

Learning To Be Saints or Sinners: The Indirect Pathway From Sensation Seeking to Behavior Through Mastery Orientation

Peter J. O'Connor¹ and Chris Jackson²

¹School of Psychology, University of Queensland

²Australian School of Business, University of New South Wales

ABSTRACT Recently, a model of learning has been proposed that argues that Sensation Seeking indirectly predicts functional and dysfunctional behaviors through Mastery Orientation. Central components of the model were tested across two studies. Study 1 tested the proposed indirect effect in the prediction of functional behavior using an objective learning task. Study 2 tested the proposed indirect effects in the prediction of functional and dysfunctional self-report behavior across two very different samples. Regression analyses in both studies generally supported the proposed model.

“To understand the entrepreneur you first have to understand the psychology of the juvenile delinquent.” Alexander Zelaznick (1986), *The New York Times*

There is a substantial literature on the role of the Impulsivity cluster of traits in dysfunctional (Dickman, 1990) or rash (Dawe, Gullo, & Loxton, 2004) behavior. Impulsivity is seen as a cause of criminality (Eysenck & Eysenck, 1970), delinquency (Levine & Jackson, 2004), eating disorders (Kane, Loxton, Staiger, & Dawe, 2004), ADHD (Nigg et al., 2004), psychopathy (Hicks, Markon, Christopher, Kreuger, & Newman 2004), extramarital affairs (Buss & Shackelford, 1997; McAlister, Pachana, & Jackson, 2005) and poor job performance (Reio & Sanders-Reio, 2006). It is also consistently associated with alcohol and substance use (Mann, Chassin, & Sher,

For correspondence concerning this article, please contact Peter J. O'Connor. E-mail: petero@psy.uq.edu.au.

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1987). The consistent message from most Impulsivity research seems to be that Impulsivity leads to dysfunctional behaviors and should not to be encouraged.

Some research, however, hints at the potential benefits of the Impulsivity cluster of traits. Dickman (1990) differentiates between Functional and Dysfunctional Impulsivity, such that Functional Impulsivity is about doing things rapidly when there is a need to be quick. Dickman (1990) found that these two forms of Impulsivity are not highly related and suggested that, while both forms of Impulsivity are due to rapid error-prone information processing, Dysfunctional Impulsivity represents an *inability* to make use of slower, more methodical approaches under certain circumstances. Others have also seen the positive side of Impulsivity and its associated cluster of traits, interpreting them as stimulus-seeking curiosity (Raine, Reynolds, Venables, & Mednick, 2002) or a desire to explore and learn about the environment (Ball & Zuckerman, 1990; Jackson, 2002, 2005; Pickering, 2004). Moreover, researchers are beginning to find evidence that, under certain conditions, the Impulsivity cluster of traits can be a positive predictor of workplace performance (Jackson, 2001, submitted).

In a reformulation of an earlier model (Jackson, 2002), Jackson's recent work provides a more extensive explanation for the relationship between the Impulsivity cluster of traits (which Jackson now refers to more specifically as Sensation Seeking), learning and positive outcomes (Jackson, 2005). Accordingly, Sensation Seeking is important to learning because impulsive people are curious and generate appetitive learning opportunities. The model argues, therefore, that Sensation Seeking is associated with both positive and negative outcomes. More specifically, the model argues that Sensation Seeking indirectly predicts functional and dysfunctional behavior through Mastery Orientation. The aim of the current research is to test these key components of Jackson's model.

Mastery Orientation

Jackson's conceptualization of Mastery Orientation originally emerged from educational literature suggesting that individuals differ in levels of learning orientation toward tasks (e.g., Dweck, 1986, 1989). Mastery Orientation is a sociocognitive construct that is largely defined by the extent to which people pursue mastery goals.

