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Personality and motivational correlates of energy drink consumption and misuse among female undergraduate students

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ABSTRACT

This study used the theoretical framework of reversal theory to examine the associations between energy drink consumption and personality constructs, including negativism, morningness–eveningness, and learning orientation/grade orientation. An initial sample of 201 undergraduate students at a Canadian university responded to an online survey that included measures of energy drink consumption, demographics, and personality. Students who were older, those who had not used energy drinks in the past year, and the small number of males who remained after applying other exclusionary criteria were removed from final analyses, yielding a final sample of 96 female participants. Negativism and grade orientation were positively correlated with the inability to stop using energy drinks. In addition, eveningness was positively associated with energy drink tolerance. However, none of the personality variables were significantly associated with negative consequences of energy drink use. The findings of the present study contribute to the understanding of students' energy drink consumption and may guide university health professionals in developing programs designed to reduce energy drink misuse.

1. Introduction

Substance use among university students is a well-known and well-studied phenomenon. While alcohol and drug use have been the mainstay of substance use researchers, energy drink use remains relatively unstudied despite its increasing popularity among college students. The central purpose of the current study was to examine personality factors, using the framework of reversal theory, that predict energy drink use and misuse.

Energy drinks are defined in this study as beverages that contain a high concentration of caffeine and other ingredients (e.g. sugar, amino acids, herbal extracts) marketed as boosting energy levels. Energy drinks have higher caffeine content than soft drinks and coffee and may or may not contain alcohol (Reissig, Strain, & Griffiths, 2009), and are advertised as a way to increase physical endurance, alertness, and psychomotor performance. Energy drinks are consumed by many university students, but estimates of past-month prevalence of their use amongst university students vary widely, with recently reported rates ranging from 27.6% (Arria et al., 2011) to 70% (Pettit & DeBarr, 2011).

Malinauskas, Aeby, Overton, Carpenter-Aeby, and Barber-Heidal (2007) identified several common reasons why students consume energy drinks, including: compensating for not getting enough sleep, increasing energy, to help study, and drinking with alcohol while partying. These reasons suggest that students use energy drinks to increase energy or decrease feelings of fatigue and drowsiness. Although energy drinks have traditionally been marketed to athletes as a way to enhance athletic performance, many college students believe that energy drinks will boost their academic performance (Malinauskas et al., 2007). However, research has shown that there is actually a negative correlation between energy drink use and academic performance (Pettit & DeBarr, 2011).

1.1. Health risks of energy drinks

While many students believe that energy drink consumption is not risky (O'Dea, 2003), several studies suggest that energy drinks may pose a health risk. Malinauskas et al. (2007) found that energy drink users reported weekly jolt and crash episodes (29% of users), headaches (22% of users), and heart palpitations (19% of users) as a result of consuming energy drinks. In addition, roughly three-quarters of energy drink consumers mixed energy drinks with alcohol. Marczinski, Fillmore, Bardgett, and Howard (2011) suggested that energy drinks offset the drowsiness associated with alcohol consumption. As a consequence, individuals may

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underestimate their level of intoxication, which raises the risk of alcohol-related injury.

Because caffeine use is generally considered normative, it is important to distinguish heavy use from dependence. Caffeine dependence is defined as patterns of caffeine use that indicate tolerance effects, inability to stop using the drug, and negative consequences as a result of use (Strain, Mumford, Silverman, & Griffiths, 1994). We believe that a dependency model of energy drink use (or "energy drink misuse") is a better conceptualization of problematic energy drink use than frequency measures of heavy use. First, it is evident in the substance use literature that the relationship between heavy substance use and negative consequences is not as strong as the relationship between drug dependence and negative consequences (Feingold & Rounsaville, 1995). Second, focusing on misuse rather than use avoids the difficulty in quantifying caffeine intake, since the caffeine content of energy drinks varies greatly (Reissig et al., 2009).

1.2. Personality and energy drink use

Few studies have examined personality correlates of energy drink use. Among these, three personality traits have typically been examined: impulsivity, sensation-seeking, and risk-taking. Energy drink users scored significantly higher on impulsivity, risk-taking and sensation-seeking than non-energy drink users (Arria et al., 2010; Arria et al., 2011; Miller, 2008; Miller & Quigley, 2011). Risk-taking tendencies were associated with mixing energy drinks with alcohol (Brache & Stockwell, 2011; Miller, 2008). In addition, impulsivity and sensation-seeking were associated with caffeine dependence (Jones & Lejuez, 2005).

