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Assessing Energy Drink Consumption by College Students using the Theory of Planned Behavior

Justin Adam Treloar

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Assessing energy drink consumption by college students using the Theory of Planned
Behavior

By

Justin Adam Treloar

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Nutrition
in the Department of Food Science, Nutrition, and Health Promotion

Mississippi State, Mississippi

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2015

Assessing energy drink consumption by college students using the Theory of Planned
Behavior

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Energy drink consumption has become an increasing problem in the United States; the overconsumption of these products can lead to a myriad of health issues. Anxiety, increased heart rate, myocardial infarction, and death have been associated with consumption of energy drinks. With the health risks linked to energy drink consumption, understanding the use of these drinks is an important area of research. Few studies have reported on energy drink consumption patterns of college students as well as the perceptions of energy drinks on college campuses. It is important to understand the perceptions of energy drinks to assist in determining the reasoning behind the consumption of these drinks. This study used the Theory of Planned Behavior (TPB) as a conceptual framework to study college students' energy drink consumption. The purpose of this study was to contribute to the increasing level of knowledge concerning college students and consumption of energy drinks using the TPB, which contains the constructs of attitude, subjective norms, perceived behavioral control, and intention. The goal of the research was to further understand the role of energy drink consumption in the college student population. Students in this study ($N = 629$) completed an electronic

questionnaire during August 2015. Results indicated that 74.2% of participants had consumed an energy drink at some point during their life, while 47.1% had consumed an energy drink in the past 12 months. Only 2.5% of participants drank energy drinks daily and 37% reported consuming energy drinks once a month. The largest group of participants (32.4%) reported 13-15 years of age as the first time they consumed energy drinks. Males were more likely to consume energy drinks than females. Logistic regression determined the constructs of attitude, perceived behavioral control, and intention were significant predictors of energy drink consumption. This indicated that students' attitude, perceived behavioral control, and intention predicted the behavior of consuming energy drinks in the past 12 months. The results of this study may be utilized to address college student engagement in adverse health behaviors, such as the consumption of energy drinks.

DEDICATION

I would like to acknowledge my parents, family, and friends for their love and support they have shown me during this challenging process. To my wonderful parents, with whom this wonderful achievement would never have been possible. Through their continued support and encouragement, I have accomplished this great achievement. I am eternally grateful for their love and support. I would also like to dedicate this dissertation to my loving wife Leigh, who has supported me and sacrificed time throughout this entire process. Without their strength, I would not have made it through.

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TABLE OF CONTENTS

DEDICATION	ii
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER	
I. INTRODUCTION	1
Perception of Performance Enhancement	3
II. REVIEW OF LITERATURE	5
Defining and Understanding Energy Drinks.....	5
Consumption of Energy Drinks	6
Components of Energy Drinks.....	8
Caffeine Content of Energy Drinks	9
Effects of Energy Drinks on Health.....	10
Energy Drink Consumption of College Students.....	15
Energy Drink Consumption and Performance Enhancement	17
Complications Associated with College Students' Energy Drink Consumption	18
Theory of Planned Behavior	20
III. METHODS	32
Purpose.....	32
Definitions.....	32
Research Questions.....	33
Participants.....	33
Instrument, Pilot Test, Reliability, and Data Collection.....	34
Institutional Review Board Approval	35
Sample Size.....	36
Statistical Analysis.....	36

IV. RESULTS AND DISCUSSION	39
Results.....	39
Attitude Construct	43
Subjective Norms Construct.....	44
Perceived Behavioral Control Construct	44
Intention Construct	45
Logistic Regression Results.....	46
Discussion	47
Strengths and Weaknesses	52
V. CONCLUSION.....	59
Attitude	60
Subjective Norm.....	61
Perceived Behavioral Control.....	62
Intention.....	62
Implications.....	63
Future Research	63
REFERENCES	66
APPENDIX	
A. QUESTIONNAIRE	73

LIST OF TABLES

1	Key Differences Between Federal Regulation of Dietary Supplements and Beverages	25
2	Energy Drinks in the Market as Both Dietary Supplements and Regular Beverages.	26
3	Ingredients Commonly Used in Energy Drink Products	27
4	Energy Drinks Contain a Varied Amount of Caffeine that is Inconsistently Represented on the Label	28
5	Reported Reason of Energy Drink Use Among College Energy Drink Users in an Average Month for the Current Semester	30
6	Theory of Planned Behavior Construct Items.....	38
7	Descriptive Characteristics of Participants	54
8	Comparison of Energy Drink Consumption and Theory of Planned Behavior Constructs.....	57
9	Descriptive Statistics for Theory of Planned Behavior Constructs	57
10	Logistic Regression Results for Predictor Values of Theory of Planned Behavior Constructs.....	58

LIST OF FIGURES

1.	Conceptual model linking energy product use to adverse outcomes.....	30
2.	Ajzen's Theory of Planned Behavior.....	31

CHAPTER I

INTRODUCTION

Energy drinks have been available for the past half century, starting in Asia and eventually gaining the popularity in Europe it sees today. The energy drink phenomenon emerged from an herbal drink originally manufactured in Asia, and then introduced in Austria (Capps, Jr. & Hanselman, 2012). When compared with traditional soft drinks, energy drinks contain a significantly higher amount of caffeine. Additionally, over-the-counter products that contain caffeine are required to have warning labels; yet, there is no such requirement placed on energy drinks.

Energy drinks have grown in popularity in the past three decades in the United States which can be seen on college campuses throughout the country. Students have become a prime target for advertisers of energy drinks (Capps, Jr. & Hanselman, 2012). Energy drinks originated from Asia, were popularized in Europe, and have entered the American culture. Yet, little research has been observed in this growing market of the beverage industry. In years past, many people reached for coffee to meet their individual caffeine needs. Today, more people are reaching for energy drinks to meet this need. According to the United States Food and Drug Administration's (FDA) (2012) report on caffeine intake in the United States, 354 million gallons of energy drinks were sold in 2009. This is a significant increase in the amount sold when compared to 26 million

gallons sold in 2001. In less than one decade there has been tremendous growth in the amount of energy drinks sold in the United States.

In the United States, Red Bull® owned the largest share of the energy drink market, 32.7% of the energy drinks consumed; with Rock Star® being the second largest seller at 18.7% in 2008 (FDA, 2012). These products have become a staple in the American beverage industry and account for a large portion of the caffeine intake in the United States today. Energy drinks may contain high amounts of caffeine, which can account for high daily consumption patterns.

The perception of energy drinks plays a major role in the consumption patterns of individuals who consume them. Kumar, Park, and Onufrak (2015) reported the perception of energy drinks by youth revealed that they were four to seven times more likely to consume energy drinks if they agreed that energy drinks were safe. This study revealed that an increased consumption pattern was due to the perception of energy drink safety. As Ibrahim and Iftikhar (2014) stated, health care providers should inquire about the misuse of energy drinks at every clinical encounter, mainly with adolescents. They advocated for a comprehensive history of energy drink consumption to be collected in order to fully understand the amount, duration, and type of energy drinks consumed. The perception of an energy drink as an ergogenic aid may be prevalent in younger age groups. These groups believe that by consuming energy drinks they are making healthy decisions without knowledge of the consequences. Ballistreri and Corradi-Webster (2008) furthered the idea that perception fuels the consumption of beverages that are believed to enhance performance. These authors state that athletes, particularly those

playing in competitive sports, show interest in new products that promise to improve their performance.

Perception of Performance Enhancement

Energy drinks have been shown to increase pain tolerance in males. Karlsson, Abetkoff, and Chiou (2015) experimented with pain tolerance in males that were given an energy drink and compared their pain tolerance against a group of males who did not consume an energy drink. These findings indicate that consumption of energy drinks boosts pain tolerance over those who did not.

The perception of performance enhancement has helped fuel energy drink consumption. This is a very dangerous perception for the consumer. If a perception of performance enhancement leads to chronic use or occasional overuse of energy drinks, adverse health effects may occur. Research has demonstrated that energy drink consumption does have detrimental effects on the health of an individual. The 5 Hour Energy® drink alone was indicated in 10 deaths from January 1, 2004, through October 23, 2012 (United States Department of Health and Human Services, Food and Drug Administration, Center for Food Safety and Applied Nutrition, n.d.); other adverse symptoms reported included anxiety, dizziness, chest pain, mood alterations, depression, headache, convulsion, disorientation, aggression, sleep disorder, and loss of consciousness.

The purpose of this study was to contribute to the knowledge of college students and consumption of energy drinks using the Theory of Planned Behavior as a conceptual framework. As stated in several articles (Bliss & Depperschmidt, 2010; Malinauskas, Aeby, Overton, Carpenter-Aeby, & Barber-Heidal, 2007; Petit & Debar, 2011), more

research about college students' energy drink consumption patterns is needed.

Understanding the role of energy drink use in the college student population may assist in decreasing adverse events from energy drink consumption.

CHAPTER II

REVIEW OF LITERATURE

Defining and Understanding Energy Drinks

The consumption of high caffeine content energy drinks has increased markedly in recent years. Regulation of energy drinks, including content labeling and health warnings has differed across countries, with the most lax regulatory requirements in the United States (Reissig, Strain, & Griffiths, 2009). The United States Food and Drug Administration (FDA), has yet to define energy drinks. It is important to explore the reasons why this product, that has seen significant increases in purchase and consumption, has not been recognized as a food product in the United States.

