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CAN PERSONALITY ACCOUNT FOR DIFFERENCES IN DRINKING BETWEEN COLLEGE ATHLETES AND NON-ATHLETES? EXPLAINING THE ROLE OF SENSATION SEEKING, RISK-TAKING, AND IMPULSIVITY

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Abstract

Collegiate athletes are an at-risk population for high risk drinking and related consequences when compared to the general college student population. However, little is known about how aspects of an individual's personality contribute to this relationship, making intervention efforts challenging. The current study examined sensation seeking, risk-taking, and impulsivity as methods of explaining the relationship between athlete and non-athlete drinking behaviors. Findings suggested athletes drank significantly more than non-athletes and this relationship seemed to function through sensation seeking and risk-taking. The role these characteristics play as risk or protective factors for high risk drinking and implications for interventions prioritizing athletes are discussed.

Although college students as a general population are considered at-risk for alcohol-related negative consequences and heavy drinking (Hingson, Zha, & Weitzman, 2009; Perkins, 2002; Wechsler, Molnar, Davenport, & Baer, 1999), collegiate student-athletes are at an even greater risk than the typical college student (Grossbard, Geisner, Mastroleo, Kilmer, Turrisi, & Larimer, 2009; Meilman, Leichliter, & Presley, 1999; Turrisi, Mallett, Mastroleo, & Larimer, et al., 2006; Wechsler et al., 1999). Participation in athletics at the collegiate level has been associated with elevated risk for consuming higher levels of alcohol, and in turn, experiencing more negative consequences (Leichliter, Meilman, Presley, & Cashin, 1998; Meilman et al., 1999; Nattiv & Puffer, 1991; Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997; Yusko, Buckman, White, & Pandina, 2008). As such, collegiate athletes have been identified as an at-risk group in need of university-based alcohol prevention and intervention efforts. While numerous athlete-specific programs have

been made available to universities across the country (e.g., CHOICES, CHAMPS, NCAA Speakers Registry), most target athletes as a community. However, differences in personality factors may make individual-level intervention a more appropriate avenue (Larimer & Cronce, 2007). As students, athletes and non-athletes alike, arrive on campus with different personal orientations, often making individual-level intervention challenging. Despite a well-developed understanding that athletes are at higher risk for alcohol related problems, few studies have examined underlying individual-level factors, which might contribute to higher consumption levels for this group (e.g., Brenner & Swanik, 2007; Grossbard et al., 2009; Hildebrand, Johnson, & Bogle, 2001; Leichter et al., 1998; Selby, Weinstein, & Bird, 1990; Wechsler, Fulop, Padilla, Lee, & Patrick, 1997; Yusko et al., 2008).

The research on drinking among athletes has mostly examined peer influences (e.g., Martens, Dams-O'Connor, Duffy-Paiement, & Gibson, 2006; Perkins & Craig, 2006; Turrisi, Mastroleo, Mallett, Larimer, & Kilmer, 2007), motives regarding drinking to cope (e.g., Martens, Dams-O'Connor, & Kilmer, 2007), and environment (e.g., Harvey, 1999; Turrisi et al., 2007). Based on these studies it is plausible to conclude athletes tend to drink more than their non-athlete peers due to greater alcohol availability, spending time with other heavy drinking athletes, and drinking to cope with stress. Another view is that athlete status interacts with the environment to facilitate higher drinking levels. Borsari (2004) and Zamboanga et al. (2008) identified that athletes may be more likely to engage in drinking games due to the team oriented play and competitive nature of such events.

Together, this body of work suggests more state-dependent reasons for athlete drinking (e.g., situations, stress, peers), which seems to limit the amount of personal responsibility placed on the athletes themselves. These ideas also fail to account for the reasons why non-athlete students who have heavy drinking peers, more stress, or more availability still tend to drink less than collegiate student athletes (Turrisi et al., 2007; Weschler et al., 1997). Evidence from studies examining individual characteristics suggest drinking might not only be a result of passive influence by the surroundings (peers, availability) or situation (high stress), but instead may be a product of individuals actively seeking out situations where there is greater potential for stimulating activities (e.g., parties, drinking) (Borsari, 2004). For example, Johnson and Sheets (2004) found individuals' motives for playing drinking games may be related to sensation seeking as they were found to be associated with "competition and thrills."

