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Surfing: an avenue for socially acceptable risk-taking, satisfying needs for sensation seeking and experience seeking☆

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Abstract

Whether the personality characteristics of sensation seeking and openness to experience and participation motives differ between participants in the high-risk sport of surfing ($n=41$) and participants in a low-risk sport (golf; $n=44$) was investigated. Multivariate analysis indicated that surfers are characterised by higher levels of sensation seeking, as measured by the Sensation Seeking Scale-V (Zuckerman, 1983) and Openness to Experience, as measured by the NEO-Personality Inventory Revised (Costa & McCrae, 1992). Surfers also demonstrated higher levels of Intrinsic Motivation, measured by the Sports Motivation Scale (Pelletier et al., 1995) than golfers, while both groups demonstrated similar levels of Extrinsic Motivation. These results suggest that personality factors, together with types of participation motives, may be useful in discriminating between participants in low- and high-risk sports, which in turn could be used to promote surfing as a positive risk-taking pursuit.

Keywords: Sensation seeking; Experience seeking; Surfing; Risk-taking; Openness to Experience; Intrinsic motivation

1. Introduction

What attracts particular individuals to take up a sporting activity is relevant to understanding the adoption of, and persistence with, a given sport. Among the many factors that may influence sport participation, individual personality characteristics and motives for participation have been identified as important variables. Research has found that participants in high-risk sports score

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higher on sensation seeking than low-risk sport participants, suggesting risk-taking may be a personality characteristic associated with participation in high-risk sports. Zuckerman (1983) has classified sports on a risk continuum, where risk is classified by consequence (e.g. injury, mental harm and punishment) and is a function of objective and subjective appraisal. Sports such as skydiving are placed on the risk end of this continuum where both serious injury and fatality are possible consequences of participation. Golf is an example of the low-risk end of the continuum where the possibility of injury is present, yet low, and fatalities are rare. Surfing involves both the potential for serious injury as well as acute danger (including fatality) and is categorised as high-risk (Rowland, Franken, & Harrison, 1986; Zuckerman, 1989).

Since surfing involves high levels of risk, it may attract individuals with sensation seeking tendencies. Sensation seeking is defined as: ''the need for varied, novel and complex sensations and experiences, and the willingness to take physical and social risks for the sake of such experience'' (Zuckerman, 1979, p. 10). Sensation seeking has been highlighted as a specific need that may be fulfilled by participation in certain sports, including hang-gliding (Wagner & Houlihan, 1994), telemark skiing (Trafton, Thomas, & Meyers, 1997) and mountain climbing (Cronin, 1990), which suggests that surfing may also provide an avenue for satisfying a sensation seeking need.

The most widely used scale for measuring sensation seeking is the Sensation Seeking Scale—V (SSS-V) (Zuckerman, 1983), which assesses four aspects of sensation seeking: Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS), and Boredom Susceptibility (BS). Comparisons have revealed significant positive relationships between high-risk sport and both specific subscale and Total Sensation Seeking scores obtained using the SSS-V. Freixanet (1991) compared participants in high-risk sports (experienced mountain climbers, mountaineers, water skiers, motorcyclists and scuba divers) with a control group not participating in any risk taking sport. All participants of high-risk sports scored significantly higher than the control group on TAS, ES and Total Sensation Seeking (TotSS). Similarly, hang-gliders have been found to score significantly higher than a control group of golfers on all four subscales of the SSS-V and Total Sensation Seeking (Wagner & Houlihan, 1994), while Jack and Ronan (1998) found similar patterns of differences in a diverse group of sports participants. Schroth (1995) found that athletes of both genders scored higher on sensation seeking as measured by the SSS-V compared with their non-athlete counterparts. However, while female athletes scored higher than female non-athletes, both groups of males (athletes and non-athletes) scored higher on sensation seeking than their female counterparts. In addition, sensation seeking scores were higher for participants in contact sports (rugby and lacrosse) compared with individuals engaging in non-contact sports (rowing and soccer). Overall, athletes had higher scores on total sensation seeking and the thrill and adventure seeking, disinhibition and boredom susceptibility subscales compared with non-athletes.