With the lack of a formal definition or category in which to place energy drinks, it is difficult for researchers to identify energy drinks. As stated by Mora-Rodrigues and Pallares (2014), manufacturers claim that energy drinks will benefit consumers by enhancing their physical capacity and cognitive performance. Because of this perceived benefit, energy drink manufacturers typically rely on caffeine to boost stamina and increase energy levels.

Energy drinks in the United States primarily target younger Americans. These drinks are most widely used by teenagers and those under 35 years of age, and appeal to a largely male consumer base (United States Senate Committee on Commerce, Science, and Technology, 2014). Like coffee and tea, which are not considered energy drinks

since their caffeine is naturally occurring, energy drinks are marketed to students to provide extra energy to study or complete homework and by athletes hoping to enhance athletic and mental acuity (FDA, 2012).

Energy drinks are considered herbal or nutritional/dietary supplements by the FDA; therefore, they are not required to meet the same standards as soft drinks. Unlike soft drinks, energy drink labels are not required to include every ingredient or amount of the ingredients in the drink. According to the FDA, a manufacturer of a product in liquid form may choose whether or not to market its product as a beverage or as a liquid dietary supplement (United States Senate Committee on Commerce, Science, and Technology, 2014). This is an important distinction because there are different requirements for packaging of a conventional food beverage and a dietary supplement. As stated by Bailey, Saldanha, Gahche, and Dwyer (2014), the manufacturer's option to declare (or not declare) the amount of caffeine, or other non-nutrient ingredients, on product labels makes it difficult to discern a product's actual caffeine content. These differences are presented in Table 1, which reveal the key differences in how a manufacturer markets their product. Because they are allowed to choose in which form they want to market their product, manufacturers are subject to different regulatory compliances. Because of this ability to choose how the product is marketed, energy drinks produced by the same company may be marketed differently even though the ingredients are similar, as shown in Table 2.

Consumption of Energy Drinks

The FDA has yet to regulate energy drinks in the same manner it has soft drinks. Exploring the history of energy drinks will provide insights into how the producers of

energy drinks have generated the popularity of this product. Energy drinks began in Asia as herbal beverages that were concocted by rural citizens to heal and provide a boost. This influence can be seen through the additions of ginseng, mate', and guarana (Capps, Jr. & Hanselman, 2012).

Following early attempts at energy drink production, Red Bull®, an Austrian drink, was introduced in the United States in 1997. It was joined by other popular energy drinks such as Monster®, Rockstar®, Hype®, and Full Throttle®. Massive industry growth in the early 2000's surpassed all previous decades, growing from 26 million gallons sold in 2001 to 354 million gallons sold in 2009 (FDA, 2012). This decade also witnessed new trends in packaging. While energy drink containers grew larger, providing multiple servings per can to accommodate caffeine restrictions, products labeled energy "shots" were condensed into smaller containers and provided a more concentrated beverage.

Excessive energy drink consumption has been reported to cause death, seizures, dehydration, deterioration of tooth enamel, and is known to interfere with heart and brain function (United States Department of Health and Human Services, Food and Drug Administration, Center for Food Safety and Applied Nutrition. (n.d.). When the industry marketed a line of drinks with added alcohol, these effects were compounded. Furthermore, energy drinks can mask the effect of alcohol, leading a consumer to believe he or she is sober when in fact that is not the case (Woolsey, Waigandt, & Beck, 2010). After a popular brand, Four Loko®, was banned in several states, the product was reintroduced in 2010 without the caffeine and was no longer marketed as an energy drink.

Energy drink consumption is quickly becoming a preferred method for caffeine ingestion in many populations. As stated by Capps, Jr. and Hanselman (2012), energy drink manufacturers have developed an aggressive marketing campaign to exploit the needs of lethargic populations. These marketing campaigns are built on the premise that energy drinks will supply the necessary components to provide the boost needed for daily activities.

Components of Energy Drinks

As stated previously, the FDA does not have a formal definition for energy drinks, but there are common elements that tie beverages into the energy drink category. The Federal government has begun to realize the potential dangers of the unregulated energy drink market. In July 2013, the issue of energy drink regulation was addressed in a hearing before the United States Senate Committee on Commerce, Science, and Transportation (2014). During this Congressional hearing, an energy drink was defined as generally representing a class of products in liquid form that contains high levels of caffeine, and typically also includes additional ingredients not found in sodas and juice drinks. This definition is similar to Ishak, Ugochukwu, Bagot, Khalili, and Zaky's (2012) definition of an energy drink, which is a beverage that promotes alertness, maintains wakefulness, and provides cognitive/mood enhancement. Energy drinks usually contain a combination of caffeine, B vitamins, taurine, guarana, ginseng, mate', and glucoronolactone (carbohydrate). A list of ingredients commonly included in energy drinks is presented in Table 3.

Caffeine Content of Energy Drinks

Caffeine, known chemically as trimethylxanthine, is a substance found naturally in coffee beans, cocoa beans, and tea leaves. Caffeine renders significant physiological effects on its consumers, and individuals often use it in an effort to boost energy or to wake up (Ferr, 2008). In addition to its natural occurrences, caffeine is added by food processors to a variety of foods, including select soft drinks (Matthews, 2007). Naturally occurring caffeine such as guarana to increase the content of the beverage. Guarana (*Paullina Cupana*), a seed found naturally in South America, has been used for centuries to increase mental awareness and fight fatigue. The seeds are approximately 7% caffeine, and contain more caffeine than most plants (Burke, 1998). Guarana is part of the Sapindaceae plant family, more commonly known as Soapberry. The seeds of this plant are high in caffeine. These seeds are ground into powder and made into soft drinks, tealike beverages, or sold in pills.

Caffeine is added to energy drinks for its ability to improve mental and physical performance, as well as its addition to the taste profile. The amount of caffeine in energy drinks can vary greatly. Moderate caffeine consumption, even in sensitive populations is 300 mg per day. One cup of coffee contains approximately 100 mg of caffeine; the amount of caffeine consumed through energy drinks is significantly higher (Evert, 2013). As stated in United States Senate Committee on Commerce, Science, and Technology (2014), energy drinks contain varied amounts of caffeine, and in some cases the caffeine content is not included on the label. This variation is due to differing sizes of containers that these drinks are packaged in and the serving size stated on the container. For example, a container that is 24 ounces may contain two servings, which can significantly

increase the caffeine ingestion of an individual. The caffeine content of popular energy drinks can be seen in Table 4.

Caffeine is the most widely used psychoactive chemical in the world (Frary, Johnson, & Wang, 2005.). In moderate doses, caffeine increases alertness, and may also cause insomnia, nervousness, and decreased fine motor coordination. Caffeine is one of the most widely used substances to stimulate the central nervous system (Cheeseman, 2010). It is used in a wide variety of food and beverage products around the world. Caffeine inhibits different adenosine receptors, producing stimulation of the central nervous system which improves performance and stamina. This stimulation reduces the sense of physical effort and brain stimulation, causing an increase in alertness (Evert, 2013). Del Coso, Perez-Lopez, Abian-Vicen, Salinero, Lara, and Valades's (2014) investigation indicated that caffeinated energy drinks were a potent ergogenic aid to improve physical volleyball performance in male players. Research has indicated a performance enhancing effect on individuals who ingested caffeine (Del Coso et al, 2014).

Effects of Energy Drinks on Health

While many individuals ingest energy drinks for its cognitive and physical performance enhancing capabilities, many consumers are unaware of the effects the consumption of energy drinks can have on one's health (Usman & Jawaid, 2012). The cognitive and performance enhancement perception of energy drinks masks the dangers that can be accompanied by chronic consumption or acute overconsumption (Bunting, Baggett, & Grigor, 2013). Kumar, Park, and Onufrak (2015) reported energy drink consumption is associated with the perceptions that energy drinks are safe drinks for

teens and that energy drinks are a type of sports drink. The perception that energy drinks are safe to consume while providing a boost of energy can be dangerous. College students have busy schedules and can be under a great amount of stress (Holinka, 2015). One way these students are combating this problem is by consuming energy drinks to get a much needed boost of energy (Bliss & Depperschmidt, 2011). While moderate consumption of energy drinks may enhance cognitive and physical performance, it is important to look at the health consequences that may arise from overconsumption and prolonged use of energy drinks. When students consume energy drinks, the amount of caffeine that is ingested far exceeds the amount needed for cognitive stimulation.

The perceptions of energy drinks is a major concern that needs to be researched further. Miller (2008) described the jock identity, masculine norms, and their association with risk taking. As described by Karlsson et al. (2015), this sensation can be decreased through consumption of energy drinks, which can lead directly to increased risk taking through perceived enhanced ability or lack of pain sensation. The jock identity can lead to exploration in substances that enhance performance, which can lead to risky health behaviors (Ballistreri et al., 2008). An example of these risky behaviors is the case of a young adolescent overconsuming energy drinks while playing video games (Usman and Jawaid, 2012). The adolescent over-consumed causing an adverse cardiac event, endangering his life. Jackson, Cotter, Merchant, Babu, Baird, Nirenberg, and Linakis', (2013) research further indicates the potential risk for adverse incidents associated with energy drink consumption. Their research indicates higher frequency of adverse effects on individuals who consume energy drinks as opposed to caffeinated-only beverage

users. The risk of over-consuming is not perceived negatively, but the performance aspect of consuming energy drinks is perceived as a positive.