As such, individuals high in Mastery Orientation follow an adaptive learning pattern and aim to master new skills and situations (Jackson, 2005). Evidence strongly suggests that mastery goals are associated with success on a number of indicators in the classroom (e.g., Ames & Archer, 1988; Duda & Nicholls, 1992; Nolen & Haladyna, 1990) and in sporting activities (Duda & Nicholls, 1992). More specifically, research indicates that Mastery Orientation is associated with positive outcomes in training and employment contexts (e.g., Fisher & Ford, 1998; Kozlowski et al., 2001; VandeWalle, Brown, Cron, & Slocum, 1999; VandeWalle & Cummings, 1997). For this reason, Jackson argues that Mastery Orientation will have a direct, positive relationship with a number of functional behaviours and a direct, negative relationship with a number of dysfunctional behaviors.

Mastery Orientation Mediates Sensation Seeking

Consistent with Elliot and Thrash (2002), Jackson argues that goals represent channels, by which approach motivation can influence complex human behavior. Jackson (2005) argues that functional learners are Sensation Seekers who develop complex sociocognitive mechanisms, particularly Mastery Orientation, as a means of functionally adapting to a complicated and generally prosocial environment. Most Sensation Seekers are likely to be reasonably well adjusted to their environment, so Jackson argues that most Sensation Seekers will also be high in Mastery Orientation (statistically, this translates into a correlation between Sensation Seeking and Mastery Orientation). Such learners are thought to be not only habitually curious and impulsive but responsible and mastery-goal-oriented, guided by sociocognitive insight-learning mechanisms. Theoretically, the positive effects of Sensation Seeking on behavior run through Mastery Orientation.

Mastery Orientation Suppresses the Negative Effects of Sensation Seeking

According to Jackson (2005), dysfunctional learners (individuals operating outside of society's rules such as delinquents and criminals) fail to develop sociocognitive learning mechanisms such as Mastery Orientation. Consequently, appetitive impulses are satiated

in noncomplex ways that are often dysfunctional and at odds with society. Jackson (2005), for example, argues that an entrepreneur will have the same learning drives as a delinquent but will have learnt more successful sociocognitive strategies to reexpress the Sensation Seeking drive in a way that is useful to him- or herself and society. However, based on the theorized correlation between Sensation Seeking and Mastery Orientation, dysfunctional learners are thought to be rare in the population.

Jackson (2005) argues that Mastery Orientation suppresses the negative effects of Sensation Seeking.¹ According to the theory, Sensation Seeking increases the risk of dysfunctional behavior, however, because Sensation Seekers tend to pursue Mastery-Oriented Goals (i.e., have good self-regulatory competence) and they are unlikely to engage in such behaviors. Indeed, there is some physiological evidence in support of Jackson's suggestion that impulsive instincts are regulated by cognitive insight. Recent brain imaging research shows activation of the frontal cortex following drug use (Goldstein & Volkow, 2002; Tekin & Cummings, 2002), and there is evidence that prefrontal damage leads to an inability to control impulsive behavior (Jentsch & Taylor, 1999). In particular, the role of the orbitofrontal cortex (OFC) seems to be very important in regulating Impulsivity (Rolls, 1986).

Four hypotheses result from Jackson's (2005) theory of learning that have yet to be formally tested in the literature. First, it is hypothesized that Sensation Seeking is associated with both functional and dysfunctional outcomes. Second, it is hypothesized that Mastery Orientation is positively linked to functional outcomes and negatively linked to dysfunctional outcomes. Third, it is hypothesized that the positive effects of Sensation Seeking on behavior run through Mastery orientation (full mediation). This indirect effect is a key element in Jackson's model and is a major focus of this article. Fourth, it is hypothesized that when the effect of Mastery Orientation is controlled, the association between Sensation Seeking and dysfunctional behavior will surface (suppressor effect). It should be noted that the presence of an initial bivariate association between

1. Statistically, suppression, like mediation, is a type of "indirect effect." In this case, the indirect effect occurs as a positive relationship between Sensation Seeking and Mastery Orientation and a negative relationship between Mastery Orientation and dysfunctional behavior.

Sensation Seeking and dysfunctional behavior is not required in tests of indirect effects such as suppression (MacKinnon, Krull, & Lockwood, 2001; Shrout & Bogler, 2002).

These hypotheses were tested over two studies. Study 1 assessed Hypotheses 1, 2, and 3 using an objective measure of functional learning. Study 2 tested all hypotheses using measures of functional and dysfunctional behavior.