While positive relationships between high-risk sport participation and sensation seeking tendencies have been observed, Zuckerman (1992) stresses that risk taking is not an essential motivation for sensation seeking behaviour. This was demonstrated by Heyman and Rose (1980) who investigated level of sensation seeking tendencies and depth of scuba dive in a group of low and high sensation seeking student divers. High sensation seekers appeared to prefer the greater opportunity of visual exploration in shallow water, supporting the suggestion that sensation seekers do not take risks for the sake of risk alone—there has to be some kind of novel experience to justify the risk. Therefore, exposure to risk is not the only reason for sport participation in

high-risk sport. Similarly, Joireman, Fick, and Anderson (2002) found that scores on the thrill and adventure seeking and disinhibition subscales of the SSS-V (Zuckerman, 1979) predicted involvement in chess, an interesting finding given that the items on the thrill and adventure seeking subscale deal exclusively with high-risk sports. In relation to surfing, individuals may be attracted because of the varied sensations experienced, where certain exposure to risk may be encountered and justified.

1.1. Sensation seeking and openness to experience

Sensation seeking is more closely related to physical sensation rather than cognition (Zuckerman, 1992), where many of the pleasures sought by sensation seekers involve unusual body sensations. However, cognitive dimensions of personality may also assist in understanding reasons for participation in high-risk sport. In terms of the "big five" personality traits defined by Costa and McCrae (1992), Openness to Experience emerges as the strongest correlate to sensation seeking (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1994). Openness to Experience is measured by six components including; *fantasy*, *aesthetics*, *feelings*, *actions*, *ideas* and *values*, each of which form an individual subscale within the factor. Primarily, Openness to Experience consists of cognitive sensations, although the facet of *actions* is external in that it refers to physical activity. According to McCrae (1987), the elements of openness have in common "an interest in experience for it's own sake" (p. 1259). Given this description, the components of Openness to Experience appear similar to descriptions of sensation seeking pursuits and may represent the cognitive aspects of sensation seeking.

In validating the dimension of Openness to Experience, McCrae (1987) used a comparison with sensation seeking, where a significant relationship was found between Openness to Experience and Total Sensation Seeking scores as well as all subscale scores, except Boredom Susceptibility, of the SSS-V (1983). The highest correlation was with Experience Seeking (0.45), which is to be expected from the definition of that factor as "the seeking of arousal through the mind and senses" (Zuckerman, 1984, p. 286). In contrast, Zuckerman et al. (1994) found that only the Experience Seeking scale of the SSS-V correlated with the Openness to Experience subscale of the NEO-Personality Inventory Revised (NEOPI-R, 1992), indicating that only one aspect of the sensation seeking dimension is related to openness. Furthermore, Zuckerman (1994) asserts that there is no relationship between sensation seeking and openness, with previous reported associations between subscales of the SSS-V and Openness to Experience subscale of the NEOPI-R solely due to the relationship with the Experience Seeking subscale of the SSS-V, and not the entire dimension. The discrepancy between the findings of McCrae and Zuckerman could arise because cognitive aspects of sensation seeking behaviour may be partially attributed to the Experience Seeking subscale of the SSS-V, while the personality dimension of Openness to Experience could also represent a separable aspect of cognition related to sensation seeking.

Openness to Experience may differ between participants in surfing compared to lower risk sport participants, with surfers scoring higher on this personality characteristic. However, engaging in a high-risk sport may involve more than personality dimensions alone. For example, the motivation to participate in a sport that involves an inherent exposure to risk may well be different to that of a low-risk sport participant.

1.2. Motivations for sport participation

A perspective that may be useful in exploring risk taking and sport participation is that the motivation to be successful in mastering dangerous tasks involves intrinsic rewards which may motivate the individual to take certain risks (Trimpop, 1994; Zuckerman, 1994). Research on the intrinsic and extrinsic motives associated with sport participation has been based predominantly on Self Determination Theory (Deci & Ryan, 1985, 1991). However, most of this research has focused on the duration and extent of participation based on levels of motivation, as opposed to understanding initial preference and participation in specific sports. Intrinsic and extrinsic motivation can be measured using the Sports Motivation Scale (SMS; Pelletier, Fortier, Tuson, Briere, & Blais, 1995), which is based on Deci and Ryan's (1985) Self Determination Theory. Within the theory of Self Determination, intentional behaviour is divided into self-determined (autonomous) and controlled behaviour (influenced from the outside). Deci and Ryan propose three distinct motivational forces can influence behaviour: Intrinsic Motivation, Extrinsic Motivation and Amotivation. Intrinsic motivation comprises three levels within the SMS scale: *intrinsic motivation to know, intrinsic motivation toward accomplishments and intrinsic motivation to experience stimulation*. The pleasurable rewards from intrinsic motivation may be physiological, emotional or cognitive. When the goals of action for the individual extend beyond those inherent in the activity, this refers to extrinsic motivation. Dimensions of extrinsic motivation include *external regulation,* referring to behaviour controlled by external sources. When external regulation has been internalised, as the acceptance or adaptation of others' beliefs as one's own, this represents *introjection* as an extrinsic motivation. *Identification*, as a level of extrinsic motivation, is present when the individual comes to value and judge the behaviour as important to the self, and performs it out of choice. Lower levels of extrinsic motivation amongst surfers may explain why social, health, fitness and competition factors have previously been found to be the least important reasons for participation in surfing (Farmer, 1992).