Malinauskas et al. (2007) reported over 50% of students consumed two or more energy drinks while studying for a test or working on a major project, while 36% drank two or more drinks to combat sleepiness during long hours of driving. As seen in Forrester's (2012) research that highlighted Texas' energy drink consumers, adverse effects reported were tachycardia (18.0%), agitation (16.0%), nausea (12.2%), vomiting (9.3%), dizziness (5.5%), tremors (5.0%), hypertension (4.6%), chest pain (4.2%), and headache (3.7%). Similarly, the Center for Food Safety and Applied Nutrition's (CFSAN) Adverse Event Reporting System reported 10 cases of death were reported from the consumption of the product 5 Hour Energy® Other adverse events included anxiety, myocardial infarction, convulsion, and numerous other serious health reactions (United States Department of Health and Human Services, Food and Drug Administration, Center for Food Safety and Applied Nutrition, n.d.).

Interruption of sleep pattern is a major adverse side effect of consumption of energy drinks. Consuming three or more energy drinks per day is associated with negative sleep outcomes, including sleepiness on the job and receiving less than four hours of sleep a night (Toblin, Clarke-Walper, Kok, Sipos, & Thomas, 2012). Similarly, Stasio, Curry, Wagener, and Glassman (2011) observed that as the frequency of energy drink consumption increased, experiences of anxiety and sleep disturbance increased significantly. A possible reason for this disruption of sleep is that caffeine intake through energy drinks increases anxiety and sleep disturbances in a dose response fashion. The more caffeine consumed the greater the episodes of sleep disruption and anxiety. Stasio et

al. (2011) further demonstrated a negative correlation with sleep disruption and depression including sadness, agitation, and lack of concentration. As can be seen in Figure 1, Grandner et al. (2014), illustrated that energy drink consumption can be linked to adverse outcomes. The excessive consumption of caffeine can lead to short sleep duration, which can lead to increased intake of sugary beverages or more caffeine containing beverages.

The heart's rhythm is controlled by an electrical impulse that is generated from a mass of tissue in the right atrium called the sinoatrial node, often referred to as the heart's natural pacemaker. It travels to a second mass of tissue called the atrio-ventricular node and then to the ventricles. This rhythm can be disrupted by various occurrences such as stress and drugs. The consumption of energy drinks alters the heart's natural rhythm. Lethargy and general exhaustion are the body's defense mechanisms to prevent overuse of body systems. Ingesting substances to override the body's defense mechanisms have the potential to cause detrimental effects on various body systems. As reported by Usman and Jawaid (2012), a 16 year old boy reported ingesting over 100 cans of a popular energy drink during a two week time frame while studying for school exams. The boy, having no previous heart or cardiovascular system problems, reported having heart palpitations, and had blood pressure readings between 140-160/80-100 mm Hg. Physicians conducted tests to rule out any additional causes for the increased cardiovascular stress. Similar results were published by Solomin, Borron, and Watts (2015) with a patient that had no significant genetic factors for acute thrombosis occluding the coronary blood vessel. They hypothesized a vasospasm caused by excessive levels of caffeine contributed to the reduced flow in the coronary blood vessel.

Bliss and Depperschmidt (2011) reported that consumption of energy drinks was the cause of cardiac symptoms. Their research also demonstrated a correlation between energy drinks and heart problems with the majority of respondents indicating that heart palpitations, as well as jolt and crash episodes, were common after consuming energy drinks.

Myocardial infarctions, or heart attacks, occur when there is an interruption in the supply of blood to the heart and vital organs. Disruption of the heart's ability to deliver blood can come either independently or in conjunction with an arterially induced myocardial infarction. This occurs when plaque accumulates on the arterial walls, this can cause a blockage, or a tear in the plaque can occur, which causes platelets to be sent to the site causing a blockage of blood flow (Chen, 2013). The necessary pace or rate of myocardial contractions, which can vary depending on the person's rate of physical exertion or age, is regulated in the sinoatrial node in the right atrium, which generates its own electrical impulses. If there is a disruption in the electrical signal to the heart, the rhythm can be disrupted causing difficulty of the heart to contract properly, therefore interfering with blood flow. Caffeine can stimulate the body to increase heartrate, this increase in heartrate can disrupt the electrical signals of the heart. If an individual has blockage in the coronary arteries, a serious health issue will result.

Tachycardia, or heartbeat faster than 100 beats per minute in the adult, can be precipitated by drugs, caffeine, anemia, shock, and emotional upset. It is characterized by rapid uncoordinated contractions of the atrial or ventricular muscles. Tachycardia may be caused by rheumatic mitral valve disease or hypertensive heart disease (Malik, 2001). The rapid pulse rate may be associated with thrombus formation in the atria. This rapid

heart rate increases an individual's risk of embolization in the brain or other organs. Tachycardia can be treated with drugs that regulate heart rhythms. Ventricular fibrillation is a sign of terminal heart failure and can be fatal (Malik, 2001).

Anxiety is defined as heightened fear or tension that causes psychological and physical distress. The American Psychological Association recognizes six types of anxiety disorders: panic disorder, phobias, specific phobia, social phobia, agoraphobia, and general anxiety disorder which can be treated with medications (Kazdin, 2000). In Trapp's (2015) research, a positive correlation occurred between anxiety and energy drink consumption in young adult males. This is similar to research conducted by Malinauskas et al. (2007) and Pettit et al. (2011), which showed an association between stressors of school and the consumption of energy drinks. Stress and anxiety can be a catalyst for energy drink consumption with college being the stressor. This can lead to health complications. Individuals reported symptoms of severe anxiety with chronic heavy consumption (six to eight servings/day) of energy drinks, with symptoms subsiding after cessation of use (Trapp, 2015).

Energy Drink Consumption of College Students

The use of energy drinks is quite common among college students, but their knowledge of ingredients and potential health hazards of such drinks is very limited (Attila & Cakir, 2011). It is important to demonstrate how this behavior developed and why adolescent and college students' lack understanding of the consumption of and effects of energy drinks. When reviewing patterns of energy drink supplements in college students, it is important to investigate their consumption before entrance into college. Arria, Bugbee, Caldeira, and Vincent's (2014) research indicates adolescents are

consuming energy drinks and continuing this behavior into college. Azagba, Langille, and Asbridge (2014) revealed nearly two-thirds (62%) of high school juniors and seniors surveyed reported consuming energy drinks at least once in the previous year with about two in five students consuming one or more per month. Consuming energy drinks can also have short term effects on adolescents and children who are not habitual caffeine users. Vulnerability to caffeine intoxication may be markedly increased due to an absence of pharmacologic tolerance (Attila & Cakir, 2011). If this consumption pattern continues into a student's college career, then serious health consequences can occur. These consequences include disruption of sleep patterns, heart rhythm alterations, and anxiety.

Consumption of caffeine has previously been used by college students to assist with a perceived shortage of energy. Students' gravitation toward energy drinks is comparable to the reliance on coffee embraced by previous generations of college students (Petit & DeBarr, 2011). This is demonstrated in Malinauskas et al.'s (2007) survey of college students' energy drink consumption. Of the 496 participants that completed the survey, over half reported consuming more than one energy drink per month. The majority of users consumed energy drinks to increase their energy (65%), and to drink with alcohol while partying (54%). Petit and DeBarr's (2011) research into the consumption of energy drinks reported findings that correlated closely with those of Malinauskas et al.'s (2007) research. In Petit and DeBarr's (2011) research with college students, 59.1% reported drinking at least one energy drink in the previous seven days. The number leaps to a staggering 70.1% for students who had consumed an energy drink in the past 30 days, 61.4% consumed 1-3 energy drinks and 8.7% consumed 4-6 energy drinks on any occasion during the previous 30 days. The chronic overconsumption of

energy drinks results in negative health consequences and is cause for concern. As Table 5 reveals, college students have a variety of reasons for the consumption of energy drinks. Insufficient sleep and the general need for energy are two main reasons for energy drink consumption (Malinauskas et al., 2007).

Petit and DeBarr's (2011) research revealed a link between academic performance and overconsumption of energy drinks. Participants who indicated higher levels of perceived stress reported more days in which at least one energy drink was consumed during the past 30 days. Participants with higher levels of perceived stress also revealed higher averages for days per week during the past 30 days in which energy drinks were consumed. Participants characterized by higher levels of perceived stress reported even larger numbers of energy drinks consumed on any occasion during the past 30 days. The relationship between participants' academic performance and largest number of energy drinks consumed on any occasion during the past 30 days was intriguing. Interestingly, the relationship was negative, thus suggesting as energy drink consumption on any occasion decreased, academic performance increased.

Energy Drink Consumption and Performance Enhancement

Using energy drinks is a popular practice among college students for a variety of situations: compensation for insufficient sleep, a need for increased energy for studying and driving for long periods, to combine with alcohol while partying, and to treat a hangover (Atilla & Cakir, 2011). Additionally, students indicated improvements in mental functioning for those students who suffered from sleep deprivation (Malinauskas et al., 2007).

Bliss and Depperschmidt's (2011) research into flight students' use of energy drinks revealed that the majority of participating collegiate flight students believed that energy drinks had an effect on their ability to pilot an aircraft. It was noted that 90% of the flight students disagreed with the statement that collegiate flight students should not consume an energy drink the same day they pilot an aircraft. The students' belief that energy drink consumption on days of flight indicated a perception of performance enhancement from the consumption of caffeinated beverages. Furthermore, more experienced flight students believed that the consumption of energy drinks enhanced performance. Participating flight students (70%) responding to the survey had over 100 total flight hours, which indicated that the majority of the participating students were upperclassmen and had been associated with the collegiate flight program for at least two to three academic years.