STUDY 1

A key element of Jackson's model is that Mastery Orientation mediates Sensation Seeking in the prediction of functional behaviors. The purpose of this study was to specifically test this mediation in a laboratory study with an objective measure of performance. The laboratory study involved a learning task designed to be moderately pressurizing and difficult enough to ensure the possibility of failure. Research suggests these conditions favor mastery goals (Elliot & Dweck, 1998; Ryan, Koestner, & Deci, 1991; Utman, 1997).

In this experiment, participants attempted to complete a difficult maze. It was hypothesized that Sensation Seeking and Mastery Orientation would be related to maze performance. Importantly, it was hypothesized that Mastery Orientation would mediate the relationship between Sensation Seeking and maze performance. We use mediated multiple regression and the Sobel test (Preacher & Hayes, 2004; Sobel, 1982) to test our hypotheses.

Method

Participants

Participants were 119 1st-year students studying at the University of Queensland, Australia. Most were aged less than 20 years (73.3%); some were aged between 20 and 30 years (24.5%); and a few were above 30 (2.2%). The majority of participants were female (62.2%).

Independent Measures

The Learning Styles Profiler (LSP). The Learning Styles Profiler (Jackson, 2005) was designed to measure individual differences in personality traits associated with learning preferences. It is a multidimensional instrument that measures learning preferences on five scales: Sensation Seeker, Goal-Oriented Achiever, Conscientious Achiever,

Emotionally Intelligent Achiever, and Deep-Learning Achiever. Only Sensation Seeker and Goal-Oriented Achiever (Mastery Orientation) are of relevance to this study. Sensation Seeker implies an impulsive, appetitive, undirected learning style, which is associated with such personality traits as Novelty Seeking and Extraversion and is characterized by the tendency to be opportunistic and seize the moment. Example items from this scale include "I seek thrilling and exciting activities," "I look for new sensations," and "I excel at seizing the moment." Jackson (2005) reported that Sensation Seeking was significantly correlated (at $p < 0.01$) with EPQ Extraversion ($r = 0.49$); Cloninger, Svrakic, and Przybeck's (1993) Novelty Seeking ($r = 0.34$); and Dickman's (1990) Functional ($r = 0.44$) and Dysfunctional Impulsivity ($r = 0.18$).

Goal-Oriented Achiever (Mastery Orientation) measures the extent to which people learn mastery, competence, and self-efficacy. People high in Mastery Orientation tend to pursue adaptive response patterns, persist in the face of failure and pursue specific, difficult, and challenging goals. They have high self-efficacy (Jackson, 2005). Example items from this scale include "I achieve specific goals that I set myself," "My plans almost always lead to success," and "I like to be challenged."

Each scale has 15 items and is answered with either *agree*, *disagree*, or *can't decide* on a 3-point, Likert-type scale. According to the model, Sensation Seeking is positively correlated with Mastery Orientation. Jackson (2005) reported that the Goal-Oriented Achiever scale was significantly correlated (at $p < 0.01$) with VandeWalle and Cumming's (1997) Learning-Goal Orientation ($r = 0.48$), as well as the Conscientiousness and Openness scales of the NEO-IPIP ($r = 0.26$; $r = 0.41$, respectively).

Dependent Measures

The dependent measure used in this study was titled Maze Performance. The maze task was a modified version of the Porteus Maze Test (Porteus, 1965; Smith, 1960). The Porteus Maze test was modified so that it would primarily measure learning instead of intelligence. Participants were given up to 10 attempts to complete the same difficult maze, and their progress through the maze provided an index of their functional learning. When participants made a mistake (i.e., where a dead end was met and the person was forced to double back), they began a fresh maze from the start. The laboratory task was therefore a learning exercise, such that a participant learned the correct route through the maze and performance could be measured in terms of furthest distance traveled. Progress through the maze was defined by the distance correctly traveled through the maze as determined by breaking the correct path into 51 equi-size intervals and

giving participants a score between 0 and 50 depending on how far they progressed through the maze on their best attempt.

