; Vandewalle, Brown, Cron, & Slocum, 1999; Vandewalle & Cummings, 1997). Functional learners are therefore guided to success by socio-cognitive insight learning mechanisms such that people re-express their curiosity and exploration in a way which is positive to themselves and society.

In contrast, dysfunctional learners fail to develop socio-cognitive learning mechanisms such as Mastery Goal Orientation and consequently their appetitive impulses are satiated in cognitively non-complex ways which are often dysfunctional and at odds with society. Dysfunctional learners are however likely to be rare in the population, based on the theorized correlation between Sensation Seeking and Mastery Goal Orientation (O'Connor & Jackson, 2008).

In support of the Hybrid Model of Learning in Personality, Jackson, Baguma and Furnham (2009) report that it predicts Grade Point Average (GPA) of Australian and Ugandan students. Jackson, Hobman, et al. (2009) report it predicts self-reported work performance of part-time workers and students more consistently than goal orientation, Eysenck and Eysenck's (1991) trait model of personality and the Z-SSS (Zuckerman, 1978). O'Connor and Jackson (2008) further reported that the Hybrid Model of Learning in Personality predicts self-reported work performance of students. Other evidence is summarized by Jackson (2009a, in press). These previous tests of the model have utilized psychology students as part-time workers and it seems likely that such groups of people are not wholly representative of the working population due to being educated, predominantly female, young and potentially low in motivation to work hard in their job. The Hybrid Model of Learning in Personality has never been tested with full-time workers across these three contexts (Core Task, Work Team and Organizational Performance).

The first context is Entrepreneurial Intentions which are highly exploratory and generally related to functional work related outcomes. Entrepreneurial Intentions have been described as the single best predictor of actual entrepreneurial behavior (Ajzen, 1991; Kolvereid, 1996). Entrepreneurs are development agents responsible for the promotion of enterprises and businesses; they infuse dynamism in economic activity; manage organizational and technical change; and also promote innovation. Entrepreneurship underlies economic growth and development.

The second context is self and supervisor rated work performance which is likely to be less pro-active than Entrepreneurial Intention. In this study, Griffin, Neal, and Parker (2007)'s new measure of work performance is used which provides an overall measure of work performance across three comprehensive contexts (Core Task, Work Team and Organizational Performance) whilst taking into account a worker's proficiency, adaptivity and proactivity. Workaholism is also measured. A workaholic may be seen as satisfied and productive (Machlouwitz, 1980), conscientious and with high energy (Clark, Livesley, Schroeder, & Irish, 1996) or more negatively in terms of being addicted and obsessed (Killinger, 1991; Porter, 2001). Whilst acknowledging the negative possibilities, workaholism reflects commitment to work and therefore is likely to be predicted similarly to work performance.

The third context is dysfunctional behavior. Researchers of dysfunctional behavior have come up with a variety of words representing this kind of behavior including corrupt, counterproductive behavior, deviance, anti-social, reckless, negligent and unethical or anti-citizen behavior (Speedy, 2004).

Five hypotheses result from Jackson's (2005, 2008a) theory of functional and dysfunctional learning which have yet to be fully tested with full-time workers across these three contexts:

**H1.** Sensation Seeking is directly associated with both functional and dysfunctional outcomes.

**H2.** Mastery Goal Orientation is positively linked to functional outcomes.

**H3.** Positive effects of Sensation Seeking are mediated by Mastery Goal Orientation.

**H4.** When the effect of Mastery Goal Orientation is controlled, the association between Sensation Seeking and dysfunctional behavior will increase due to the suppressing effect of Mastery Goal Orientation.

**H5.** The model of functional learning will predict highly pro-active behaviors such as Entrepreneurial Intention better than generally pro-active behaviors such as work performance and workaholism.