Grossbard, Geisner, and colleagues (2007) noted personality factors (e.g., sensation seeking) may serve as motives for athletes to play drinking games, which tend to result in higher alcohol consumption levels. Relative to non-athletes, athletes have been found to be higher in sensation seeking (Cross, Basten, Hendrick, Kristofic, & Schaffer, 1998); however, sensation seeking has typically been examined as a unidimensional variable in the athlete literature. Other researchers have suggested taking a more multidimensional approach when examining the influence of personality (i.e., sensation seeking, risk-taking, and impulsivity) on behavior (Zuckerman, Kolin, Price, & Zoob, 1964). In an attempt to identify potential explanations for differences in drinking activities between athletes and non-athletes, the present article examines sensation seeking, risk-taking, and impulsivity as mediators of the

relationship between athlete status (athlete vs. non-athletes) and drinking outcomes (see Figure 1).

Sensation Seeking

Sensation seeking (SS) is a trait defined in the literature as “the seeking of varied, novel, complex and intense situations and experiences and the willingness to take physical, social, legal and financial risks for the sake of such experience” (Zuckerman, 1979, p. 10). Studies examining this construct have found athletes at both the collegiate and recreational levels express higher levels of SS on the Sensation Seeking Scale-V (SSS-V; Zuckerman et al., 1964) compared to non-athletes. Past studies have shown little variation in SS between male and female participants (Gundersheim, 1987); however, strong differences between sport types (i.e., sky-diving vs. running) have been documented (O’Sullivan, Zuckerman, & Kraft, 1998). Although a fair amount of research has examined athletes and non-athletes as they differ on SS, few studies have associated SS with substance use and correlated consequences (Franques, Auriacombe, Piquemal, Verger, Brisseau-Gimenez, Grabot, et al., 2003). In a recent study, Yusko et al. (2008) found athletes high in SS reported a significantly greater number of heavy episodic drinking (HED) episodes than non-athletes. However, this study examined only one aspect of SS, limiting the overall understanding of the role SS plays in athlete drinking. Therefore, further examination of SS is necessary to better understand the underlying reasons for heavier drinking tendencies among student-athletes.

Risk-taking

In addition to the role SS plays in the drinking patterns and personalities of collegiate student-athletes, a tendency towards risk-taking is also minimally understood as it relates to student-athlete drinking tendencies. Few studies have examined risk-taking as a personality trait connected to collegiate athletic status and instead have examined risk-taking in the context of other risk behaviors (e.g., risky driving, not wearing a seatbelt, sexual risk behavior; Grossbard, Lee, Neighbors, Hendershot, & Larimer, 2007; Huang, Jacobs, & Derevensky, 2010; Nattiv, Puffer, & Green, 1997; O’Brien & Lyons, 2000; Schwenk, 2000). Overall, athletes as a group are considered to be more likely to engage in risk-taking behavior, which leads to high risk for binge drinking (5 or more drinks in one sitting) and a lack of appreciation for potential harm and consequences related to their drinking (Schwenk, 2000). Athletes have been shown to display higher risk-taking behavior (i.e., not wearing a seatbelt, riding with a driver who is driving under the influence) and endorse significantly higher rates of HED compared to non-athletes (Nattiv et al., 1997). Studies have also found athletes higher in SS hold more permissive attitudes towards risk, which resulted in a greater likelihood to engage in gambling activity (Cross et al., 1998; Huang et al., 2010). Despite the potential connection between risk-taking and sensation seeking in collegiate athletes (Zuckerman, 1983), no studies have specifically examined the relationship between risk-taking and collegiate athlete drinking.

Impulsivity

Closely related to the characteristics of SS and risk-taking, previous research has shown elevated impulsivity scores among athletes (Robinson, 1985; Straub, 1982; Zaleski, 1984).

Impulsivity is defined as an immediate and impetuous response to a stimulus without thoughtful planning (Buss & Plomin, 1975). Research has been mixed regarding impulsivity such that contact and “explosive” sport athletes (i.e., football) scored higher on scales of impulsivity compared to endurance athletes (i.e., runners) (Svebak & Kerr, 1989). In contrast, other research has shown football players and female field hockey players were significantly lower than their non-athlete counterparts on Impulsive Sensation Seeking (O’Sullivan et al., 1998). These findings may suggest that as a group, college team sport athletes are not significantly different than non-athletes on scales of impulsivity, suggesting the potential for competing hypotheses. While impulsivity has been linked to drinking behaviors in adolescents (Colder & Chassin, 1997), no known studies have examined this construct as it relates to the comparative drinking behaviors of college athlete and non-athlete students.