Intrinsic and extrinsic motivations are considered to be at opposite ends of a self-determination dimension. Deci and Ryan (1985), contend that only self-determined behaviour increases intrinsic motivation while controlled behaviour (external to the person or activity) decreases this motivation. This in turn suggests that only voluntary risk taking behaviour is intrinsically motivated, and that more self determined people regard potentially dangerous situations as a challenge while more 'controlled' people experience the same situations as threats (Deci & Ryan, 1987). If surfing involves high levels of physical risk, then participants may require higher levels of intrinsic motivation towards the activity in order to receive sensory rewards in the form of varied sensations and experiences. Such a process could be associated with sensation seeking tendencies and Openness to Experience personality dimensions.

A relationship between sensation seeking, and intrinsic motivation has been demonstrated by Babbitt, Rowland, and Franken (1990), who report that female participants in aerobics classes (low-risk), scored significantly lower than Australian female norms on the SSS-V. The main motives reported for participation in aerobics were identified as health, appearance, and weight control, each representing extrinsic motivations. While these findings suggest that individuals with lower sensation seeking tendencies participate in low-risk sport for extrinsic reasons, there is also evidence that individuals with higher sensation seeking tendencies participate in high-risk sports because they are intrinsically motivated.

Bennett and Kramer (2000) conducted open-ended interviews with male and female surfers about their motivations for peak performance. Both competition and free riding (recreational)

surfers tended to describe more intrinsic motivation for their participation. In a separate study, Bennett and Kramer (2001) investigated the reasons male and female professional surfers gave for big wave riding, reporting the top three motivations as "the feeling" (representing an *intrinsic motivation to experience*), "the challenge" and "self satisfaction and fulfilment" (both examples of *intrinsic motivation to accomplish*), all of which are intrinsic motives. Extrinsic motives described by the surfers included sponsorship (an example of *introjection*), travel (in the form of *external regulation*) and competition (as representing *identification*). However, each of these motives were described as secondary to the first three, since the athletes said they would ride big waves anyway, even if these extrinsic incentives did not exist. These findings demonstrate a possible relationship between intrinsic motivation and sensation seeking and suggest that surfers participate in their sport mainly for intrinsic motives and rewards.

It has been suggested that people engaging in activities involving high levels of risk receive intrinsic rewards (Trimpop, 1994), such as hormonal pleasures (Zuckerman, 1984) and only to a lesser extent, extrinsic rewards such as recognition. If risk taking is intrinsically rewarding, this may explain why vertigo, aesthetics and catharsis (Farmer, 1992) have been identified as important motivating factors for participating in surfing. Furthermore, if extrinsic motives are secondary to intrinsic ones, this would explain why social, health, fitness and competition are subjectively less important to surfers' participation.

1.3. Present research

The current research explored whether the personality factors of sensation seeking and openness to experience, together with types of motivations discriminate between participants engaged in surfing as a high-risk sport and low-risk sport participants. Based on previous research findings, a group difference is predicted between surfers and golfers on the combination of sensation seeking dimensions, openness to experience and type of participation motives. It is also expected that individuals with a strong tendency to seek sensations may be attracted to surfing, whereas individuals with lower sensation seeking dispositions would tend to participate in lower risk sports. Individuals who participate in the high-risk sport of surfing are also expected to score higher, not only on Total Sensation Seeking, but also on each specific subscale of the Sensation Seeking Scale-V (Zuckerman, 1983) than those individuals who participate in low-risk sports. If Openness to Experience is related to the cognitive aspects of sensation seeking, it is expected surfers will score higher on the openness trait of the NEOPI-R (Costa & McCrae, 1992) than a control group of low-risk sports participants. Finally, Intrinsic Motivation is predicted to be more important to surfers' participation than to a control group of low-risk sport participants who are expected to score higher on Extrinsic Motivation, as measured by the Sports Motivation Scale (Pelletier et al., 1995).

2. Method

2.1. Participants

Participants were recruited through a surf coast long boarders club and a golf club, both of which are located on the Surf Coast in Victoria, Australia. Questionnaires were distributed to 160

potential participants. Of these, 88 were returned (a return rate of 55%). Three questionnaires were removed because the primary sport indicated was not of interest, leaving a total of 85 questionnaires for the analyses. The final sample comprised 26 females and 59 males, ranging in age from 21 to 73 years, who were classified into one of four categories: Recreational Surfing, Competitive Surfing, Recreational Golfing and Competitive Golfing based on their level of participation in their sport (see Table 1).