Malinauskas et al. (2007) indicated performance enhancement as a reason for consumption of energy drinks, with 50% of participants indicating consumption of energy drinks during studying or completion of major course projects. Attila and Cakir (2011) furthered this perception of energy drink performance enhancement; participants in their study indicated they consumed energy drinks to feel "energetic," to concentrate while studying, and/or stay awake. These studies show a consistent perception of the performance enhancement capabilities of consuming energy drinks.

Complications Associated with College Students' Energy Drink Consumption

College students may reach for an energy drink to help complete daily tasks such as going to class, studying, or work. As Stasio et al.'s (2011) findings indicated, as frequency of energy drink consumption increased, experiences of anxiety and sleep

disturbances increased significantly. Energy drink consumption can be linked to other negative health behaviors according to Larson, DeWolfe, Story, and Neumark-Sztainer's (2014) research. It was revealed that adolescent energy drink consumption was positively correlated with higher consumption of other sugar-sweetened beverages, and cigarette smoking. Azagba, Langille, and Asbridge (2014) indicated that cigarette, marijuana, alcohol, and illicit drug use were all related to energy drink consumption. More frequent consumption had a stronger connection with substance uses rather than less frequent consumption. As stated by Woolsey et al. (2014) increased use of energy drinks, and the availability of prescription stimulants, college students are at-risk to have problems with stimulant abuse. Azagba et al. further observed a link between energy drink consumption, poor mental health, and substance use behavior in their research with high school students' consumption of energy drinks. It is important to note that the most hazardous use of energy drinks in terms of the health of young adults is the use of energy drinks in combination with alcohol (Attila & Cakir, 2011). The stimulant effects mask how intoxicated the young individuals are when consuming alcohol. Woolsey et al. (2015) research indicates greater risk taken by consumers of alcohol and energy drinks compared to just alcohol consumers. The risk taking behavior can be amplified by the consumption of an energy drink. This may cause an individual to continue consumption until the point that the stimulant effect of energy drinks in the mixture consumed wears off, and the depressant effect of alcohol become apparent (Attila & Cakir, 2011). This can lead to serious adverse outcomes. Overall, the use and abuse of energy drinks by college students is an issue that needs further research. Most research in the area of college students and energy drink consumption focuses on mixture with alcohol or reasons for consumption.

There is a lack of research in the area of energy drink consumption and health behavior theory. The current research attempts to bridge this gap by using health theory to further understand consumption patterns of 2-year college students.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was developed in the 1980s by the social psychologist Icek Ajzen and was a refinement of the Theory of Reasoned Action (TRA) (Ajzen, 2011). The TPB acknowledges that intention can be carried out only to the extent that a person has sufficient control. The TPB adds the concept of perceived behavioral control to predict behavior. The perceived ease or difficulty of performing the behavior is a reflection of past experiences as well as difficulties and obstacles (Ajzen, 2011; Ajzen, Joyce, Sheikh, & Cote, 2011; Sims, 2002).

Before understanding the TPB, it is vital to establish the foundation on which the theory is grounded. The TRA states that individuals are thoughtful creatures and are aware of their attitudes and behaviors (Bordens & Horowitz, 2001). TRA was developed to explain freely chosen behavior. It states that behavior is determined by a person's intentions to perform or not perform a particular behavior. Intention is the sole determinant of behavior in TRA. The determinants of intention are a person's attitudes toward performing behaviors, and the influence of subjective norms on the individual performing the behavior. These two factors are weighted because their impact on behavioral intention is a function of factors such as the person's experience and situational constraints.

The first determinant of intention is attitude. Attitude is a function of beliefs concerning perceived consequences of performing a behavior and a personal evaluation

of the consequences. The second determinant of a person's intention, subjective norms are a function of the perceived expectations of others, and the motivation to comply with these expectations. As this theory concerns freely chosen behavior, both objective and subjective control are assumed to be high. In examining behaviors with this model it must be assumed, rather than measured, that control is high (Janelle, Hausenblaus, & Singer, 2001).

The TPB is an extension of TRA with the inclusion of perceived behavioral control. The purpose of including perceived behavioral control was to provide a measurement of the control element, including the measurement of both real and perceived limitations to performing the behavior. This addition to TRA allows the researcher to examine behaviors not completely under the control of the individual (Janelle et al., 2001). The TPB is based on the principle that people use information and reasoning to guide their behavior. It uses three variables to predict an individual's behavioral intention, which is then used to predict his or her actual behavior. The relative weight of each variable can vary, depending on the behavior and the population; but in general, more positive attitudes, greater perceived control, and stronger intention to perform a behavior are positively related to actually performing the behavior.

The TPB is a three-step process to predict behavior. This prediction is based on a person's attitude, subjective norms, and behavioral control. Attitude, subjective norms, and perceived behavioral control are variables that determine a person's intention. Intention of behavior is the greatest predictor of behavior (Bordens & Horowitz, 2001). Attitude towards behavior is a determinant of a person's intention to perform a behavior. A positive attitude is more likely to lead to the adoption of a behavior, while a negative

attitude is less likely to lead to the adoption of a behavior. The attitude toward the behavior is a better predictor of actions than attitude about the behavior, because it will affect a person's intentions (Bordens & Horowitz, 2001).

Attitude is influenced by behavioral beliefs and evaluation of behavioral outcomes (Ajzen, 2001; Zoellner, Estabrooks, Davy, Chen, & You, 2012). If an individual believes a behavior is positive, they will be more likely to engage in the behavior. In a study by Blanchard et al. (2009), the authors expanded on the concept of attitude towards behavior by measuring the difference between instrumental and affective attitude. Their research delved into the difference when the individual believed the behavior was enjoyable (affective) versus an individual who believed the behavior was beneficial (instrumental). An individual may believe that an unenjoyable behavior is beneficial to their health, which may explain why the person engages or does not engage in a particular behavior. Similarly, an individual may engage in a behavior because it is enjoyable, but may choose not to engage in an enjoyable behavior because of the lack of perceived benefit to their health. Attitude is important to assess when determining health behaviors (Ajzen, 2001).

Attitude is not the only factor that determines behavior. Often people engage in unhealthy behaviors. The question is, why would a person engage in a behavior that they may perceive as unhealthy? There can be a myriad of reasons why an individual may engage in unhealthy behaviors. According to TPB, behavioral control is a belief that the behavior being considered is difficult or easy (Bordens & Horowitz, 2001). Perceived behavioral control is influenced by control beliefs and perceived power (Zoellner et al., 2012). If an individual believes that exercise is key to a healthy lifestyle but does not

have an area to exercise, they may not engage in the behavior. This is a lack of behavioral control, it is a perception by the individual that they cannot exercise because of an extenuating circumstance that is beyond their control. Behavioral control can be real or perceived. A person may feel they do not have sufficient support to engage in healthy behaviors while having the resources and not taking advantage of them (Zoellner et al., 2012).

Behavioral control and attitude towards behavior are important when deciding which behaviors to engage in. The question that remains is: What happens when we engage in a behavior? Subjective norms shape the environment in which a person acts and manages their behaviors. When engaging in a behavior, there is continual assessment of the validity of engaging in that behavior. How does a person assess the behaviors in which they participate?

The last determinant of the TPB is subjective norms. An individual will evaluate their behavior based on how they will be perceived by family and friends. When engaging in a behavior, an individual will attempt to perform behaviors in which their peers will approve. Behaviors that are inappropriate are usually discouraged by the peers.

The combination of attitude, perceived behavioral control, subjective norms, and intention shape an individual's behavior (Figure 2). It is important to understand that an individual does not base behavioral decisions on one determinant, but rather a combination of all three. Individuals are complex organisms that weigh many factors when deciding how or why to act. When assessing health behavior, it is vital to understand the process that leads to a behavior.

As stated previously, people will engage in unhealthy behaviors, and the reasons are varied and multiple. Energy drink consumption is a concern and health behavior theory may provide a conceptual framework for understanding why individuals choose to consume energy drinks. There is an overall lack of descriptive data on the consumption patterns of energy drinks in the college population. Few studies such as Arria et al. (2014), Malinauskas et al. (2007), Stasio et al. (2011), and Petit and Debarr (2011) have collected data on the 4-year college student, but the 2-year college student consumption patterns have little to no research. In Berg et al's (2011) research with 4-year and 2-year college student smoking behaviors, 2-year college students had a higher probability of current smoking and daily smoking. Velazquez et al's. (2011) also showed significant difference in the behavior patterns of 2-year and 4-year college students. Their findings showed significant differences with 4-year college students reporting higher alcohol consumption patterns than their 2-year college counterparts. VanKim, Laska, Ehlinger, Lust, and Story's (2010) research saw similar trends in alcohol and tobacco use among 4-year and 2-year college students. With little data reported on 2-year college students' energy drink consumption habits, it is vital to examine this population. The behavior patterns of 4-year college students may differ and therefore cannot be extrapolated to 2-year college students. Also, research has not been evaluated using the TPB to explain the behavior of consuming energy drinks. The current research bridges the gap by collecting data on the consumption patterns of college students, as well as explaining the attitude, subjective norms, perceived behavioral control, and intention of college students.