**2. Method**

**2.1. Participants**

A Sydney, Australia based research website provided 530 participants who were all full-time workers (mean age = 38.89, range 18 to 69, SD = 13.15; male: 55% male, female: 45%; highest education: 31.4% school, 19.5% trade, 33% undergraduate, 13.8% masters, 2.4% PhD; seniority at work: 40.5% staff, 27.0% junior manager, 32.5% senior manager; company size worked for: 31.5% small (1–20 people), 16.7% medium (21–100 people), 51.8% large (100+), job type: 11.5% production, 12.6% Retail, 41.1% Service, 18.2% Education). A total of 242 supervisors provided supervisor ratings of performance (45.87% response rate).
2.2. Independent Variables

Zuckerman’s Sensation Seeking Scale (Z-SSS; Zuckerman, 1978, 1994) is a well-known measure of Sensation Seeking which assesses intrinsic drive to seek out environmental stimuli that are novel, complex and varied so as to maintain optimal levels of cortical arousal. Forty force-choice (yes/no) items measure Sensation Seeking across four domains: Experience Seeking (mental stimulation), Disinhibition (impulsivity), Thrill and Adventure Seeking (risky activities), and Boredom Susceptibility (restlessness). Alpha = .781.

Jackson’s Sensation Seeking Scale (J-SSS; Jackson, 2005; Jackson, 2008a, 2008b) and Mastery Goal Orientation (referred to as Goal Oriented Achiever in the test) are of central relevance to this study. J-SSS implies an impulsive, appetitive, undirected exploratory drive, which is associated with such personality traits as novelty seeking and Extraversion, and characterized by the tendency to be opportunistic and seize the moment. Example items from include “I look for new sensations,” “I enjoy starting projects” and “I excel at seizing the moment.” Alpha = .764.

Mastery Goal Orientation measures the extent to which people learn mastery, competence and self-efficacy. People high in Mastery Goal Orientation tend to pursue adaptive response patterns, persist in the face of failure and pursue specific, difficult and challenging goals. Example items include “I achieve specific goals that I set myself”, “My plans almost always lead to success” and “I like to be challenged”. Alpha = .776.

Each scale has 15 items. Each item is answered as ‘agree’, ‘disagree’, or ‘can’t decide’. Jackson (2005) reported that Sensation Seeking was significantly correlated with EPQ Extraversion (r = 0.49, p < .01), NEO-IPIP Extraversion (r = 0.33, p < .01), Cloninger, Svrakic and Przybeck’s (1993) novelty seeking (r = 0.34, p < .01), and Dickman’s (1990) functional (r = 0.44, p < .01) and dysfunctional impulsivity (r = 0.18, p < .01). Jackson (2005) also reported that Mastery Goal Orientation was significantly correlated with VandeWalle and Cumming’s (1997) Learning Goal Orientation (r = 0.48, p < .01), as well as the Conscientiousness and Openness scales of the NEO-IPIP (r = 0.26, p < .01; r = 0.41, p < .01 respectively) and Cloninger, Svrakic and Przybeck’s (1993) Persistence (r = 0.22, p < .01) and Self-Directedness (r = 0.28, p < .01). Other research is summarized in Jackson (2009a, in press).

J-SSS and Mastery Goal Orientation scales are from The Learning Styles Proﬁler (LSP; Jackson, 2005) which is designed to measure processes associated with learning and personality development. Respondents indicate their agreement with each item on a three-point rating scale (True, False, can not decide).

2.3. Dependent measures

Entrepreneurial Intentions was designed by the author specifically to measure functional and positive intention to engage in entrepreneurial success. The items used were: “I have great ideas for starting a business”; “I would always write a business plan before starting a business”; “I see big opportunities to make money in business”; “I want to manage sales and growth”; “My dream is to get rich through business success”; “I would put in the hard work and planning required to achieve business success”; “I want to manage sales, see growth and lead a team”; “I have the skills to be a successful business entrepreneur”. No questions were added or removed to improve results. Respondents indicated their agreement with each item on a five-point rating scale (strongly agree to strongly disagree). Alpha = .840.

Overall Self Rated Job Performance (Griffin et al., 2007) measures task and contextual performance in three contexts – the individual level, team level and organizational level. Example items included “Thinking about how you have carried out your core job over the past 6 months, to what extent have you carried out the core parts of your job well” (job performance), “Thinking about your role in your work unit over the past 6 months, to what extent have you coordinated your work with co-workers” (team performance), and “Thinking about your contribution to the organization over the past 6 months, to what extent have you talked about the organization in positive ways” (organizational performance). Griffin et al. (2007) reported support for the external validity of their proposed model using supervisor ratings from 32 organizations and self rating from employees in two organizations. Overall Self Rated Job Performance (alpha = .967) was calculated as the sum of the three facets of job performances. Respondents indicated their agreement with each item on a five-point rating scale (very little to a great deal).