2.2. Design

The research used a quasi-experimental design, where recreational and competitive golfers formed a control group of low-risk sport participants. Both recreational and competitive sport participants were included to control for the effect of level of participation. Independent variables were Sport (surfers, golfers), Level of participation (recreational, competitive) and Gender. Dependent variables included the subscale and total scores from the SSS-V (Zuckerman, 1983), total score on Openness to Experience (NEOPI-R, Costa & McCrae, 1992), and Total Intrinsic Motivation and Total Extrinsic Motivation from the SMS (Pelletier et al., 1995). To hold constant anticipated age differences between groups, and to protect against inflated type I error due to multiple tests of dependent variables, a three-way multivariate analysis of covariance (MANCOVA) was used to investigate the research questions. Sensation seeking measures, Openness to Experience and both Intrinsic and Extrinsic motivation scores were used to determine the variables that represent the linear combination of measures that distinguish golfers from surfers.

2.3. Materials

Participants completed an anonymous, self-report questionnaire comprising four sections. The sections included demographic questions, the Zuckerman Sensation Seeking Scale-V (Zuckerman, 1983) and the Openness to Experience subscale of the NEOPI-R (Costa & McCrae, 1992). To assess participation motives, the Sports Motivation Scale (Pelletier et al., 1995), was included. Questionnaire packages required approximately 20 min to complete and contained an addressed, reply-paid envelope so that completed questionnaires could be returned via the mail.

Table 1
Breakdown of the sample by age, gender, sport and level of participation

	Females			Males		
	M	S.D.	*n*	*M*	S.D.	*n*
Competitive Surfers	27.7	(6.03)	3	40.3	(8.9)	9
Recreational Surfers	30.5	(6.89)	8	37.5	(11.38)	21
Competitive Golfers	50.5	(10.58)	10	45.2	(17.05)	19
Recreational Golfers	46.2	(8.90)	5	46.5	(19.39)	10

2.3.1. Demographic questionnaire

The demographic subsection asked about age, gender, primary sport of participation (surfing or golf) and information regarding number of years of participation, hours per week of participation and level of sport involvement (recreational or competitive). Recreational participation was defined as unrestricted participation, whereas competitive participation was defined as competing at an interclub level or beyond. Participants were also asked to rate the levels of risk they associated with both surfing and golf respectively using a five point scale (1 = Very Little Risk, 2 = Small Risk, 3 = Medium Risk, 4 = High-risk, 5 = Very High-risk).

2.3.2. Zuckerman Sensation Seeking Scale-V (1983)

The Zuckerman Sensation Seeking Scale (SSS-V) measures Total Sensation Seeking (TSS) as well as four subscale dimensions of Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS) and Boredom Susceptibility (BS); each containing ten items. The scale comprises 40 items requiring forced choice responses between two statements. Internal reliabilities of the TSS score range from 0.83 to 0.86; the ranges of reliability for the subscales are: TAS, 0.77–0.82; ES, 0.61–0.67; DIS., 0.74–0.78, and BS, 0.56–0.65. (Zuckerman, Eysenck, & Eysenck, 1978). Higher scores for TAS indicate a desire to engage in risky and adventurous activities and sports providing unusual sensations. For ES, higher scores represent the seeking of stimulation through the mind and the senses. A higher score on DIS describes a kind of impulsive extraversion, whereas high scores on BS represent an aversion to repetitive experience (Zuckerman, 1994). For this sample, reliabilities for each scale used in the study are reported in the Results section.

2.3.3. Openness To Experience Scale of the NEOPI-R (1992)

Openness to Experience consists of six component scales: *fantasy*, *aesthetics*, *feelings*, *actions*, *ideas* and *values*, each consisting of eight items, some of which are reverse scored. Each item is rated on a five-point Likert scale, and item responses are scored from 1 (strongly disagree) to 5 (strongly agree). The internal consistency coefficients range from 0.86 to 0.95 for the Total Openness to Experience scale and 0.56 to 0.90 for each component scale. Stability coefficients range from 0.51 to 0.83 in three to 7 year longitudinal studies (Costa & McCrae, 1992). Higher scores on Total Openness to Experience indicate an active imagination, aesthetic sensitivity, attending to inner feelings, preference for variety, intellectual curiosity and independence of judgement (Costa & McCrae, 1992). Only total score was used in this analysis.