Table 1 Key Differences Between Federal Regulation of Dietary Supplements and Beverages

Conventional Food (Beverage)	Dietary Supplements
New ingredients must be approved as a food additive by the U.S. Food and Drug Administration (FDA), unless the ingredient is generally recognized as safe	Only new ingredients not marketed as dietary supplements in the U.S. prior to October 15, 1994 require FDA preapproval. Otherwise, FDA must determine an ingredient is unsafe under conditions of use to take the product off the market
Any reporting of serious adverse events is completely voluntary	Required by law to report to the FDA any serious adverse events
Includes a “Nutrition Facts” panel on the label, with information on amount of calories, total fat, cholesterol, sodium, carbohydrates, protein, vitamin A, vitamin C, calcium, and iron	Includes a “Supplement Facts” panel on the label, with information on quantities of ingredients that exceed standards or that are relevant to a product claim
List of ingredients in descending order of predominance is required	List the quantity of each dietary ingredient, unless the ingredient is a part of a ‘proprietary blend’, in which case quantities are not required
Good Manufacturing Practices focus on ensuring safe and sanitary processing conditions	Good Manufacturing Practices contain standards of identity to help verify that the product is what it is purported to be

Source: United States Senate Committee on Commerce, Science, and Technology, 2014.

Table 2 Energy Drinks in the Market as Both Dietary Supplements and Regular Beverages.

Parent Company	Brand Name	Product Name	Marketed as Dietary Supplement or Conventional Food (Beverage)
Living Essentials	5-Hour Energy	5-Hour Energy	Dietary Supplement
Celsius	Celsius	Celsius	Dietary Supplement
Monster Beverage Corporation	Worx Energy	Worx Energy	Dietary Supplement
Monster Beverage Corporation	Monster	Monster Energy, Blue Energy, Hansen's Energy	Conventional Food (Since March 2013)
Rockstar, Inc.	Rockstar Energy Drink	Rockstar	Conventional Food (Since January 2013)
PepsiCo	AMP Energy Boost	AMP	Conventional Food (Since 2012)
Dr. Pepper Snapple Group	Venom	Venom Energy	Conventional Food
Clif Bar and Company	Clif Shot	Clif Shot Gel	Conventional Food
Red Bull	Red Bull	Red Bull	Conventional Food
Coca Cola	Full Throttle	Fuze	Conventional Food
Coca Cola	NOS	Nos	Conventional Food
Nestle' USA (Until November 2012)	Jamba	Jamba Energy	Conventional Food
Sambazon	Sambazon	Sambazon	Conventional Food
Target Corp. made by a third party	Archer Farms	Archer Farms Energy Drinks	Conventional Food
AriZona Beverages	Arizona	AZ Energy, RX Energy Fast Shot	Dietary Supplement
AriZona Beverages	Arizona	Caution, Joltin Joe, RX Energy Herbal	Conventional Food

Source: United States Senate Committee on Commerce, Science, and Technology, 2014.

Table 3 Ingredients Commonly Used in Energy Drink Products

Brand Name	Ingredients Related To Functional Claims Made by the Manufacturer (not including natural or synthetic sugars)
Arizona	Caffeine, guarana extract, L-carnitine, ginseng extract, eleuthero root, schisandara, green tea extract, B vitamins
Venom	Caffeine, taurine, guarana, L-carnitine, ginseng extract, inositol, maltodextrin, B vitamins (niacinamide, B6, riboflavin, B12)
Clif Shot	Caffeine, green tea extract, guarana, maltodextrin
Red Bull	Caffeine, taurine, glucuronolactone, inositol, B vitamins (niacinamide, B12, pantothenic acid, pyridoxine)
Full Throttle Fuze	Caffeine, B vitamins (niacinamide pantothenic acid, pyridoxine)
NOS	Caffeine, guarana, taurine, L-theanine, B vitamins (B6, B12)
Jamba	Caffeine, green tea extract
Sambazon	Caffeine, yerba matte, green tea extract, guarana
Target Archer Farms	Caffeine, panax ginseng root, guarana, taurine, vitamin B6 and B12
AMP Energy	Caffeine, choline, theanine, maltodextrin, panax ginseng root extract, L-carnitine, guarana, taurine, B vitamins (riboflavin, pantothenic acid, niacinamide)
Rockstar	Caffeine, guarana, B vitamins (niacin B12, pantothenic acid, B6) taurine, yerba mate, green tea extract, L-carnitine, inositol
5-hour Energy	Caffeine, citicoline, L-tyrosine, L-phenylalanine, malic acid, glucuronolactone, taurine, B vitamins (niacinamide, pyridoxine, B12, folic acid), methylated xanthines
Celsius	Caffeine, guarana, taurine, green tea extract, glucuronolactone, ginger extract, B vitamins (riboflavin, niacin, B6, B12, pantothenic acid)
Monster Energy	Caffeine, taurine, L-carnitine, glucuronolactone, guarana, panax ginseng extract, inositol, maltodextrin

Source: United States Senate Committee on Commerce, Science, and Technology, 2014.

Table 4 Energy Drinks Contain a Varied Amount of Caffeine that is Inconsistently Represented on the Label

Product Name	Product Type	Container Size (fl. oz.)	Total Caffeine Per Container From all Sources (mg)	Caffeine Amount Declared on the Label
Rockstar	Drink	24	360 or 240	Transitioning to labeling caffeine on all products
Arizona AZ Energy Half&Half Iced Tea Lemonade	Drink	23	265	Yes
NOS	Drink	16	260	Yes
Rockstar	Drink	16	240 or 160	Transitioning to labeling caffeine on all products
Monster Energy	Drink	24	240	Transitioning to labeling caffeine on all products
Worx Energy	Shot	2	200	No
Celsius	Drink, Powder	12	200	Yes
Full Throttle Fuze	Drink	16	200	Yes
Java Monster	Drink	16	200	Yes
Arizona AZ Energy	Drink	15	195	Yes
Venom	Drink	15	160	Yes
Monster Energy	Drink	16	160	Transitioning to labeling caffeine on all products
Arizona Caution	Drink	11.5	144	Yes

Table 4 (Continued)

AMP Energy Boost	Drink	16	142	Yes
Red Bull	Drink	12	114	Yes
Arizona Rx Energy Fast Shot	Shot	2	113	No
Jamba	Drink	8.4	80	Yes
Sambazon	Drink	10.5	80	Yes
Target Archer Farms	Drink	12	70	Yes
Clif Shot	Gel	34 grams	0, 25mg, 50mg, or 100	Yes
5-hour Energy	Shot	2	Did not answer	no

Source: United States Senate Committee on Commerce, Science, and Technology, 2014.

Table 5 Reported Reason of Energy Drink Use Among College Energy Drink Users in an Average Month for the Current Semester

Situation	% of Females (n = 146)	% of Males (n = 107)
Insufficient Sleep	67	68
Need Energy (in general)	62	69
Studying or Major Project	46	56
Driving car for long period of time	40	51
Mix with Alcohol	57	50
Treat Hangover	16	18

Source: Malinauskas, Aeby, Overton, Carpenter-Aeby, and Barber-Heidal, 2007.

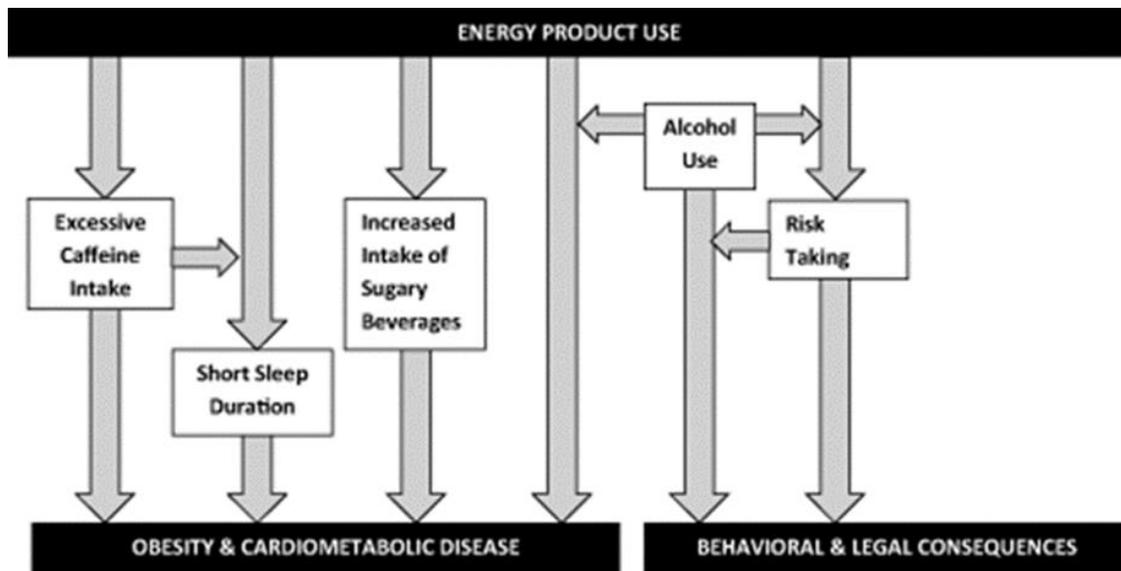


Figure 1. Conceptual model linking energy product use to adverse outcomes.

(Grandner et al. 2014).