Procedure

Upon entering the experimental room, participants were seated behind a desk and provided with a booklet of 10 identical mazes. Participants were instructed to begin a fresh maze whenever they made a mistake and were stopped after 5 minutes. Following the maze task, participants completed a number of electronically administered questionnaires in the same room.

Results and Discussion

Means, standard deviations, and correlations between focal variables in this study are summarized in Table 1. The significant correlation between Sensation Seeking and Mastery Orientation is consistent with the argument that Sensation Seeking is moderately related to Mastery Orientation. Furthermore, the significant association between Sensation Seeking and maze performance provides support for Hypothesis 1.

Table 1 also indicates a marginal level of reliability for Sensation Seeking. Although not ideal, we do not consider this problematic, as Jackson's Sensation Seeking Scale has previously been shown to be reliable across many samples (Jackson, 2005) and the two independent samples used in Study 2 of this article also indicate acceptable reliability for this scale.

Hypotheses 2 and 3 could be tested simultaneously using mediated multiple regression. Following the standard procedure set out by Baron and Kenny (1986), three standard multiple regression analyses, followed (where applicable) by the Sobel test (Preacher & Hayes,

Table 1
Means, Standard Deviations, Alphas, and Correlations Between Learning Styles and Maze Performance ($n = 125$)

	Mean	SD	Alpha	SS	MA
Sensation Seeking (SS)	21.55	4.92	0.68		
Mastery Orientation (MA)	20.03	5.07	0.72	0.49**	
Best distance	38.29	8.67		0.22*	0.39**

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

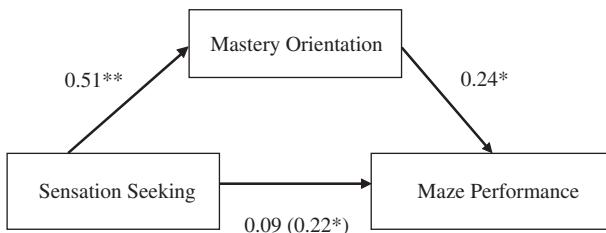


Figure 1

Mastery Orientation mediates the effect of Sensation Seeking on Maze Performance. Regression weights for the prediction of performance from Sensation Seeking only are included in parentheses.

2004; Sobel, 1982), were used to test the hypothesis that Mastery Orientation mediates Sensation Seeking in the prediction of Maze Performance. The results of this analysis are summarized in Figure 1. Figure 1 demonstrates a significant positive relationship between Sensation Seeking and Mastery Orientation, $\beta = 0.51$, $t(117) = 6.28$, $p < 0.001$, and a significant positive relationship between Mastery Orientation and Maze Performance, when controlling for Sensation Seeking, $\beta = 0.24$, $t(116) = 2.26$, $p < 0.05$ (support for Hypothesis 2). This represents full mediation, as the direct relationship between Sensation Seeking and Maze Performance became nonsignificant when Mastery Orientation was included as an independent variable, $\beta = 0.09$, $t(116) = 0.85$, $p = 0.40$. Consistent with this pattern of results, application of the Sobel Test (Preacher & Hayes, 2004) indicated that Mastery Orientation was a significant mediator of the relationship between Sensation Seeking and Maze Performance, $z = 2.16$, $p < 0.05$ (support for Hypothesis 3).

The results are consistent with Jackson's (2005) model, such that Mastery Orientation acts as a significant mediator of Sensation Seeking in the prediction of functional learning.

Study 1 provided a laboratory-based test of how Mastery Orientation mediates Sensation Seeking in the prediction of an objective measure of functional learning. Study 2 sets out to generalize and extend these findings to the real world.

STUDY 2

The purpose of this study was to test the four hypotheses derived from Jackson's model over two different samples. Sample A was a

group of working adults and Sample B was a group of schoolchildren. In both samples participants were given a number of self-report questionnaires measuring Sensation Seeking, Mastery Orientation, and several functional and dysfunctional behaviors.

Method

Participants

Participants comprised two differently aged samples from the UK and Australia.