To date, few studies have examined sensation seeking, risk-taking, and impulsivity with substance use outcomes (Franques et al., 2003). Specifically, no studies have examined SS, risk-taking, and impulsivity in relation to higher drinking rates in collegiate student-athletes as compared to their non-athlete counterparts. In working to more completely understand the underlying reasons for heavier drinking tendencies among student-athletes, understanding the role of each of these potential mediators is vital. Therefore, the present study examines sensation seeking, risktaking, and impulsivity as mediators, or potential reasons for differential drinking outcomes in a sample of collegiate varsity athletes as compared to a group of non-athletes. We hypothesize athletes will engage in heavier drinking than non-athletes, presumably due to higher rates of sensation seeking, risk-taking, and impulsivity.

METHOD

Sample

Respondents consisted of 113 first-year collegiate athletes and non-athletes (61.1% female, $n = 69$) from a moderately sized, National Collegiate Athletic Association (NCAA) Division I university located in the northwest United States. Participants received course credit in exchange for their participation. The sample included in the current study was part of a larger trial ($N = 430$) examining alcohol use. All individuals in the larger sample were asked if they had competed in athletics (athlete status) at the high school level and if they were currently participating in athletics at the collegiate varsity level. Participants identifying no past athletic involvement at either level were coded as non-athletes ($n = 61$; 46%). Participants indicating “yes” to both questions were coded as athletes ($n = 52$; 54%). Participants were primarily Caucasian (85.6%), with 6.3% Hispanic, 1.8% Asian, 1.8% African American, and 4.5% “other.” The mean age of the sample was 18.6 ($SD = 0.69$) years. Each participant completed an informed consent form before participating in the study, and this study was approved by the university IRB and was in compliance with APA ethical guidelines.

Measures

Drinking Outcomes—Three drinking outcomes were selected and tested individually in the model in order to examine generalizability of the findings across different drinking

behaviors (e.g. typical vs. high risk). All drinking measures were drawn from previous literature on college alcohol consumption and found to be valid in past research with college student populations.

Weekend drinking: The first drinking outcome was based on items selected from the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). Research has identified weekend drinking as having the highest reported drinking quantity most consistently related to athlete status (Overman & Terry, 1991). Therefore, weekend drinking quantity was assessed with the questions, “Given that it is a typical week, please write the number of drinks you probably would have on Friday.” The same question was repeated for Saturday. An open-ended response was recorded and the two items were summed to create a weekend drinking variable. The DDQ has been widely used to assess drinking in college students without limiting participants with lower and upper bound response options (e.g., Larimer, Turner, Anderson, Fader, Kilmer, Palmer et al., 2001; Turrisi, Wiersma, & Hughes, 2000; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001).

Heavy drinking episodes: The second drinking outcome was based on a response to the question, “In the last 2 weeks, how many times have you had 5 or more drinks in a row?” (Wechsler, Dowdall, Maenner, Glenhill-Hoyt, & Lee, 1998). An open-ended response was recorded.

Peak drinking: Finally, peak drinking was identified using the question, “What is the most number of drinks you have consumed on any night in the past 3 months?” (Larimer et al., 2001). This open-ended question allowed participants an unrestricted range of responses.

Mediating Personality Traits—Sensation Seeking, Risk Taking, and Impulsivity were tested as mediators of the relationship between athlete status and drinking. All three traits were assessed using items from a modified version of Zuckerman’s work (1994, 1996). In instances when a summed variable was created from individual items, we examined factor loadings to ensure internal consistency.

Sensation seeking: The measure of sensation seeking was created by summing the following four items: “I like wild, uninhibited parties,” “I generally seek new and exciting experiences and sensations,” “Routine jobs really bug me,” and “I often like to get ‘high’ (drinking liquor or smoking marijuana).” Items were scored on a true/false scale. The items were chosen because they made conceptual sense in regard to college student sensation seeking as it relates to alcohol use in social situations. Factor analysis loadings ranged from .60 to .75.

Risk-taking: The risk-taking measure was created by summing the following three items: “I sometimes like doing things that are a little bit frightening,” “I enjoy taking risks,” and “I welcome new and exciting experiences and sensations even if they are a little frightening and unconventional.” Items were scored on a Likert-type scale scored 0–5 with 0 = “Strongly Disagree” and 5 = “Strongly Agree.” Factor analysis loadings ranged from .84 to .90.

Impulsivity: The impulsivity measure was created by summing the following three items: “I often do things on the spur of the moment,” “I am an impulsive person,” and “I often get into trouble because I do things without thinking.” Items were scored on a Likert-type scale scored 0–5 with 0 = “Strongly Disagree” and 5 = “Strongly Agree.” Factor analysis loadings ranged from .73 to .90.