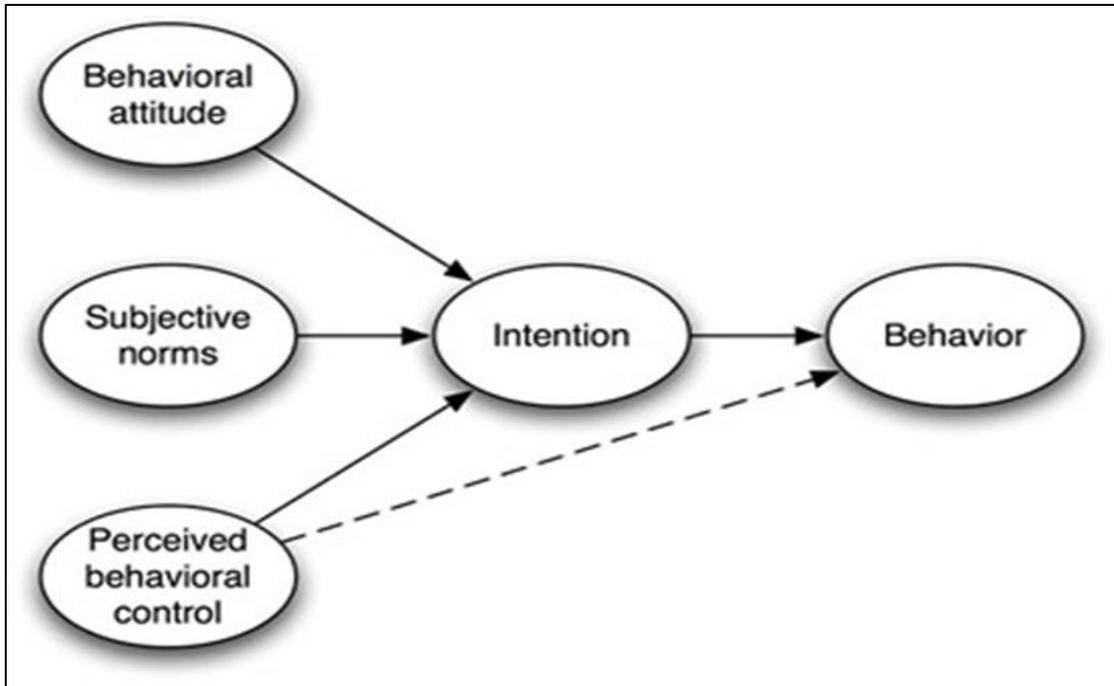


Figure 2. Ajzen's Theory of Planned Behavior.

CHAPTER III

METHODS

Purpose

The purpose of this study was to contribute to the increasing level of knowledge concerning college students and consumption of energy drinks in relation to the Theory of Planned Behavior. The study used a survey to assess attitude, subjective norms, perceived behavioral control, and intention towards energy drink consumption. The goal of the research was to further understand the role of energy drink consumption in the college student population.

Definitions

A college student was defined as a participant that is 18 to 23 years of age enrolled in college (Justice & Dornan, 2001). Enrollment of part-time (1-11 credits) and full-time (12 credits or more) students were assessed.

An energy drink is a beverage that promotes alertness, maintains wakefulness, and provides cognitive/mood enhancement (Ishak et al., 2012). Common brands of energy drinks are Red Bull®, 5 Hour Energy®, Rockstar®, Hype®, and Full Throttle®. Beverages such as coffee and tea are excluded since they have naturally occurring caffeine. Although many cola beverages contain caffeine, they are not considered energy drinks due to much lower levels of caffeine. An operational definition of an energy drink

for this study was a caffeine containing beverage that is marketed to improve cognitive or physical performance.

Research Questions

The following research questions were investigated:

1. What is the frequency in which community college students consume energy drinks?
2. What are community college students' perceptions of energy drink consumption?
3. What is the utility of the TPB in determining and assessing personal attitude, subjective norms, perceived behavioral control, and intention for energy drink consumption?
4. Does the TPB construct of intention predict the actual behavior of energy drink consumption?

Participants

Participants of this study were students enrolled at Northeast Mississippi Community College in Booneville, Mississippi. The students were enrolled in at least one class during the fall semester of 2015. Participants were categorized as traditional college students if they were 18 to 23 years of age. Older students were also invited to respond to the survey and they were considered non-traditional college students. It should also be noted that 2-year or community college students are freshmen and sophomores, and the traditional ages of freshmen and sophomores are 18 and 19 years old.

Instrument, Pilot Test, Reliability, and Data Collection

The conceptual framework for the questionnaire used in the collection of data for this research was based on the work of Ajzen (2011). An additional useful resource for developing the instrument was an e-manual for constructing questionnaires based on TPB (Francis et al., 2004). The questionnaire was reviewed by the graduate committee and other social scientists familiar with health promotion theory. The questionnaire was specifically sent to eight social scientists at four universities with expertise in design and development of health behavior surveys; six scientists responded with comments and edits and two of those scientists also provided detailed information to improve the questionnaire in regards to the TPB constructs and data analysis. The questionnaire included demographic questions to address gender, age, race/ethnicity, student classification, enrollment status, and employment status. In addition to demographic data, general consumption of energy drinks was included as well as consumption of other beverages, in addition to the scaled (1 = strongly disagree to 7 = strongly agree) TPB construct items to assess participants' attitude, perceived behavioral control, perceptions of subjective norms, and intention (Table 6) towards energy drinks. A total of 69 items were included in the questionnaire (Appendix A), which contained no personal identifiers to ensure confidentiality and anonymity.

The questionnaire was pilot tested in two classes at Northeast Mississippi Community College. The students were emailed the questionnaire with the use of the survey platform QuestionPro (QuestionPro, Inc., Issaquah, WA). Each student opened the email on their personal computer or cellular device, clicked on the link, completed the questionnaire, and submitted it. It took approximately 15 minutes for the students to

complete the survey. None of the students experienced any difficulties with navigating or submitting the survey. Students' responses were immediately recorded into an Excel spreadsheet file (Microsoft Office Excel, version 2010, Microsoft Corp., Redmond, WA). The number of participants in the pilot study was 26 students.

To establish reliability of the questionnaire, Cronbach alpha scores were calculated for the constructs using results of the pilot study. The Cronbach alpha score for the attitude construct was .75 when two items were deleted from the construct. The two items were, "It is important that I stay alert" and "It is important that I have help studying for exams." These items were inadvertently typed incorrectly and should have been, "It is important that I consume energy drinks to stay alert" and "It is important that I consume energy drinks to help me study for exams." These two items were included correctly in the final questionnaire (Appendix A). The subjective norms alpha score was .85, the perceived behavioral control score was .80, and the intention construct was determined as .90 (Table 7). All constructs received an acceptable Cronbach alpha score of .70 or higher (Chronbach, 1951; Santos, 1999). Items on the questionnaire that were worded negatively were reverse coded for directional consistency. For the collection of data for the study, all students attending Northeast Mississippi Community College were sent the questionnaire through an email blast using the same technology as in the pilot study.

Institutional Review Board Approval

The study was approved by the Mississippi State University Institutional Review Board for the Protection of Human Subjects in Research (IRB) as study #15-215, in addition to approval by Northeast Mississippi Community College IRB prior to beginning the study.

Sample Size

The number of participants (completed surveys) needed for this study was determined with an online calculator at <http://www.surveysystem.com/sscalc.htm>, which determined the sample size with a 5% confidence level, 5% margin of error, and a theoretical population of 20,000–100,000. Based on this calculation the number of required completed surveys was 374-383. However, general guidelines for considering survey response rates and questionnaire completions usually dictate a participant number of at least 500 completed, returned surveys. For regression analysis, the general guidelines presented by Green (1991) were used: $N > 50 + 8(m)$, where m is the number of predictor values, 80% power, and an α level of .05. The sample size for the regression analysis was determined as greater than 82 participants using four predictors (TPB constructs of attitude, subjective norm, perceived behavioral control, and intention) in the regression model.

Statistical Analysis

The Statistical Package for Social Sciences (Version 22.0, 2013, SPSS, Inc., Chicago, IL) was used for data analysis. Descriptive statistics summarized demographic information and consumption of energy drinks and other beverages. Chi-square tests were used to determine the relationships between energy drink consumption, gender, college student enrollment (part-time vs full-time), and work status. Differences between college students who consumed energy drinks and those who did not consume energy drinks and the mean responses of the TPB constructs were assessed using Independent-samples t

tests with a categorical dependent variable of consuming or not consuming energy drinks. Continuous variables (scaled constructs) were reported as means \pm standard deviations, and categorical variables were reported as frequencies and percentages.

Logistic regression analysis was used to predict the behavior of consuming or not consuming energy drinks using the mean responses of the TPB constructs. The dependent variable was the categorical variable of consumption of energy drinks in the past 12 months or not having consumed energy drinks in the past 12 months and the predictor (independent) variables were the TPB constructs of attitude, subjective norms, perceived behavioral control, and intention. Significance was set at $P \leq 0.05$ for all analyses.