Overall Supervisor Rated Job Performance was measured using a rephrased version of the above questionnaire (Griffin et al., 2007) so that supervisors could complete it regarding their ratings of performance of the follower. Alpha = .970.

Workaholism (Spence & Robbins, 1992) provides a measure of workaholism based on the three facets of Work involvement, Feeling driven to work and Work enjoyment. Work involvement has eight items (e.g., “I get bored and restless on vacations when I have not anything productive to do”), Feeling driven to work has seven items (e.g., “I often feel that there’s something inside me that drives me to work hard”) and Work enjoyment has seven items (e.g., “My job is more like fun than work”). Respondents indicated their agreement with each item on a five-point rating scale (strongly agree to strongly disagree). Alpha = .869.

Dysfunctional behavior was designed by the author and consisted of the following items: “Not all that I do is on the right side of the law”; “Sometimes I do anti-social activities; “Some people think of me as quite delinquent”; “I do not have much respect for laws”; “I often seem to get myself into trouble”; “Sometimes I really upset people to get what I want”. Respondents indicated their agreement with each item on a five-point rating scale (strongly agree to strongly disagree). Alpha = .732. In item development, two items from an original scale were removed: “I think fun is more important than work”; “I have plans to get rich quickly”.

Entrepreneurial Intentions and dysfunctional behavior at work were specifically designed by the author because they needed to be short for easy administration and most existing scales of Entrepreneurial Intentions and Dysfunctional behavior are quite long. For example, Gruys and Sackett (2003) construct a 66 item questionnaire covering 11 factors of counter-productive work behavior.

2.4. Method

Participants completed survey modules of the YWeDo online cognitive laboratory (Jackson, 2010) at www.ywedo.com/lab.asp and were paid for their contribution. The YWeDo online cognitive laboratory is a modular online laboratory designed to collect information about workers. Modules include surveys, objective tests and supervisor rating questionnaires which can be presented in a random order to participants. It is designed and run by the author and available for use by other researchers.

In the collection of supervisor ratings of performance, YWeDo automatically emailed supervisors a link to their questionnaire once their email address was entered by participants. The procedure collected follower-supervisor dyads which almost certainly did not overlap with any other dyad. This procedure can be contrasted with most supervisor rating studies which collect data from just a small number of organizations and in which each supervisor usually assesses many followers. The strengths of the current method are that it provides data which are generalizable across organization and which are not nested. The procedure was granted ethical approval on the basis that supervisors could only be
emailed with the survey link a single time and that supervisor details would be deleted as soon as a response was obtained.

3. Results

The data were analyzed using the full dataset except in the prediction of dysfunctional behavior and Overall Supervisor Ratings of Performance. In the prediction of dysfunctional behavior people over the age of 65 years (n = 2) were excluded from the analysis based on the well evidenced attenuation of anti-social activity with age (Bloningen, 2010). In the prediction of Overall Supervisor Ratings of Performance, people who had been in their jobs for 3 months or less (n = 103) were excluded on the basis that their performance would be unknown to their supervisor and people who had been in their job 15 months or more were excluded as this led to a very skewed distribution (n = 24). A similar procedure was employed by Smillie, Yeo, Furnham, and Jackson (2006). The sample size used in the prediction of Overall Supervisor Ratings of Performance was n = 99. Means, standard deviations, alpha reliabilities and correlations are shown in Table 1. Alphas are all >.72.

Generally, scales with an alpha of >.7 are considered to have reasonable internal reliability.

An independent groups t-test of the people who provided supervisor ratings from those who did not showed that they were less entrepreneurial (t = 2.100, p = .036, Cohen’s d = .194), lower in dysfunctional behavior (t = 2.004, p = .046, d = .185) and lower scorers on the Z-SSS (t = 2.457, p = .014, d = .227) and J-SSS (t = 2.823, p = .005, d = .260). Results suggest that people who diligently provide contact details of their supervisor and who have a supervisor willing to reply are generally less exploratory and more reserved in their behavior. Often a Cohen’s d of <.3 is considered a small effect and all other scales were not significantly different. A test of the variances between these groups showed that no variances were significantly different. For these reasons, I combined the two groups and therefore most of the following analyses report results from all participants. When results of supervisor ratings are reported, it is important to remember how the sample of people with supervisor ratings deviates from the sample of people without supervisor ratings.