2.3.4. Sports Motivation Scale (SMS, 1995)

The SMS scale assesses seven forms of motivation: *intrinsic motivation to know, intrinsic motivation towards accomplishments, intrinsic motivation to experience stimulation, identified regulation, external regulation, introjected regulation and amotivation* and contains 28 items in total. Each item is rated on a five-point Likert scale and item responses are scored from 1 (strongly disagree) to 5 (strongly agree). Internal consistency coefficients range from 0.58 to 0.84 with a mean test–retest correlation of 0.70 (Pelletier et al., 1995). Confirmatory factor analyses support the seven-factor structure of the SMS, and the construct validity of the scale (Pelletier et al., 1995). Higher scores on Total Intrinsic Motivation represent engaging in an activity for the

pleasure and satisfaction derived from doing the activity, while higher scores on Total Extrinsic Motivation indicate motives that extend beyond those inherent to the activity itself (Pelletier et al., 1995). Amotivation scores were not used in this analysis.

2.4. Procedure

A sample of convenience was recruited from the Torquay Surf Coast Long Boarders Club and the Anglesea Golf Club. To be included in the study the participant needed to engage in either surfing or golf as their primary sport. Surfing was recognised within this study as involving the use of either short or long designed board, however body-boarding and body surfing were excluded, as these forms were not included in objective level of risk classification (Rowland et al., 1986; Zuckerman, 1989). Playing golf was recognised within this study as participating at courses or golf courses or links specifically designated for that purpose. Participants were also required to be over 18 years of age.

Members of each sport club were briefly addressed as a group, and invited to participate in the study. Club members were provided with information about the nature of the study, details of the questionnaire package and the procedure for returning the completed questionnaires. Interested potential participants were provided with a questionnaire package, which contained a description of the study, the questionnaire and a reply-paid envelope. Potential participants were requested to complete the questionnaire at a time and place convenient to them, and to return them via mail when completed.

3. Results

3.1. Initial data screening and scale reliability

3.1.1. Zuckerman Sensation Seeking Scale-V (1983)

In this study, internal consistencies for each subscale of the SSS-V were: *Disinhibition* $\alpha = 0.75$, *Boredom Susceptibility* $\alpha = 0.67$, *Thrill and Adventure Seeking* $\alpha = 0.82$, and *Experience Seeking* $\alpha = 0.65$.

3.1.2. Sports Motivation Scale (Pelletier et al., 1995)

Both Total Intrinsic Motivation and Total Extrinsic Motivation scores ranged from 12 to 60. Total Intrinsic Motivation scores comprised scores on *intrinsic motivation to know*, *intrinsic motivation towards accomplishments* and *intrinsic motivation to experience stimulation* subscales, and showed an internal consistency of $\alpha = 0.80$ for this study. Total Extrinsic Motivation score comprised scores on *identified regulation*, *external regulation* and *introjected regulation* subscales, and showed a good internal consistency of $\alpha = 0.78$ for this sample.

3.1.3. Openness to experience subscale of the NEO-PIR (1992)

Scale reliability was performed on the Total Openness to Experience score, which comprised *fantasy*, *aesthetics*, *feelings*, *ideas*, *actions* and *values* subscale scores. Total scores ranged from 48 to 240, with the internal consistency of the subscale high ($\alpha = 0.92$).

3.2. Levels of risk associated with surfing and golf

Both golfers and surfers perceived the risk associated with surfing to be greater than that associated with golf. The majority of golfers reported that surfing was medium- to high-risk, while golf was seen as involving little or no risk. Surfers tended to rate surfing as an activity involving moderate amounts of risk and golf as involving very little risk.

3.3. Assumption testing

Inspection of the histograms and probability plots in each cell indicated that the assumptions of normality were acceptable for all variables, with the exception of Thrill and Adventure Seeking (TAS) scores. Due to the limitations of MANCOVA regarding sensitivity to non-normality, a square root transformation was performed on TAS scores to reduce the possibility of producing type I or type II errors (Tabachnik & Fidell, 2000), with transformed scores for this variable used in subsequent analyses. All other assumptions for multivariate analysis of covariance were met. Family error rate was set at $\alpha = 0.05$, with each analysis classified as a family. After applying a Bonferroni correction, the main effects and interaction for each analysis were evaluated against $\alpha = 0.025$.

3.4. Analysis

A three-way multivariate analysis of covariance (MANCOVA) was performed on seven dependent variables (DVs): Disinhibition (DIS); Boredom Susceptibility (BS); Experience Seeking (ES); transformed Thrill and Adventure Seeking (RSRTAS); Total Openness to Experience (OPENNESS); Total Intrinsic Motivation (IMTOTAL) and Total Extrinsic Motivation (EMTOTAL). To control for differences in age between the groups, age was included as a covariate. Independent variables in the analysis were SPORT (surfers and golfers), LEVEL (competitive and recreational) and GENDER (male and female).