Table 6 Theory of Planned Behavior Construct Items

Theory of Planned Behavior Constructs and Items
Attitude
<p>I believe energy drinks are a healthy way to obtain energy. I believe energy drinks help me be more alert. I believe energy drinks help me study for exams. I believe energy drinks may cause adverse side effects. I believe energy drinks can be dangerous to my health. It is important that I obtain energy through healthy beverages. It is important that I consume energy drinks to stay alert. It is important that I consume energy drinks to help me study for exams.</p>
Subjective Norms
<p>My parents or guardians want me to consume energy drinks. My friends want me to consume energy drinks. My parents or guardians feel that energy drinks are safe to consume. My friends feel that energy drinks are safe to consume. My parents or guardians approve of my current energy drink consumption habits. My friends approve of my current energy drink consumption habits. My parents or guardians expect me to consume energy drinks. My friends expect me to consume energy drinks. It is expected of me that I not consume energy drinks. I feel under social pressure to consume energy drinks.</p>
Perceived Behavioral Control
<p>If I go one day without consuming an energy drink I feel that I am doing something positive. It causes worry and concern if I cannot go one day without consuming an energy drink. If I go 7 days without consuming an energy drink I feel that I am doing something positive. It causes me worry and concern if I cannot go 7 days without consuming an energy drink. If I go 30 days without consuming an energy drink I feel that I am doing something positive. It causes worry and concern if I cannot go 30 days without consuming an energy drink.</p>
Intention
<p>I intend to continue consuming energy drinks. I intend to increase my consumption of energy drinks. I intend to decrease my consumption of energy drinks. I intend to quit drinking energy drinks. I want to drink energy drinks in the next 7 days. I intend to drink energy drinks in the next 7 days. I want to drink energy drinks in the next 30 days. I intend to drink energy drinks in the next 30 days. I intend to consume more than one energy drink a day. I want to consume more than one energy drink a day.</p>

CHAPTER IV

RESULTS AND DISCUSSION

Results

The study sample consisted of 629 participants; this was after 12 surveys were eliminated due to incomplete data. The researcher sent out an email blast to the entire student population of Northeast Mississippi Community College. The enrollment at the time of the email blast was 3,515 students. The response rate using the total student population of 3,515 students was 18%.

Demographic information indicated that over half of the participants were females (62%) and 38% were males (Table 7). The majority of participants (86.3%) were of typical college age, 18-23 years old, with 18-19 year olds comprising 69.2%. Most participants (78.7%) reported being White or Caucasian. Black or African American was the second largest racial demographic (17.2%). The remaining 4.1% of participants were comprised of Asian, Hispanic or Latino, and Other or Multicultural. The majority of students (90.5%) were enrolled full-time, 54.8% were freshman and 45% were sophomores. The percent of students living on campus was 31.2% while 47.5% identified as living at home with parents or guardians. Students living off campus/other living situation included 21.1%. Also, 86% of students indicated they were not married, 5.4% were married, 4.5% were single with children, and 3.7% were married with children. Less than half of the participants (38.6%) did not work, 31.6% worked less than 20 hours a

week, 23.5% worked 21-39 hours per week, and 6% reported working 40 or more hours a week. The majority (76.2%) of participants identified a personal yearly income of less than \$10,000, 13.5% earned \$10,000-\$19,999, 4.1% earned \$20,000-\$29,999, and 3.8% earned \$30,000 or more per year. Fifteen participants (2.4%) did not respond to the item about income (Table 7).

Most of the participants (74.1%) reported consuming an energy drink at some point in their lives; 47.1% reported consuming an energy drink in the past 12 months, and 43.9% reported they currently do not consume energy drinks (Table 8). The frequency in which community college students consumed energy drinks was once a month (37%), while 7.9% reported consuming an energy drink 1-3 times a month, 5.1% reported consuming an energy drink 1-2 times a week, 3.5% reported consuming energy drinks 3-6 times a week, and 2.7% reported consuming energy drinks daily. For the amount consumed when drinking energy drinks, 18.9% reported consuming less than 8 ounces, 33.4% reported consuming 8-16 ounces, and 4.8% reported consuming more than 16 ounces.

Seventy nine participants (12.6%) reported consuming their first energy drink at 12 years of age or younger, 32.4% reported at 13-15 years of age, 17.5% at 16-17 years of age, and 10.5% were 18 years or older when they drank their first energy drink (Table 8). Eighty three participants (13.2%) reported they had started consuming energy drinks within the past year while 24.8% of participants reported they had been consuming energy drinks for 5 years or longer. Over one-third (35%) of participants who consumed energy drinks had not tried to stop consuming them, 29.9% of participants reported trying to stop the consumption of energy drinks. When asked if they were successful in their

attempt to quit consuming energy drinks, 3.8% reported they were unsuccessful, while 32.6% reported they were successful. The percentage of participants that consumed energy drinks and had not tried to quit was 26.1%. Over 14% of participants acknowledged consuming energy drinks late at night to help them study, while 85.5% indicated they had not consumed energy drinks late at night. When participants were asked if they used energy drinks to help them wake up or get themselves going in the morning, 75.4% reported they did not, while 23.5% reported using energy drinks to help them in the mornings. Overall, 17.3% of participants reported that energy drinks impacted their sleeping habits and 44.8% reported that energy drinks did not impact their sleeping habits.

A large majority of participants (81.6%) indicated they had consumed an energy drink with alcohol in it, while 17.8% reported not consuming an energy drink containing alcohol, four participants did not respond to the question (Table 8). When participants were asked why they consumed energy drinks, 25.6% responded they liked the taste, 22.9% reported energy drinks made them feel more alert, 3.7% reported they liked the way energy drinks made them feel, and 1.9% reported they consumed energy drinks because it was a habit. Most participants (82.8%) indicated they consumed other forms of caffeine excluding energy drinks. Additionally, 89.8% of participants indicated they consumed sports drinks such as Gatorade, Propel, and PowerAde, and 87.1% of the students reported drinking cola/soda beverages with some (12.1%) indicating a high consumption of three or more colas daily. Most participants (95.9%) indicated they drank water, the majority of participants consumed bottled water (44.2%) with 37.2% indicating they never or almost never drank tap water. A majority of participants (66.3%) also

indicated they never or almost never consumed sweetened water.

Differences were observed between males and females in the consumption of energy drinks. Overall, males were more likely to have ever consumed an energy drink compared to females ($p = .002$), more likely to have consumed an energy drink in the past 12 months ($p < .001$), more likely to report daily or weekly consumption of energy drinks ($p = .049$), and also more likely to have consumed an energy drink with alcohol in it ($p = .033$). Males reported they had been consuming energy drinks over a longer period of time compared to females ($p = .001$); however, there was no difference between males and females regarding the age of first consumption of energy drinks ($p = .235$). There was a significant difference in race; Whites/Caucasians were more likely to consume energy drinks than Blacks/African Americans or other ethnicities/races ($p = .003$). Lastly, there were no observed differences between full-time and part-time students or the participants' work status in relation to energy drink consumption.

Cronbach alpha scores were determined for the constructs after data collection, with each construct receiving an acceptable score of greater than .70 when two items were removed from the subjective norms construct, and three items were removed from the perceived behavioral control construct. The construct of attitude had a score of .797, subjective norms received .799, perceived behavioral control received .893, and intention had a Cronbach alpha score of .904.

The mean response scores of the TPB constructs were compared between those who had consumed an energy drink in the past 12 months ($n = 296$) and those who had not consumed an energy drink in the past 12 months ($n = 332$). The participants who reported not consuming energy drinks responded with significantly higher scores than

those who had consumed an energy drink in the past 12 months for three of the TPB constructs ($p < .001$, Table 8). This indicated those participants ($n = 332$) had an overall negative attitude, and a negative perception with regards to subjective norms, towards consuming energy drinks, and they also demonstrated the intention of not consuming energy drinks. Perceived behavioral control had similar mean scores for those who consumed an energy drink in the past 12 months and those who did not (Table 8).

Attitude Construct

The perceptions of energy drink consumption by community college students were obtained through the TPB constructs and items within the constructs. Attitude towards energy drinks was investigated and the majority of participants (72.7%) disagreed with the statement that energy drinks are a healthy way to obtain energy, but 46.9% agreed to the statement that energy drinks help them be more alert. For the statement, “I believe energy drinks help me study for exams,” 19% agreed, with 30.2% neither agreeing nor disagreeing with the statement. A majority of participants (63.1%) agreed that it is important to obtain energy from healthy beverages. For the statement, “It is important that I consume energy drinks to stay alert,” 66.8% disagreed, and 68.9% disagreed that it is important for them to consume energy drinks to help study for exams. The mean response for the attitude construct was 5.3 ± 1.1 ; this is the mean after reverse coding the items that were worded negatively to ensure directional consistency for statistical analysis (Table 9).

Subjective Norms Construct

A majority of participants (76.9%) disagreed with the statement that their parents or guardian wanted them to consume energy drinks, and 59.8% disagreed with the statement that their friends wanted them to consume energy drinks. The largest group of participants (34.9%) selected neither agree nor disagree to the statement that their friends want them to consume energy drinks. Also, 70.8% of participants disagreed with the statement that their parents or guardians felt that energy drinks are safe to consume, and 35.6% selected neither agree nor disagree for the statement, “My friends feel that energy drinks are safe to consume.” For the statement about their parents or guardians approving of their current energy drink consumption habits, 41.1% of participants selected neither agree nor disagree, with 28.3% disagreeing and 22.7% agreeing with the statement. Half of the participants (50.2%) selected neither agree nor disagree for the statement that their friends approved of their current energy drink consumption patterns. The majority of participants (58.6%) strongly disagreed with the statement that their parents or guardians expected them to consume energy drinks, and 52.1% disagreed with the statement that their friends expected them to consume energy drinks. The majority of participants (64.1%) disagreed with the statement, “I feel social pressure to consume energy drinks.” Participants’ mean response for subjective norm construct was 5.5 ± 1.0 after reverse coding negatively worded items for directional consistency (Table 9).