Data Analysis—Using analysis of variance (ANOVA), we initially examined differences between athletes and non-athletes on drinking, sensation seeking, risk-taking, and impulsivity. Next, following the approach by Preacher and Hayes (2008), we examined a multiple mediator model. Using a bootstrapping approach due to non-normal distributions on our mediational and outcome measures, regression analyses were used to test the α and β paths using SPSS. The α path (the effect of athlete status on the hypothesized mediator) is assessed for statistical significance at the same time as the β path (the effect of the mediator on the outcome; see Figure 1). If both the α and β paths jointly show significance at the .05 level, there is evidence for a significant mediating relationship (e.g., being in the athlete/non-athlete group affects the outcome variable through changes in the mediating variables; e.g., MacKinnon, 1994). The mediated effect is the product of the α and β values ($\alpha \beta$) and provides an estimate of the relative strength between the mediated effects. For these analyses, athletes were coded as 0 and non-athletes as 1.

RESULTS

The focus of the analyses examined whether sensation seeking, risk taking, and impulsivity significantly mediated the relationship between athlete status and drinking. The results are presented in sections. The first section and Table 1 provide descriptive information on group differences between athletes and nonathletes on drinking and the mediating variables (i.e., sensation seeking, risk taking, impulsivity). The following sections describe results from the mediational analyses (see Figure 1). First, the effect of athlete status (athlete vs. non-athlete) on the predicted mediators (SS, risk-taking, and impulsivity) is presented (α paths). Second, the impact the mediators (personality factors) have on drinking is identified (β paths). Finally, the results of the full mediation model presented in Figure 1 are reported for all mediators. Results of the mediation analyses are reported in Table 2.

Preliminary Analyses

Results indicated athletes consumed significantly more drinks during the weekend (Friday and Saturday night) and during their most recently reported peak drinking occasion, and they engaged in more episodes of heavy drinking than their non-athlete peers (see Table 1). Further, athletes were found to be higher in sensation seeking and risk-taking than non-athletes, yet no differences were found for impulsivity (see Table 1). No significant interaction between athletic status and gender was observed.

Mediation Analysis

Athlete Status Effects on Personality Factors (α paths)—Athlete status effects were significant for sensation seeking and risk-taking (all $ps < .05$) (see column α , Table 2). However, athletic status was not significantly associated with impulsivity.

Personality Factor Effects on Drinking Outcomes (\$ paths)—Examination of the β paths in Table 2 revealed significant relationships with sensation seeking and weekend drinking ($p < .001$), heavy drinking episodes ($p < .05$), and peak drinking ($p < .001$). No significant relationships were found between risk-taking or impulsivity on any drinking outcomes.

Mediated Effects (α \$)

Results indicated sensation seeking significantly mediated the relationships between athlete-status and weekend drinking, heavy drinking episodes, and peak drinking (all $ps < .05$). Risk-taking was also a significant mediator of the relationships between athlete-status and heavy drinking episodes ($p < .01$). These results demonstrate the effects of athletic participation on drinking could be explained, at least in part by levels of sensation seeking and risk-taking.

DISCUSSION

Due to higher drinking tendencies, collegiate athletes experience more negative consequences when compared to their non-athlete peers (Meilman et al., 1999; Nelson & Wechsler, 2001). As previous work has focused more on external influences on athlete drinking behavior (e.g., Martens et al., 2006, 2007), the findings presented in this study provide a different perspective for the relationship between individual characteristics (sensation seeking and risk-taking) and drinking behaviors of collegiate student athletes when compared to non-athletes.

Results identified sensation seeking was a significant mediator of athletic status and a variety of drinking outcomes. This supports similar findings by Yusko et al. (2008), which found sensation seeking was more strongly associated with athlete, compared to non-athlete, drinking outcomes. It may be that these individuals not only engage in high risk drinking, but they also may be seeking out more stimulating situations as a means of social engagement. Considering a proportion of collegiate athletes are often highly competitive individuals, they may have a higher threshold for excitement and seek above average stimuli to match their inherent characteristics. These higher levels of sensation seeking may act as a risk factor for athletes considering the significant association with heavy drinking that was observed. As such, raising students' awareness regarding their own levels of sensation seeking may help them avoid situations that could increase their alcohol-related risk. For example, as identified by Grossbard, Gesiner and colleagues (2007), sensation seeking may be a characteristic tied to enhanced participation in drinking games, often leading to higher levels of alcohol consumed. Future research examining the context of athlete drinking may help to identify the interactions between sensation seeking and specific drinking behaviors, establishing opportunities for interventions to reduce high risk drinking behaviors.