Sample A. This sample comprised 347 part-time workers who were also in tertiary education. Most were less than 20 years old (59%), some were aged between 20 and 30 years (23%), and a few were above 30 (18%). The majority of participants in this sample were female (71.2%). Most worked in casual positions (56%), and most jobs were in the service industries (51%).

Sample B. This sample comprised 119 UK schoolchildren from a single school, aged between 14 and 16 (47% boys; 53% girls). Data were gathered as part of a school activity organized by the principal.

Independent Measures

The Learning Styles Profiler (LSP). This was again used to measure Jackson's Sensation Seeking and Mastery Orientation Scales.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS contains 20 items with response options of *very slight or not at all* (1), *a little* (2), *moderately* (3), *quite a bit* (4), and *extremely* (5). Scores indicate either positive or negative affect. The scales have high internal consistency ($\alpha > 0.87$) and were administered only to Sample A to determine the effect on the predicted statistical relationships if the effects of positive and negative affect are partialled.

Dependent Measures

Multiscale Work Performance Questionnaire (Griffin, Neal, & Parker, 2001). This is a three-factor measure of task and contextual performance, assessing compliance, adaptability, and proactivity in relation to activities that contribute to work outcomes. Two of the scales were utilized in this study: those assessing outcomes at the individual level of analysis (Job Performance; 11 items) and the organizational level of

analysis (Organisational Performance, 9 items). Example Job Performance items are “To what extent have you carried out the core parts of your job well?” “To what extent have you avoided mistakes and errors when completing core tasks?” and “To what extent have you initiated better ways of doing your core tasks?” Example Organizational Performance items are “To what extent have you adjusted well to changes in the organization?” and “To what extent have you defended the organization if others criticized it?” This measure was used in Sample A.

Work Performance Questionnaire adapted for the school environment (Johnson, 1998). This questionnaire contains six items, with higher scores indicating greater work performance. This scale has more than adequate internal consistency ($\alpha = 0.75$) and was utilized with minor adaptation as a measure of schoolwork performance. Example items are “I study hard and work to the best of my abilities,” “I get along well with my fellow students,” and “My teacher knows I am doing a good job.” This measure was used in Sample B.

Self-Reported Delinquency (Furnham & Thompson, 1991). This scale consists of 51 items on theft, tax avoidance, cheating, drug use, and violence. Responses were on a 2-point scale, with higher scores representing greater delinquency. This measure was used in Sample A.

Times in detention. This was a simple count of the number of times the participant had been excluded or put in school detention over the previous year. This measure was used in Sample B.

Procedure

During each testing session, participants completed a number of electronically administered questionnaires in a room under the supervision of a research assistant (Sample A) or teacher (Sample B).

Results and Discussion

Sample A: Part-Time Workers Also Studying at University

The means, standard deviations, internal reliabilities, and correlations between Sensation Seeking, Mastery Orientation, and the various measures of positive and negative behavior are included in Table 2. In support of Hypothesis 1, Sensation Seeking is associated with both functional and dysfunctional behavior.

Table 2

Sample A: Means, Standard Deviations, Alphas, and Correlations Between Learning Styles and Indicators of Functional and Dysfunctional Behavior ($n = 347$)

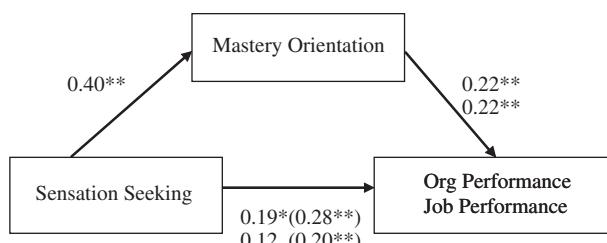
	Mean	SD	Alpha	1	2	3	4
Sensation Seeking (1)	23.14	5.80	0.83				
Mastery Orientation (2)	23.17	6.12	0.87	0.40**			
Organizational Performance (3)	27.54	6.50	0.85	0.28**	0.30**		
Job Performance (4)	40.03	6.11	0.87	0.20**	0.26**	0.53**	
Delinquency	54.22	19.02	0.98	0.13*	0.00	-0.05	-0.02

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

Note: $n = 257$ for Organizational and Job Performance.