3.4.1. Multivariate main effects and interactions

There was a significant main effect for SPORT on the combined set of DVs, $F(7, 70) = 6.761$, $P < 0.001$. The partial eta squared for Wilks Lambda indicates the proportion of variability in scores on the combined set of DVs explained by SPORT is $\nu^2 = 0.403$, or approximately 40%. A significant main effect for the covariate AGE was observed, $F(7, 70) = 3.878$, $P < 0.001$. The partial eta squared for Wilk's Lambda indicates the proportion of variability explained by AGE is $\nu^2 = 0.279$ or approxiately 28%. No main effects for either GENDER or LEVEL were present. No significant interactions were observed.

3.4.2. Univariate tests

Tests of between subjects analysis of covariance (ANCOVA) with the covariate of age were performed between sport groups. Surfers scored significantly higher than golfers on Disinhibition, $F(1, 76) = 20.03$, $P < 0.001$, Thrill and Adventure Seeking, $F(1, 76) = 12.96$, $P < 0.001$, Experience Seeking, $F(1, 76) = 18.53$, $P < 0.001$ and Total Openness To Experience, $F(1, 76) = 20.12$, $P < 0.001$. Surfers also scored significantly higher than golfers for Total Intrinsic

Motivation, F (1, 76) = 5.55, $P < 0.001$, however Total Extrinsic Motivation was not significant (see Table 2). No significant differences were observed for the LEVEL factor.

For the factor of GENDER, females scored significantly lower than males on Disinhibition $F(1, 76) = 8.972$, $P < 0.005$. Males scored significantly lower than females on Total Openness to Experience, $F(1, 76) = 5.986$, $P < 0.025$ (see Table 3). There were no significant differences for the remaining DVs.

There was no significant interaction between SPORT and LEVEL. A significant interaction of SPORT and GENDER for Disinhibition scores was observed, where female surfers scored significantly higher than female golfers, $F(1, 76) = 8.734$, $P < 0.005$ (see Fig. 1). There were no other significant interaction effects found for this analysis.

3.5. Regression analysis of sensation seeking and openness

A regression analysis was performed to assess the value of Disinhibition, Boredom Susceptibility, Thrill and Adventure Seeking and Experience Seeking scores in predicting Total Openness to Experience. When all predictors were entered, the overall equation was significant, $R^2 = 0.473$, F (4,80) = 17.921, $P < 0.001$. However, the only significant unique predictor of Total Openness to Experience was the Experience Seeking subscale, with a unique effect $\beta = 0.635$, $P < 0.001$. Table 4 displays the unstandardised regression coefficients (B), the standardized regression coefficients (β), the semipartial (sr), and squared semipartial correlations (sr^2), for each sensation seeking subscale.

Disinhibition approached significance as a unique predictor of Total Openness to Experience, although Experience Seeking was the only significant predictor. As shown in Table 4, approxi-

Table 2
Estimated marginal means for all dependent variables as a function of sport

	DIS[a]	BS[a]	RSRTAS[a]	ES[a]	IM[b]	EM[b]	Openness[c]
Surfers	6.138	3.850	2.587	7.180	48.216	34.427	185.897
Golfers	3.683	3.128	2.003	5.168	44.35	36.667	163.189

[a] DIS = Disinhibition, BS = Boredom Susceptibility, RSRTAS = Thrill and Adventure Seeking, ES = Experience Seeking.
[b] IM = Total Intrinsic Motivation, EM = Total Extrinsic Motivation.
[c] Openness = Total Openness To Experience Scores.

Table 3
Estimated marginal means for all dependent variables as a function of gender

	DIS[a]	BS[a]	RSRTAS[a]	ES[a]	IM[b]	EM[b]	OPENNESS[c]
Females	4.138	3.332	2.219	6.289	46.553	34.410	180.292
Males	5.673	2.371	2.371	6.059	46.098	36.685	168.794

[a] DIS = Disinhibition, BS = Boredom Susceptibility, RSRTAS = Thrill and Adventure Seeking, ES = Experience Seeking.
[b] IM = Total Intrinsic Motivation, EM = Total Extrinsic Motivation.
[c] Openness = Total Openness To Experience Scores.