Also identified was a significant mediating effect for risk-taking, which offers new information on this specific characteristic as it relates to athlete drinking behaviors. Schwenk (2000) noted athletes have a lack of appreciation for potential harm and consequences associated with their drinking, which has the potential for leading to higher levels of risk-taking characteristics. This, coupled with the impact alcohol has on decision-

making, could result in problematic outcomes for individuals engaging in risk-taking behaviors. As athletes continue to report heavier alcohol use than their non-athlete peers, the role of risk-taking, and athletes' potential lack of identified risk (Schwenk, 2000), may be factors associated with increased alcohol related problems and consequences. Interestingly, risk-taking was only a mediator for heavy drinking episodes, and not typical weekend or peak drinking suggesting its association with higher risk drinking patterns. This information may benefit efforts aimed at reducing athlete drinking behaviors and specific approaches for tailoring interventions for this population. Future studies examining the level and nature of risk-taking inherent in athletes and non-athletes may further the understanding of how these characteristics interact with drinking behaviors.

These data offer further support for O'Sullivan and colleagues' (1998) findings regarding athlete impulsivity. No mediating relationship was identified for this characteristic, possibly identifying college team sport athletes as routine and disciplined individuals in all aspects of their daily behavior (e.g., social, drinking). Although athletes drink at higher levels, impulsivity does not seem to be a sufficient explanatory reason. However, the current study defined impulsivity broadly, and we did not control for sport type. Additional research is needed to identify specific types of impulsivity, possibly in the context of different sport types that may impact higher alcohol use among collegiate athletes.

Implications for Intervention

Knowing athletes are higher in sensation seeking and risk-taking, while also consuming higher quantities of alcohol, creates an opportunity for interventions which aim to reduce high drinking levels and, in turn, reduce potential related negative outcomes. Given the wealth of options available for individual- and peer-based intervention (see Larimer & Cronce, 2007), coupled with the more recent application of such methods to the athlete population (e.g., Martens, Kilmer, Beck, & Zamboanga, 2010), it seems reasonable to supplement traditional areas of emphasis (e.g., peer norms, attitudes, etc.) within existing programs by also including content regarding athlete-specific personality characteristics. Past studies have shown success in using individual peer-led feedback sessions with high risk drinking groups on college campuses by lowering numbers of drinks per sitting (e.g., Fraternity members, Larimer et al., 2001; high school athletes, Turrisi, Larimer, Mallett, Kilmer, Ray, Mastroleo, et al., 2009). One idea would be to use similar approaches with collegiate varsity athletes to target safer drinking practices and interactions at parties, while also emphasizing the importance of recognizing risk. This may result in reduced drinking levels and other alcohol related problems. Additionally, Borsari and Carey (2000) and Fromme and Corbin (2004) found group-based motivational approaches successful in reducing alcohol consumption with mandated students, lending support for testing this method with an athlete population. Using a group-based approach aimed at correcting misperceptions of peer alcohol use and raising awareness of the influence of high levels of sensation seeking among athletes may be an appropriate intervention to reduce risky drinking behaviors. As Martens et al. (2006) showed peer influences impact athlete drinking behaviors, this group approach may be especially successful with a collegiate athlete population. To our knowledge, neither approach has been tested with athlete populations, leaving room for growth in the area of effective prevention strategies aimed at reducing high

risk drinking behaviors in an at-risk subpopulation of college students. With regard to individual-based interventions, Martens and colleagues (2010) recently found partial support for an electronically delivered personalized drinking feedback (PDF) intervention targeted specifically to collegiate student-athletes (i.e., used athlete specific normative information). Student-athletes in the PDF condition reported lower peak BAC levels at 6-month follow-up compared to athletes in the standard PDF and the assessment-only condition offers preliminary support for an intervention tailored specifically for college athletes.