Standard multiple regression analyses, again followed by the Sobel test (Preacher & Hayes, 2004; Sobel, 1982), were used to test Hypotheses 2 and 3. Relevant standardized path coefficients (beta weights) are summarized in Figure 2.

Figure 2 shows a significant positive relationship between Sensation Seeking and Mastery Orientation, $\beta = 0.40$, $t(255) = 6.96$, $p < 0.001$, and a significant positive relationship between Mastery Orientation and both Job Performance, $\beta = 0.22$, $t(254) = 3.33$, $p < 0.01$ and Organizational Performance, $\beta = 0.22$, $t(254) = 3.43$, $p < 0.01$ (support for Hypothesis 2). In relation to the Job Performance DV, this represents full mediation, as the direct relationship between Sensation Seeking and Job Performance became nonsignificant when Mastery

**Figure 2**

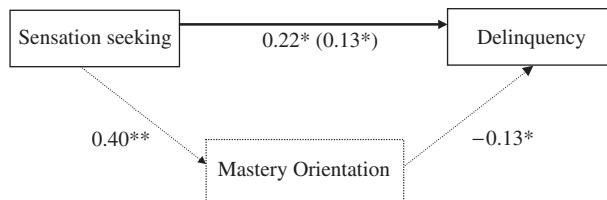
Mastery Orientation mediates the effect of Sensation Seeking on indicators of positive work behavior.

Orientation was included as an independent variable, $\beta = 0.12$, $t(254) = 1.17$, ns . In relation to the Organizational Performance DV, this represents partial mediation, as the direct relationship between Sensation Seeking and Job Performance was weakened when Mastery Orientation was included as an independent variable, $\beta = 0.19$, $t(254) = 2.9$, $p < 0.01$.² Application of the Sobel Test (Preacher & Hayes, 2004) indicated that Mastery Orientation was a significant mediator of the relationship between Sensation Seeking and Job Performance, $z = 3.00$, $p < 0.01$, and that Mastery Orientation was a significant partial mediator of the relationship between Sensation Seeking and Organizational Performance, $z = 3.06$, $p < 0.01$. The results therefore support Hypothesis 3, and suggest that Mastery Orientation fully mediates Sensation Seeking in the prediction of Job Performance and partially mediates Sensation Seeking in the prediction of Organizational Performance.

Hypotheses 2 and 4 were then tested with a series of standard multiple regressions in the prediction of dysfunctional behavior. It was hypothesized that Mastery Orientation would be directly associated with dysfunctional behavior (Hypothesis 2) and that Mastery Orientation would suppress the positive relationship between Sensation Seeking and dysfunctional behavior (Hypothesis 4). Specifically, Hypothesis 4 proposes a positive direct relationship between Sensation Seeking and Mastery Orientation and a negative direct relationship between Mastery Orientation and dysfunctional behavior (i.e., an indirect effect). This proposed indirect effect can be tested for significance using the Sobel test (indirect effects such as this can be tested using methods developed for mediated effects; see MacKinnon et al., 2000; Shrout & Bogler, 2002). The results of this analysis are summarized in Figure 3.

In accordance with Hypotheses 2 and 4, Figure 3 indicates a positive unique relationship between Sensation Seeking and Mastery Orientation, $\beta = 0.40$, $t(345) = 6.96$, $p < 0.001$, and a negative unique relationship between Mastery Orientation and Delinquency, $\beta = -0.13$, $t(344) = 2.9$, $p < 0.01$. Furthermore, as hypothesized, inclusion of Mastery Orientation in the regression analysis (thus

2. Even when controlling for positive and negative affect (using the PANAS and entering positive and negative affect at Step 1 of each regression equation), results were unchanged in that goal orientation was found to be a significant mediator for both Job and Organisational performance.

**Figure 3**

The indirect effect from Sensation Seeking to Delinquency through Mastery Orientation.

removing the variance of Mastery Orientation from Sensation Seeking) increased the relationship between Sensation Seeking and delinquency. Application of the Sobel test revealed this effect to be marginally significant ($z = -1.95, p = 0.05$). It should be noted however, that this effect lost significance when controlling for positive and negative affect ($z = -1.27, p = 0.20$).