In this sample, J-SSS correlates with Z-SSS (r = .365, p < .001). The correlation between J-SSS and sub-scales of Z-SSS are as follows: Thrill and Adventure Seeking r = .406, p < .001; Experience Seeking, r = .245, p < .001; Disinhibition, r = .209, p < .001; Boredom Susceptibility, r = .075, p < .001. This indicates that the J-SSS is more aligned with the thrill seeking items of the Z-SSS and less related to the Boredom Susceptibility items. The thrill seeking items are often concerned with novelty seeking although often with a physical and dangerous basis whereas the Boredom Susceptibility items are more concerned with irritation from doing things repetitively. The low correlation between J-SSS and Experience Seeking scale of the Z-SSS is explained by noting that Experience Seeking contains items related to drug use which orient the scale towards dysfunctional experiences and other items which focus on non-conformity. Similar to the arguments voiced by Arnett (1994) and Roth et al. (2009), the J-SSS advocates different measurement of Sensation Seeking from the Z-SSS and this is shown by the moderate correlation between the measures. The reported moderate correlation therefore provides evidence of the expected similarity and dissimilarity between the J-SSS and the Z-SSS.

J-SSS is correlated to Mastery Goal Orientation (r = .626, p < .001) whereas Z-SSS is much less correlated with Mastery Goal Orientation (r = .106, p < .05). Correlations between the dependent variables and independent variables are shown in Table 1. Moreover, dysfunctional behavior is correlated with Entrepreneurial Intentions (r = .299, p < .01) whilst not correlated with work performance. This suggests that Entrepreneurial Intentions includes an element of dysfunction and rule breaking and that such problematic work methods are generally unrelated to actual work performance. In general, J-SSS is more strongly correlated with functional outcomes (Entrepreneurial Intentions, Workaholism, and Job performance) than Z-SSS and Z-SSS is more strongly correlated with Dysfunctional performance than J-SSS. The correlations between Z-SSS and each of the criteria were compared with the correlations between J-SSS and the criteria. All correlations were significantly different at p < .001.

This is confirmed by examination of regressions between the dependent variables with J-SSS and Z-SSS included as independent variables at the same time. Results are shown in Table 2. In the prediction of functional outcomes, J-SSS is always significant and positive but is not significant in the prediction of dysfunctional outcomes. In contrast, Z-SSS is predictive of dysfunctional outcomes but is significant only in the prediction of one functional outcome (Overall Self Rated Job Performance and note that the negative relationship which indicates that this finding argues that low scorer on Z-SSS report themselves as good workers). As expected, results indicate J-SSS in much less aligned to dysfunctional outcomes and more aligned towards functional outcomes than the Z-SSS.

The mediating role of Mastery Goal Orientation on the association between Sensation Seeking and outcomes was tested using regression according to steps proposed by Baron and Kenny (1986) for testing mediation and the SPSS bootstrap model

### Table 1

Means, standard deviations, alphas and correlations between the dependent variables.

<table>
<thead>
<tr>
<th>ENT</th>
<th>WORK</th>
<th>SELF</th>
<th>SUP</th>
<th>DB</th>
<th>Z-SSS</th>
<th>J-SSS</th>
<th>MGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8.51</td>
<td>47.07</td>
<td>125.90</td>
<td>128.15</td>
<td>3.33</td>
<td>17.32</td>
<td>21.66</td>
</tr>
<tr>
<td>SD</td>
<td>4.99</td>
<td>9.72</td>
<td>20.45</td>
<td>19.77</td>
<td>3.15</td>
<td>6.31</td>
<td>5.89</td>
</tr>
<tr>
<td>Alpha</td>
<td>.840</td>
<td>.869</td>
<td>.967</td>
<td>.969</td>
<td>.725</td>
<td>.781</td>
<td>.764</td>
</tr>
<tr>
<td>Entrepreneurial Intentions (ENT)</td>
<td></td>
<td></td>
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<tr>
<td>Workaholism (WORK)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Overall Self Rated Job Performance (SELF)</td>
<td>.181 ^</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall supervisor rated performance (SUP)</td>
<td>.130 ^</td>
<td>.210 ^</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workaholism (WORK)</td>
<td>.132</td>
<td>.292 ^</td>
<td>.363 ^</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysfunctional behavior (DB)</td>
<td>.246</td>
<td>.082</td>
<td>.127 ^</td>
<td>.134</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-SSS</td>
<td>.213 ^</td>
<td>.025</td>
<td>.014</td>
<td>.089</td>
<td>.299 ^</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J-SSS</td>
<td>.447 ^</td>
<td>.214 ^</td>
<td>.284 ^</td>
<td>.211 ^</td>
<td>.116 ^</td>
<td>.365 ^</td>
<td></td>
</tr>
<tr>
<td>Mastery Goal Orientation (MGO)</td>
<td>.376 ^</td>
<td>.239 ^</td>
<td>.336 ^</td>
<td>.291 ^</td>
<td>.009</td>
<td>.106 ^</td>
<td>.626 ^</td>
</tr>
</tbody>
</table>