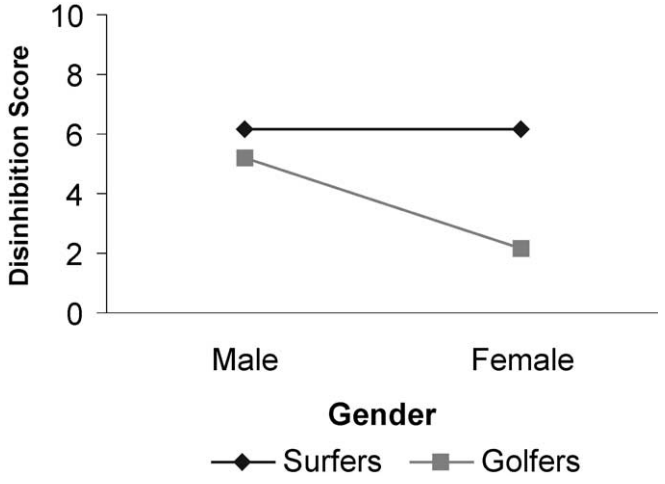

Fig. 1. Interaction of SPORT and GENDER on Disinhibition scores.

Table 4
Predictors of Total Openness to Experience

Predictor	*B*	β	Sr^2	T	Sig.
DIS	−1.804	−0.208	0.025	−1.973	0.052
BS	1.555	0.133	0.015	1.524	0.132
ES	6.470	0.635	0.260	6.307	0.000
TAS	5.920	0.183	0.020	1.770	0.081

Significance level set $\alpha = 0.05$. DIS = Disinhibition, BS = Boredom Susceptibility, TAS = Thrill and Adventure, Seeking, ES = Experience Seeking.

mately 26% of variance on Total Openness to Experience scores is explained by the Experience Seeking subscale of the SSS-V.

4. Discussion

With the exception of boredom susceptibility, the data confirmed the prediction that, compared to golfers, surfers would score significantly higher on each aspect of sensation seeking, including Thrill and Adventure Seeking, Experience Seeking, and Disinhibition. Surfers scored higher than golfers on all measures except extrinsic motivation and boredom susceptibility. The expectation that surfers would score significantly higher than the control group of low-risk sport participants on the Openness to Experience subscale of the NEOPI-R was also supported. However, the prediction that Openness to Experience is related to sensation seeking was not upheld by the data. The results of this study support Zuckerman's (1979) position that sensation seeking and Openness to Experience are conceptually distinct. Zuckerman maintains that previously reported associations between scores on the SSS-V and Openness to Experience are due to the relationship of the Experience Seeking component of the SSS-V. For this study, scores on the subscales of

Thrill and Adventure Seeking and Disinhibition approached significance as predictors of scores on Openness to Experience. However, the amount of variance explained by each (around 2%) was very small. In contrast, Experience Seeking was a significant predictor of Openness to Experience scores and explained over a quarter of the variability in scores for this measure.

The data from the current study supported the hypothesis that surfers would score significantly higher than golfers in total level of Intrinsic Motivation, and endorses the research of Bennett and Kramer (2000, 2001). However, the data failed to confirm the hypothesis that golfers would score significantly higher on total levels of Extrinsic Motivation. This prediction was made based on the findings of Babbitt, Rowland, and Franken (1990), who found the participation motives of members of an aerobics class, a sport which is classified as low-risk, were extrinsic. The level of extrinsic motivation for participation did not differ between the high and low-risk sports groups in this study, although surfers reported significantly higher intrinsic motivation for being involved in their sport. Our results suggest that those who take part in low-risk sports do not always have higher extrinsic motives for participation. Other characteristics of sports, apart from, or perhaps in addition to, whether they are low- or high-risk need to be investigated to establish the nature of any relationship between participation motives and types of sports.

Overall, the findings are consistent with the notion that individuals with a strong tendency to seek sensations will be attracted to surfing, whereas individuals with weaker sensation seeking dispositions will tend to participate in lower risk sports. In this study, sensation seeking differentiated surfers from low-risk sport participants, although the two groups exhibited similar levels of boredom susceptibility. A possible explanation for the non-significant difference between surfers and golfers on the sensation seeking dimension of Boredom Susceptibility may lie in the nature of the two sports. Golf requires patience in many respects, such as shot selection, reading the lie of the course and the time it takes to complete the game. Individuals high on boredom susceptibility might find the pace of golf to be too slow for them. Similarly, surfers require the ability to control boredom situations because of the variability of surf conditions, which may cause them to wait considerable lengths of time for appropriate conditions for surfing, and even between suitable waves.