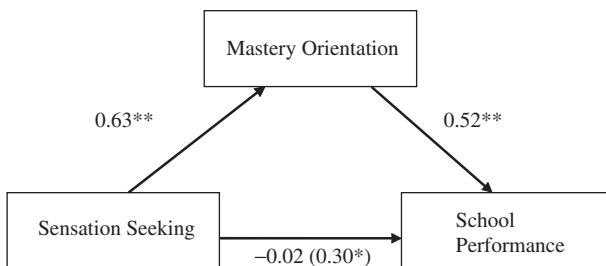
Sample B: Schoolchildren

The means, standard deviations, internal reliabilities, and correlations between learning styles and behavioral measures are summarized in Table 3. It should be noted that Times in Detention was positively skewed and had a large standard deviation in comparison to its mean value (*skewness* = 2.65, *S.E.* = 0.22; *kurtosis* = 6.69, *S.E.* = 0.44). This is not surprising, considering a large number of students would receive few detentions and a small number would receive many. For this reason, hypotheses were tested using a transformed (logarithmic transformation) distribution for Times in

Table 3
Sample B: Means, Standard Deviations, and Alphas for Learning Styles and the Measure of School Performance ($n = 119$)

	Mean	SD	Alpha	1	2	3
Sensation Seeking (1)	18.71	5.18	0.79			
Mastery Orientation (2)	17.98	6.11	0.85	0.63**		
School Performance (3)	17.73	2.72	0.77	0.30**	0.51**	
Times in Detention (4)	7.11	13.09		0.17	-0.06	-0.25**

** $p < .01$ (2-tailed).

**Figure 4**

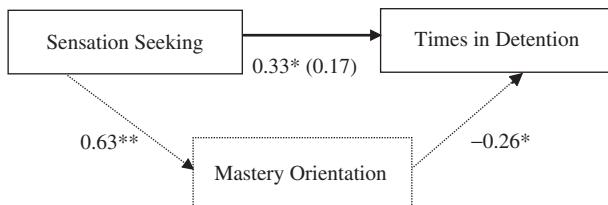
Mastery Orientation mediates the effect of Sensation Seeking in the prediction of School Performance.

Detention. This transformation resulted in a more symmetrical distribution, making it more appropriate for parametric testing (*skewness* = 0.72, *S.E.* = 0.22; *kurtosis* = -0.38, *S.E.* = 0.44).

It can be seen from Table 3 that that the positive correlation between Sensation Seeking and Mastery Orientation was stronger in this sample than in Sample A. In partial support of Hypothesis 1, Sensation Seeking was found to be significantly positively correlated with School Performance but not significantly correlated with Times in Detention.

Results of the mediated multiple regression mirrored those of the workers. As can be seen in Figure 4, there was a significant positive relationship between Sensation Seeking and Mastery Orientation $\beta = 0.63$, $t(117) = 8.77$, $p < 0.001$ and a significant positive relationship between Mastery Orientation and School Performance, $\beta = 0.52$, $t(116) = 5.05$, $p < 0.001$ (support for Hypothesis 2). In support of Hypothesis 3, this represents a full mediation, as the direct effect between Sensation Seeking and School Performance was essentially nullified when Mastery Orientation was included as a mediator, $\beta = -0.02$, $t(116) = -0.24$, *ns*. Application of the Sobel test revealed that this was a significant mediation, $z = 4.37$, $p < 0.001$.

With regard to the proposed indirect effect between Sensation Seeking and dysfunctional behavior via Mastery Orientation (i.e., Hypotheses 2 and 4), results once again were similar to those of the student sample. As can be seen in Figure 5, there was a positive relationship between Sensation Seeking and Mastery Orientation $\beta = 0.63$, $t(117) = 8.77$, $p < 0.001$, and a negative direct effect between Mastery Orientation and (log of) Times in Detention $\beta = 0.26$, $t(117) = -2.30$, $p < 0.05$ (support for Hypothesis 2). Furthermore,

**Figure 5**

The indirect effect from Sensation Seeking to Times in Detention through Mastery Orientation.

the direct effect between Sensation Seeking and (log of) Times in Detention increased once Mastery Orientation was controlled (suppression). In support of Hypothesis 4, the indirect/suppressor effect was found to be significant when tested using the Sobel test, $z = -2.23 p < 0.05$.