**Note:**
- n = 530 except for overall supervisor rated performance where n = 242.
- The correlations between Z-SSS and each of the criteria were compared with the correlations between J-SSS and the criteria. All correlations were significantly different at p < .001.
- ^ p < .01
- ^ p < .05.
developed by Preacher and Hayes (2008a). These include testing that: (1) the independent variable significantly affects the mediator (path a in Fig. 1 and Table 3), (2) the independent variable significantly affects the dependent variable in the absence of the mediator (path c in Fig. 1 and Table 3), (3) the mediator has a significant effect on the dependent variable in the presence of the independent variable (path b in Fig. 1 and Table 3), and (4) the effect of the independent variable on the dependent variable shrinks upon the addition of the mediator to the model (the contrast between c’ and c in Fig. 1 and Table 3). As will be shown, it is in the mediational model that the difference between Jackson’s and Zuckerman’s models of Sensation Seeking becomes apparent.

Fig. 1 presents the mediational model tested in this study and results are shown in Table 3. It might be argued that the pattern of results is primarily found because the J-SSS and the Mastery Goal Orientation scales were designed by the author and therefore that the results stem from common method variance attributable to this source. For this reason, Zuckerman’s Thrill and Adventure Seeking sub-scale of the Z-SSS is also presented in Table 3 to determine if evidence in support of J-SSS effects could be identified. Thrill and Adventure Seeking was used as it has already been noted that it has the closest relationship to J-SSS. Preacher and Hayes (2008b) suggest using the index of mediation as a standardized measure of the effect size of the indirect effect. This is also presented in Table 3.

Consider first the mediating effect of Mastery Goal Orientation on J-SSS in the prediction of the work related outcomes. Mastery Goal Orientation is a partial mediator of Entrepreneurial Intentions and a full mediator of Overall Supervisor Rated Job Performance, Overall Self Rated Job Performance and Workaholism. In paths beginning with J-SSS, the Preacher and Hayes (2008) test statistic of indirect effects (an improvement over the Sobel statistic) was highly significant for Entrepreneurial Intentions, Workaholism, Self Rated Work Performance and Supervisor Rated Work Performance ($p < .01$). This shows the effectiveness of the indirect path from J-SSS through Mastery Goal Orientation in producing functional work outcomes. Compared to the overall path from J-SSS to functional behavior, the indirect path through Mastery Goal Orientation.

In the prediction of dysfunctional behavior, the direct effect of J-SSS significantly increases once the effect of Mastery Goal Orientation is partialled. In line with expectations, the direction of the change in the direct effect is the opposite to functional behavior. Here Mastery Goal Orientation suppresses the effect of J-SSS in the prediction of dysfunctional behavior.

Results were not so clear cut, but Thrill and Adventure Seeking was partially mediated by Mastery Goal Orientation in the prediction of Entrepreneurial Intentions and there were significant indirect effects in the prediction of Workaholism and Overall Self Rated Job Performance. In contrast, Thrill and Adventure Seeking is a significant predictor of dysfunctional behavior, although there is no evidence of a suppression effect. The evidence from the analysis of this sub-scale of the Z-SSS partially supports the proposed model which is that Sensation Seeking can be a positive predictor of functional outcomes when re-expressed through Mastery Goal Orientation and is a direct positive predictor of dysfunctional outcomes. The suggestion is that results from J-SSS are not strongly influenced by common method variance attributable to scales being designed by the same author.