An interesting finding of this study is that male and female surfers scored similarly on the Disinhibition subscale, while female surfers scored significantly higher than female golfers. The scores on the Disinhibition subscale for female golfers in this sample were considerably lower than scores for female golfers in Schroth's (1995) study. Given the older age of this sample compared to that of Schroth, this difference might reflect the age difference between the samples rather than any other characteristic. Schroth found that for his sample of university students, there were no differences on any of the subscales of SSS-V between female athletes participating in volleyball, soccer, softball, tennis and golf. However, in his sample, males scored higher than females, and male athletes higher than male non-athletes, on all subscales of the SSS-V, except Experience Seeking. The mean disinhibition scores for male and female surfers in this study, who are similar in age to Schroth's sample, are similar to the mean disinhibition score for male non-athletes, but slightly less than that of his male athletes. That the female surfers in this sample exhibited high levels of disinhibition may explain the low levels of female surf participation reflected in this study, where only 11 of the surfers were female. Females with higher levels of

Disinhibition may possess the personality characteristics necessary to overcome extrinsic barriers (e.g. social norms related to sex roles or stereotypes), in order to participate in the sport of their choice.

As expected, scores on the Openness to Experience subscale of the NEOPI-R (Costa & McCrae, 1992) were significantly higher for surfers than golfers. The nature of the surfing experience may thus attract individuals with stronger tendencies for fantasy, aesthetics, feelings, actions, values and ideas. Whilst only the Experience Seeking aspect of sensation seeking was found to be related to Openness to Experience, the observation that surfers score significantly higher indicates the possibility of an association with the sport of surfing itself, as distinct from the sensation seeking aspects of the sport. Alternatively, Experience Seeking may represent the information seeking (cognitive aspects) of sensation seeking.

In comparison to athletes in Schroth's (1995) study, the Australian surfers in the current study scored less on disinhibition (6.99 versus 6.138 in the current study) and less on boredom susceptibility (4.62 compared with 3.850).[1] Scores for surfers in this sample were similar to those of male non-athletes in Schroth's study on both disinhibition (5.99) and boredom susceptibility (3.66). However, the mean score on the Experience Seeking subscale for surfers in this study was 7.18 compared with 4.66 for the male athletes and 4.39 for male non-athletes in Schroth's sample. Thus experience seeking seems to be the characteristic that differentiates surfers from althletes in other sports such as rugby, lacrosse, soccer and crew, which were the sports represented in the study by Schroth.

It is interesting to note that in the present study, surfing was not rated as a high-risk sport. If this is a widely held view in the community, this may result in fewer individuals being attracted to surfing as a way of meeting a need for sensation seeking. In addition, the stereotypes and subculture associated with the sport may have an effect on participation rates.

5. Conclusions

In comparison to low-risk sport participants, the sample of surfers in this study were characterised by higher levels of Disinhibition, Thrill and Adventure Seeking and Experience Seeking dimensions of sensation seeking and Openness to Experience. Intrinsic Motivation was higher amongst surfers than the control group of low-risk sport participants. The personality dimensions of sensation seeking that appear to be associated with surfing include a desire to engage in risky and adventurous activities providing unusual sensations, and the seeking of stimulation through the mind and senses. Surfers are also more likely to possess an active imagination, aesthetic sensitivity, an attention to inner feelings, preference for variety, intellectual curiosity and independence of judgement (Costa & McCrae, 1992). Intrinsic motives are more important to surfers' participation, indicating participation in the activity for the pleasure and satisfaction derived from the activity itself.

[1] No comparison of the Thrill and Adventure Seeking scores was made between the two studies as the scores on this subscale for the current study were transformed to reduce skewness. Due to the excessive skew in the data, the mean score for this subscale in the current study is not an accurate representation of the central tendency of the group and so no comparison could be made.

The finding that sensation seeking is a personality dimension associated with participation in surfing supports Farmer's (1992) finding that vertigo is one of the most important motives for surfing. Higher levels of Openness to Experience associated with the sample of surfers' in this study explain the significance of aesthetics and catharsis to surfers' participation as identified by Farmer. As surfers in this study reported surfing to be intrinsically rewarding, this provides an explanation for the findings of Farmer that vertigo, aesthetics and catharsis were more important to surfers' participation than social, health, fitness or competition motives. The finding that aspects of sensation seeking, Openness to Experience and Intrinsic Motivation are linked to surfing, complements and extends the findings of Farmer through the application of the established psychological measures of personality and motivation. The current research findings also provide a basis for future exploration of surfing participation or related sport activities such as the new generation of 'extreme' sports. The results from the current study suggest that the personality factors of sensation seeking and openness to experience, together with level of intrinsic motivation maybe useful in discriminating between participants in low- and high-risk sports. These in turn could be used to promote surfing as a positive risk taking pursuit, through identifying the particular personality dimensions and motivations that attract participants to this sport.

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