GENERAL DISCUSSION

A key premise of Jackson's (2005) model is that cognitive strategies redirect Sensation Seeking to predict functional behaviors. This study focused on the relationship between Sensation Seeking and Mastery Orientation and tested four hypotheses derived from Jackson's (2005) model of learning. First, it was hypothesized that Sensation Seeking is associated with both functional and dysfunctional behaviors. Second, it was hypothesized that Mastery Orientation would be positively associated with functional behaviors and negatively associated with dysfunctional behaviors. Third, it was hypothesized that Mastery Orientation would mediate the relationship between Sensation Seeking and indices of functional behavior. Fourth, it was hypothesized that there would be an indirect relationship between Sensation Seeking and indices of negative behavior, such that the relationship between these two variables would increase when controlling for Mastery Orientation. In both studies, support was generally found for Hypotheses 1, 2, and 3. In Study 1, it was found that Mastery Orientation mediates Sensation Seeking in the prediction of maze performance. In Study 2, support was generally found for all four hypotheses over two very different samples. Overall results supported Jackson's (2005) notion that Sensation Seeking and Mastery Orientation play a part in the prediction of functional and dysfunctional behavior. We note, however, that the

results for Hypothesis 4 were considerably weaker than the results for Hypothesis 3.

Theoretical and Practical Implications

Support for key features of Jackson's (2005) model of learning has several important implications in terms of theory, understanding the development of prosocial behavior such as work performance, understanding of antisocial behavior, and therapy. In terms of theory, results of this study are consistent with Jackson's premise that undirected Sensation Seeking provides the source for both functional and dysfunctional learning. In terms of development of our knowledge of prosocial behavior such as workplace performance, our findings show that development of Mastery Orientation is related to positive workplace behaviors. In terms of furthering our understanding of delinquency, criminality and antisocial behavior, findings suggest that undirected Sensation Seeking is potentially harmful in the absence of Mastery Orientation. Fortunately, such cases are likely to be rare in the general population, based on our findings of strong, positive correlations between Sensation Seeking and Mastery Orientation.

Eysenck (1996, p. 148), in attempting to understand criminal activity, writes "The real question is . . . why do we behave in a socially desirable manner" rather than why do people commit crime. Jackson's model provides an answer by suggesting that criminality is the behavior of an appetitive person who has a sociocognitive failure to reexpress their instinctive urges into more functional outcomes. Such failure can derive from many sources, including 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.

Strengths and Limitations

We consider a strength of this report to be the replication of results over two studies and three different samples. The studies are both laboratory and field based, samples are from Australia and the UK and from different age groups, and the samples use different dependent variables. There may be some concern, however, regarding discrepancies in the magnitude of regression weights over the two

samples in Study 2. Specifically, in Sample A, while both mediations were significant, the reduction in the association between Sensation Seeking and functional behavior when controlling for Mastery Orientation was only modest. In Sample B, on the other hand, the reduction in the association between Sensation Seeking and functional behavior when controlling for Mastery Orientation was quite dramatic. It would seem that the most likely explanation for this discrepancy is the contextual differences in the dependent variable. Specifically, it seems that extraneous variables (such as goal ambiguity and level of intrinsic motivation) are more likely to affect the relationship between goal setting and performance in a part-time working student sample than in a school student sample.

Conclusion

In summary, results are consistent with Jackson's (2005) claim that "Saints" and "Sinners" can be conceptualized as having the same basis in Sensation Seeking. Support is found for the view that Sensation Seeking is associated with functional and dysfunctional outcomes as a result of the indirect effect of Mastery Orientation. Results provide support for Jackson's model, which combines both the trait and sociocognitive approaches of learning and personality into one coherent framework.

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