Also shown in Table 3 is the possible effect of Mastery Goal Orientation on Z-SSS in the prediction of the criteria. Z-SSS is partially mediated by Mastery Goal Orientation in the prediction of Entrepreneurial Intentions and is a positive direct predictor of dysfunctional behavior. In the prediction of Workaholism and Overall Self Reported Job Performance there is evidence of indirect effects. There is no evidence of direct or indirect effects in the prediction of Overall Supervisor Rated Job Performance. All this suggests that Z-SSS is a positive predictor of highly pro-active positive behaviors through Mastery Goal Orientation and a direct predictor of Dysfunctional behavior, but that the evidence is less compelling than with the J-SSS.

The index of mediation (Preacher & Hayes, 2008b) provides a view of the importance of the effect size independent of scale measurement. Across all the different models, the indirect effect through Mastery Goal Orientation from J-SSS is greater than the indirect effect through Mastery Goal Orientation from Thrill and Adventure Seeking which is greater than from Z-SSS. The index of mediation shows how much the dependent variable changes according to a change in the independent variable when re-expressed through the mediator. Thus, for example, Entrepreneurial Intentions increases by .099 standard deviations for a one standard deviation increase in J-SSS re-expressed indirectly via Mastery Goal Orientation whereas the increase is .072 from Thrill and Adventure Seeking and .039 from Z-SSS. The suggestion is therefore that J-SSS is more amenable to the indirect effects of mastery goal orientation than Thrill and Adventure Seeking and Z-SSS.

In summary, the study indicates that when Sensation Seeking is operationalized as the J-SSS (emphasizing curiosity and exploration) then it provides a basis for highly pro-active and dynamic functional outcomes such as Entrepreneurial Intentions, functional outcomes such as work performance and Dysfunctional behavior. Dysfunctionality tends to occur when Sensation Seeking is not re-expressed through Mastery Goal Orientation whereas functionality

Table 2

<table>
<thead>
<tr>
<th>DV</th>
<th>IVs</th>
<th>$B$</th>
<th>$t$</th>
<th>$p$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Intentions</td>
<td>J-SSS</td>
<td>.421</td>
<td>8.005</td>
<td>&lt; .001</td>
<td>.195</td>
</tr>
<tr>
<td>Workaholism</td>
<td>J-SSS</td>
<td>.258</td>
<td>4.984</td>
<td>&lt; .001</td>
<td>.057</td>
</tr>
<tr>
<td>Overall Self Rated Job Performance</td>
<td>J-SSS</td>
<td>.328</td>
<td>3.126</td>
<td>.002</td>
<td>.093</td>
</tr>
<tr>
<td>Overall Supervisor Rated Job Performance</td>
<td>J-SSS</td>
<td>.240</td>
<td>2.367</td>
<td>.020</td>
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<td>.428</td>
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* $n = 99$. 

![Fig. 1](image-url)

Fig. 1. The indirect effect of the mediator (through paths $a$ and $b$) from the IVs in the prediction of the DVs where $c$ is the direct path from IV to DV in the absence of the mediator and $c'$ is the direct path from IV to DV in the presence of the mediator.
tends to occur when Sensation Seeking is re-expressed through Mastery Goal Orientation. When Sensation Seeking is operationally defined as the Z-SSS (with a greater emphasis on dysfunction) then it is a better direct predictor of Dysfunctional Performance and the indirect effects through Mastery Goal Orientation more weakly and inconsistently predict functional outcomes. Operationalization of Sensation Seeking in terms of Thrill and Adventure Seeking tends to produce results between those of J-SSS and Z-SSS.

4. Discussion

The aim of this study is to determine if Sensation Seeking provides a common basis for functional and dysfunctional performance and related outcomes in full-time workers. Similarly to Arnett (1994), Jackson (2005, 2008a) and O’Connor and Jackson (2008) argue that curiosity and exploration are core facets of Sensation Seeking which are associated with a general drive to learn. This perspective differs from Zuckerman in arguing that Sensation Seeking is not necessarily dysfunctional and in arguing that sociocognitive constructs such as Mastery Goal Orientation mediate Sensation Seeking in the prediction of work related outcomes. Jackson’s (2005, 2008a) Hybrid Model of Learning in Personality argues that as Sensation Seeking increases, so does the potential for functional or dysfunctional learning and that the outcome is partly dependent upon the re-expression of Sensation Seeking by Mastery Goal Orientation.