Although findings of the current study are significant, there are limitations worth noting in the research. All respondents represented a single Division I institution. Although our study design limits generalizability of results beyond the current sample, results from this study are likely relevant to other college athlete populations based upon prior research at different universities and with different athlete sub-populations (e.g., Grossbard et al., 2009; Martens et al., 2007; Meilman et al., 1999). Similarly, we did not examine differences by sport type. Given results from the NCAA (2001) study identifying little variation in drinking differences between sports, results are likely to generalize to all collegiate sport sub-populations. In addition, the cross-sectional design of this study limits the ability to infer causal mechanisms between mediators and drinking outcomes. However, personality factors, such as sensation seeking and impulsivity, tend to be fairly stable individual traits, suggesting that exploration of these relationships longitudinally would produce similar results. Finally, there is always the possibility of concern when using self-report data. However, confidentiality was assured throughout the survey and consent form, and no identifiable information was collected as a component of this study. Furthermore, a recent meta analysis found no evidence of under-reporting alcohol use in college student samples (Borsari & Muellerleile, 2009).

Despite these limitations, the results showing collegiate student athlete alcohol use being mediated by sensation seeking and risk-taking offers new understanding regarding underlying factors related to drinking within this high-risk group. Testing previously successful interventions with this group will not only expand our understanding of how efficacious treatments respond with new populations, but we may also gain greater insight to methods of reducing the high levels of negative consequences experienced as a direct result of high drinking levels with college athletes.

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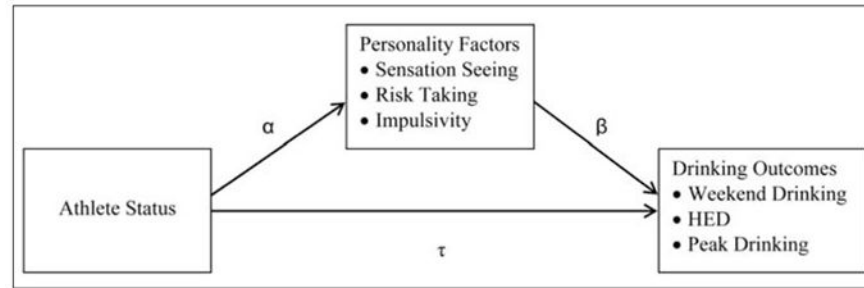


Figure 1.

General mediation model used to test the role of personality factors in the relationship between athlete status and drinking outcomes. *Note:* This model was tested as a multiple mediator model as identified in Preacher and Hayes (2008) for personality factors and each drinking outcome. This approach estimates the path coefficients, using a multiple mediator model, and generates bootstrap confidence intervals for total and specific indirect effects of athlete status on drinking outcomes through one, or more, mediator variable(s). The τ -path represents the direct effect of athlete status on each drinking outcome; the α -path represents the effect of athlete status on each personality factor; and the β -path represents the effect of each personality factor on the drinking outcomes.

Table 1

Means, Standard Deviations, and Group Differences at Baseline

	<u>Athlete</u>	<u>Non-athlete</u>	<u>F</u>	
	<i>M (SD)</i>	<i>M (SD)</i>	<i>(df = 1, 110)</i>	<i>p value</i>
Outcomes				
Weekend drinking	8.36 (8.44)	3.75 (6.12)	10.89	.001**
Peak drinking	9.45 (7.62)	4.89 (5.47)	12.89	.000***
Heavy drinking episodes	1.95 (2.38)	.80 (1.65)	8.68	.004**
Personality Factors				
Sensation seeking	2.18 (1.16)	1.65 (1.15)	5.81	.02*
Risk-taking	10.75 (2.49)	9.02 (3.16)	10.65	.001**
Impulsivity	8.49 (2.95)	8.43 (2.99)	.013	.91

Note:*
 $p < .05$,**
 $p < .01$,***
 $p < .001$.

Table 2

Athlete Status Effects on Personality Factors, Personality Factor Effects on Drinking Outcomes, Mediated Effects, and Significance of Mediated Effect

	(α)Athlete status effect on personality factors	(β)Personality factor effect on drinking outcomes	($\alpha\beta$)Mediated effect	Significance of Mediated Effect <i>p</i> -value
Weekend Drinking				
Sensation seeking	0.527*	4.068***	-2.141	-.022*
Risk-taking	-1.735**	-.177	.307	-.022
Impulsivity	-.063	-.048	.003	.007
Heavy Drinking Episodes				
Sensation seeking	-.526*	1.03***	-.539	-.002*
Risk-taking	-1.735**	-.091	.158	.008*
Impulsivity	-.063	-.018	.001	-.0001
Peak Drinking				
Sensation seeking	-.526*	3.036***	-1.598	.022*
Risk-taking	-1.735**	.124	-.215	.040
Impulsivity	-.063	.204	-.013	.013

Note:* $p < .05$,** $p < .01$,*** $p < .001$ two-tailed.