One theory of personality and motivation that appears to be a good fit for examining possible predictors of energy drink use is reversal theory. Reversal theory (Apter, 2001) posits that people alternate between opposing pairs of motivational states, also known as "metamotivational modes". In the present study, only the telic/paratelic and negativistic/conformist modes were examined. In the telic state, individuals are focused on pursuing subjectively-defined goals. They are serious, sensible, cautious, and future-oriented. In contrast, in the paratelic state, individuals seek immediate enjoyment, adventure, and thrills. In the negativistic state, individuals consider rules to be restrictive and want to be rebellious. People who score high on negativism engage in risky behavior *because of the risk it entails*. In contrast, in the conformist state, individuals are comfortable following the rules and obeying authority.

Reversal theory has been used to predict individuals' health habits and risky behaviors, but has not yet been applied to energy drink use. Previous studies have found that negativism dominance is associated with heavier smoking and alcohol consumption (Klabbers et al., 2009; Lafreniere, Menna, & Cramer, 2013); resistance to messages about the risks of marijuana use (Boddington & McDermott, 2012); and social and enhancement motives for marijuana use (Craig, O'Neil, & Lafreniere, 2013). In addition, previous studies have found that paratelic dominance is associated with placing larger bets while gambling (Anderson & Brown, 1987); heavy drinking (Lafreniere, Menna et al., 2013); and enhancement motives for alcohol use (Craig et al., 2013).

In a previous investigation, Lafreniere, Menna, Cramer, Tippin, and Ianni (2013) examined reversal theory constructs in relation to temperament, learning orientation and grade orientation, and morningness-eveningness, to predict academically risky behavior. Morningness refers to a tendency to be more alert in the morning (i.e. an "early bird"). In contrast, eveningness refers to a tendency to be more alert in the evening (i.e. a "night owl"). Their findings indicated that negativism dominance and paratelic dominance were positively related to grade orientation, and that negativism, paratelic dominance, grade orientation and eveningness were significantly associated with academic risk-taking.

Eveningness is relevant to the present study because it may affect patterns of energy drink consumption. Previous studies have found an association between eveningness and caffeine use. Eveningness has been associated with a greater need for sleep, more irregular sleep habits, and greater caffeine consumption (Mitchell & Redman, 1993; Taillard, Philip, & Bioulac, 1999; Taylor, Clay, Bramoweth, Sethi, & Roane, 2011). In addition, students scoring high on eveningness consumed more caffeine in the evening and nighttime hours than those who scored high on morningness (Shohet & Landrum, 2001).

Learning orientation and grade orientation (Eison, Pollio, & Milton, 1986) describe students' approach to the college experience. Learning orientation refers to the degree to which participants are motivated primarily by meeting intrinsic academic goals (i.e. gaining knowledge). In contrast, grade orientation describes the degree to which participants are concerned with meeting extrinsic academic goals (i.e. getting good grades). To our knowledge, no previously published study has examined the association between learning orientation/grade orientation and energy drink or caffeine consumption. We speculate that students who score high on grade orientation would be more likely to consume energy drinks in order to get better grades, as they are generally more inclined to find "shortcuts" to academic success compared to their peers who score high on learning orientation (Marsden, Carroll, & Neill, 2005).

1.3. Hypotheses

We proposed that there would be three primary motivators of energy drink misuse: negativism, eveningness preference, and grade orientation. Accordingly, it was hypothesized that:

(1) Tolerance, inability to stop, and negative consequences would be positively associated with negativism, grade orientation, and eveningness; and negatively associated with learning orientation.
(2) Energy drink use would be positively associated with negativism.
(3) Negativism would be associated with mixing energy drinks with alcohol.
(4) The negativism and paratelic personality scales would be positively associated with enhancement motives for energy drink use.

2. Method

2.1. Participants

Participants ($n = 201$) were recruited from the undergraduate psychology participant pool at a Canadian university. Our initial sample was comprised of 174 females (87%) and 27 males (13%) who ranged in age from 17–43 years ($M = 21.4$, $SD = 3.8$). Most of the participants (79%) described their ethnic background as Caucasian/European; 5% as Middle Eastern and 3% each as South Asian, East Asian or African Canadian, respectively, while the remaining 7% described themselves as Latin/South American, Aboriginal Canadian, bi- or multiracial or 'other', or did not respond.

We removed 105 participants who were over the age of 30 ($n = 8$), did not indicate their age ($n = 2$), did not consume energy drinks ($n = 24$), did not consume energy drinks within the last year ($n = 57$), or were male ($n = 14$), resulting in a final sample of 96. Based on our other exclusionary criteria, our sample would have yielded only 14 males, so we elected to focus on females only. Older participants were removed because their reasons for