In the current research, Entrepreneurial Intentions was specifically chosen as an example of highly pro-active, exploratory and functional behavior; Work Performance and Workaholism were chosen as examples of moderately exploratory functional behavior; and Dysfunctional behavior was chosen as examples of moderately exploratory functional behavior. It was argued that the Hybrid Model of Learning in Personality would predict this range of behaviors in a predictable manner.

J-SSS and Mastery Goal Orientation was successfully shown to have a central position in explaining functional work place outcomes. Evidence provided general support for all hypotheses. Results therefore generally support the effectiveness of the Hybrid Model of Learning in predicting work place outcomes. The effectiveness of the proposed model depends upon the likely relevance of learning (in terms of exploration and curiosity and its re-expression through Mastery Goal Orientation) to the work outcomes being measured. Mastery Goal Orientation was a partial mediator of Sensation Seeking in the prediction of Entrepreneurial Intentions, and Mastery Goal Orientation was a partial suppressor of Sensation Seeking in the prediction of dysfunctional behavior. The effect is a partial one because these pro-active behaviors remain under the influence of the energizing effect of the Sensation Seeking drive.

Support for key features of Jackson’s (2005, 2008a) Hybrid Model of Learning in Personality has several important implications in terms of theory, understanding the learning mechanisms predicting work performance, understanding of anti-social behavior and how to direct interventions such as training. In terms of theory, results of this study are consistent with Jackson’s (2005, 2008a) premise that curiosity and exploration associated with undirected Sensation Seeking provides an important source for both functional and dysfunctional learning.

In terms of development of our knowledge of pro-social behavior such as work-place performance, findings show that Mastery Goal Orientation acts as a conduit for Sensation Seeking. The importance of this result is that a new process for understanding workplace success has been isolated and Sensation Seeking should no longer be seen as entirely a negative influence on behavior.

The implication of this study in terms of training in the workplace is that successful intervention comes from focusing on the variables like Mastery Goal Orientation which are primarily socio-cognitively based (Cury, Elliot, Da Fonseca, & Moller, 2006) as opposed to Sensation Seeking which is likely to have more of a biological basis (Zuckerman, 1994). Siadaty and Taghiyareh (2007), for example, selected people for training with the aim of improving Conscientious Achievement and Sensation Seeking. Conscientious Achievement training improved performance whereas Sensation Seeking training had no effect – exactly as the Hybrid Model of Learning in Personality (Jackson, 2005, 2008a) predicts.

In terms of furthering our understanding of delinquency, criminality and anti-social behavior, findings suggest that undirected Sensation Seeking is potentially harmful once the effects of Mastery Goal Orientation are controlled. Results suggest that a one standard deviation increase in J-SSS leads to a .083 standard deviation decrease in dysfunctional behavior when re-expressed through Mastery Goal Orientation. The research therefore suggests

Table 3

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>c’</th>
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All parameters and their significance are computed using SPSS macro provided by Preacher and Hayes (2008a). Unstandardized parameters reported.

a n = 99.
b A standardized measure of the effect size of the indirect effect as suggested by Preacher and Hayes (2008b).

* p < .05
** p < .01
*** p < .001.
that the kind of model adopted in this study may be useful in understanding anti-social behavior. The finding of a strong, positive correlation between J-SSS and Mastery Goal Orientation it appears that high Sensation Seeking is generally related to high Mastery Goal Orientation such that few people are high scorers on Sensation Seeking and low scorers on Mastery Goal Orientation. Low scores in Mastery Goal Orientation may occur for many reasons which may include situational factors, such as stress, tiredness, the influence of alcohol and drugs, and peer pressure. Longer-term factors, such as failures in parental upbringing, may also play a role.

The results suggest that the J-SSS was more successful than the Z-SSS as a predictor of positive work outcomes. This might be expected because J-SSS is operationalized based on exploration and curiosity whereas Z-SSS is more operationalized as exploration and curiosity but is partially related to the experience of dysfunctional behaviors. The reorientation of J-SSS towards a direction which is neither positive nor negative is similar to the first half of Zuckerman’s (1994) definition of Sensation Seeking and provides a better opportunity for Mastery Goal Orientation to redirect Sensation Seeking towards functional outcomes whilst also remaining a direct predictor of dysfunctional outcomes once the effects of Mastery Goal Orientation are removed. Z-SSS seems to be more clearly related to Zuckerman’s (1994) complete definition of Sensation Seeking and this operationalization reduces positive direct relationships with work performance and indirect effects through Mastery Goal Orientation but emphasizes strong positive relations with negative behaviors.

It is interesting to contrast the theory underlying Hybrid Model of Learning in Personality (Jackson, 2005, 2008a) with the Big Five model of personality. The Big Five consists of the following superfactors (although names vary): neuroticism, extraversion, openness, agreeableness and conscientiousness (e.g. Digman, 1990). Many researchers have argued that the Big Five represents a taxonomy to parsimoniously, reliably and comprehensively describe human personality and that it has validity strongly supported by empirical evidence (e.g. Digman, 1990). Because of its validity, strong psychometric design and wide acceptance, the Big Five has been extensively utilized in recent organizational and other applied research (e.g. Judge, Higgins, Thoresen, & Barrick, 1999). The Big Five is useful in all these respects but is also limited by its descriptive nature in which mechanisms of learning and change are not specified (see also Block, 1995, for a larger list of limitations). In contrast the Hybrid Model of Learning in Personality is a process model of learning in which motivation and process are emphasized and, as a result, differences about the likely response to intervention from the different components of the model can be made. At the same time though, it is important to note that the Hybrid Model of Learning in Personality does not provide the parsimonious and broad description of personality claimed by the Big Five and that it is likely that some of the underlying factors of the Big Five are probably highly related to scales in the Hybrid Model of Learning in Personality.

The most important general limitation to this research is that causality is not assessed. Mediating pathways must be theoretically causal models in which the mediator influences the independent variable, but causality is generally not tested in most studies using mediation and is not tested in this study. Adding to this point, is that the Hybrid Model of Learning in Personality is developed from a literature which argues that Mastery Goal Orientation primarily has a socio-cognitive basis and Sensation Seeking primarily has a biological basis. On the one hand, there is substantial agreement on this in the literature; see for example Cury, Elliot, Da Fonseca, and Moller (2006) who review the socio-cognitive basis of goal orientation and Zuckerman (1978, 1994) who reviews the biological basis of Sensation Seeking, and Elliot and Thrash (2002) who argue that goal orientations mediate biological drives. Elliot and Thrash (2002, p. 806) make the point that goals are channels through which biological drives are directed such that biological drives are energizers whereas goals are specific, cognitive forms of self regulation that provide focus and direction.

On the other hand, empirical evidence in favor of such distinctions is somewhat lacking such as, for example, in a study finding little evidence in favor of the temperament character split in Cloninger’s scales of personality (Gillespie, Cloninger, Heath, & Martin, 2003). My viewpoint is that there is no strict dichotomy but instead a continuum of scales which have more of a biological basis and those which have more of a socio-cognitive basis. Such views await confirmation and further research is needed to better evidence the idea of distinctions between scales of personality which are more biological and those which are more socio-cognitive.

Further limitations include that self and supervisor rated work performance are measured and that the follower: supervisor dyads were non-overlapping (such that each supervisor almost certainly only rated one supervisee and the sample was from many different organizations). Such data are not only hard to collect but also more generalizable and less problematical than most supervisor: follower data in which several followers generally share a supervisor.

In summary, support is found for the view that Sensation Seeking is associated with functional outcomes as a result of the mediating effect of Mastery Goal Orientation whilst being a direct predictor of dysfunctional outcomes once the indirect effect of Mastery Goal Orientation is removed. The current research provides support for Jackson’s (2005, 2008a) Hybrid Model of Learning in Personality which combines both the trait and socio-cognitive approaches of learning and personality into one coherent framework. I advocate that mechanisms of learning in personality such as in this study have much to offer psychology since they provide an explanation of why people behave as they do and tell us more about how to plan interventions than descriptive models of personality such as the Big Five. Moreover, the idea that functional and anti-social behaviors have a common core component provides an exciting avenue of research; the idea that personality can be understood in terms of biological and socio-cognitive constructs suggests that some elements of personality are more amenable to intervention and training than others; and, this research also suggests that Sensation Seeking can be conceptualized and measured in different ways (Arnett, 1994; Jackson, 2008b; Roth, et al., 2009) such that there can be positive components to Sensation Seeking.

Acknowledgment

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References