Perceived Behavioral Control Construct

The majority of participants (53.7%) selected neither agree nor disagree with the statement, “If I go one day without consuming an energy drink I feel that I am doing something positive,” while 45% strongly disagreed with the statement, “It causes worry

and concern if I cannot go one day without consuming an energy drink.” For the statement, “If I go 7 days without consuming an energy drink I feel that I am doing something positive,” the majority of participants (52%) selected neither agree nor disagree, while 38% strongly disagreed with the statement, “It causes worry and concern if I cannot go 7 days without consuming an energy drink.” A majority of participants (53.2%) indicated they neither agreed nor disagreed to the statement, “If I go 30 days without consuming an energy drink I feel that I am doing something positive,” but 36.4% strongly disagreed with the statement, “It causes worry and concern if I cannot go 30 days without consuming an energy drink.” Mean response for the perceived behavioral control construct was 4.1 ± 1.7 after reverse coding negatively worded items (Table 9).

Intention Construct

The largest group of participants (42.9%) disagreed with the statement, “I intend to continue consuming energy drinks” while 22.6% agreed with the statement. For the statement, “I intend to increase my consumption of energy drinks,” 51.3% strongly disagreed and only 3% agreed. A majority of the participants (55.7%) selected neither agree nor disagree to the statement, “I intend to decrease my consumption of energy drinks” and 20.4% disagreed and 23.9% agreed with the statement. For the statement, “I want to drink energy drinks in the next 7 days,” 42.8% strongly disagreed, and similarly with “I intend to drink energy drinks in the next 7 days,” 44.7% strongly disagreed. For the statement, “I want to drink energy drinks in the next 30 days,” 41.9% strongly disagreed and 42.6% strongly disagreed with the statement, “I intend to drink energy drinks in the next 30 days.” A majority of participants (62.3%) strongly disagreed with the statement, “I intend to consume more than one energy drink a day,” while 62.2%

strongly disagreed with the statement. The mean score for the intention construct was 5.1 ± 1.2 when the negatively worded items were reverse coded for directional consistency (Table 9).

Logistic Regression Results

Logistic regression was conducted to determine which TPB constructs were predictors of the consumption of energy drinks in the past 12 months. Logistic regression was used to predict the membership of a participant into one of two groups: (1) consumed an energy drink in the past 12 months or (2) did not consume an energy drink in the past 12 months. The participants were assigned membership according to their responses to the independent variables of the TPB constructs (attitude, subjective norms, perceived behavioral control, and intention) with a hierarchical model including the covariates of gender and race. The regression results indicated that three TPB constructs were predictors (attitude, perceived behavior control, and intentions) of distinguishing between those who had consumed an energy drink and those who had not consumed an energy drink in the past 12 months. The gender of male and the race/ethnicity of White/Caucasian were also predictors of consuming energy drinks in the past 12 months (Table 10).

The overall model fit for the data was acceptable ($\chi^2 = 183.100$, $df = 9$ (full model with all races/ethnicities included), $p < .001$). The values for Cox and Snell R^2 was .253 and Nagelkerke R^2 was .338, which should be interpreted cautiously in logistic regression as the proportion of variance explained by the predictors as 25.3% to 33.8%. The strongest predictor of consuming energy drinks in the past 12 months was being male, with an odds ratio of 2.032 (Table 10). This indicates males are 2 times more likely to

have consumed energy drinks in the past 12 months compared to females. Race/ethnicity was also significant and White/Caucasian participants were 1.2 times more likely to consume energy drinks compared to other races/ethnicities. Additionally, attitude, perceived behavioral control, and intention constructs contributed as predictors in classifying individuals as consumers or non-consumers of energy drinks. Intention was a predictor of the behavior of not consuming energy drinks. The odds ratio of .561 for intention indicated that for every point increase in intention to not consume energy drinks, participants were .56 times less likely to have consumed energy drinks in the past 12 months. The subjective norms of participants did not predict group membership (Table 10). Overall, the regression model correctly classified 73.2% of the cases (participants) into group membership of having consumed an energy drink and those who had not consumed an energy drink in the past 12 months.

Discussion

The consumption patterns of college students has been reported in previous research; however, the current study attempted to understand the reasoning behind the consumption patterns of energy drinks in college students. Consumption of energy drinks can have severe consequences on the health of an individual. Usman et al. (2012) and Solomin et al. (2015) reported that overconsumption of energy drinks has been related to heart health issues in adolescents and adults. Numerous health related concerns have been reported from the consumption of energy drinks. As reported by the United States Department of Health and Human Services, Food and Drug Administration, Center for Food Safety and Applied Nutrition (n.d.) adverse incidents report, anxiety, heart attack, and death have been attributed to overconsumption of energy drinks. Because of these

health risks it is important to determine the consumption patterns, and perceptions of energy drink usage. The perception of energy drinks as stated by Kumar et al. (2015) can affect the consumption patterns of energy drinks, and Ibrahim and Iftikhar (2014) advocated for a comprehensive energy drink history on individuals by primary health care providers. The frequency, perceptions, and behaviors associated with energy drink consumption are important factors to understand. The objectives of this research were to answer four questions: (1) What is the frequency in which community college students consume energy drinks? (2) What are college students' perception of energy drink consumption? (3) What is the utility of the TPB in determining and assessing personal attitude, subjective norms, perceived behavioral control, and intention for energy drink consumption? (4) Does the Theory of Planned Behavior construct of intentions predict the actual behavior of energy drink consumption?

The consumption patterns of the participants of the study were 47.1% of participants consuming an energy drink in the past 12 months, (44.9%) indicated consumption of energy drinks monthly, with 16.7% consuming energy drinks weekly. The results of the current study are similar with other researchers who have investigated students' consumption patterns of energy drinks. Malinauskas et al. (2007) reported 51% of college students consumed more than one energy drink a month. Pettit et al. (2011) observed a higher consumption pattern of at least one energy drink in the past 30 days by (70.1%). Bliss et al.'s (2011) study is similar with 57% of respondents reporting consuming energy drinks 1-3 times a week.

When determining the frequency of consumption of energy drinks, it is important to look at the age of first use. Participants (13.2%) in the current study indicated first

consumption at age 12 or younger, 50% first consuming between the ages of 13-17, and 10.5% consuming at age of 18 years or older. A significant portion of the participants (24.8%) reported consuming energy drinks for 5 or more years. These results indicate that 2-year college students are consuming energy drinks at a significant level with many of them starting at a young age and continuing the habit for an extended period of time.

The current research indicates that the population had a negative perception of energy drinks towards their health, but when prompted about the ability to help them be more alert the participants indicated a positive perception of energy drinks. The perception of the participants towards cognitive or physical performance enhancement of energy drinks is similar to previous research, but their perception about the effect on their health differed with a negative perception. The perception of energy drinks among college students is important to understand. Kumar et al., (2015) indicated energy drink consumers are affected by the perception of energy drinks. As stated in Ballistreri et al.'s (2008) research, the perception of performance enhancement is intriguing to the energy drink consumer. This perception of performance can also be seen in Karlsson et al.'s (2015) research with pain tolerance in groups consuming energy drink versus groups not consuming energy drink.

The perception toward energy drinks and their ability to improve physical or cognitive performance is important to understand. In the research previously stated (Ballistreri et al. 2008 and Karlsson et al. 2015), the attitude of the individual played a role in consumption patterns. The current study showed a significant relationship between attitude and the behavior of energy drink consumption. The mean response rate for the attitude construct items correlated significantly with the participant having consumed an

energy drink in the past 12 months or not consuming an energy drink in the past 12 months.

As seen in the research study by Bliss et al. (2011), their results are comparable to the results of the current study in that users consumed energy drinks to study, for sleep deprivation, and general need for more energy. This is consistent with Malinauskas et al.'s (2007) research revealing the main reasons for energy drink consumption, which included insufficient sleep, general need for energy, and studying. The positive attitude toward the effects of energy drinks coupled with the intention of performance enhancement of energy drinks helps predict the consumption of energy drinks.

Although the current research indicated that individuals may have perceived energy drinks to have performance enhancement qualities, their perceptions of their parents/guardian, and friends may have differed. When asked if parents or guardians expect them to consume energy drinks, the majority of participants strongly disagreed, and participants strongly disagreed with the statement that friends expect them to consume energy drinks. Again, parents and guardians may be a major influence on the perception of energy drinks, with both friends and family/guardians not supporting the perception that energy drink consumption is beneficial. Miller's (2008) research with male athletes and consumption of energy drinks showed a relationship between subjective norm and consumption patterns. The current research did not show a significant relationship between subjective norm and consumption patterns of energy drinks. The participants' responses for the subjective norm construct suggested a negative perception of energy drinks from their parents or guardians.

When staying up late to study, 14.3% consumed energy drinks and when waking

up, more participants (23.8%) used energy drinks to get them going. These results are similar to Bliss et al.'s (2011) research in which 17% of respondents drank energy drinks when studying for an exam and 15% indicated sleep deprivation for the reason of consuming energy drinks. Another major reason identified in the study by Bliss et al. (2011) for the consumption of energy drinks was a general lack of energy. Of some concern in the current study is that 11.2% had sleep disruption from consumption of energy drinks, but 44.9% indicated they did not have any sleep disruption from their consumption of energy drinks. From the current study, the majority of participants did not use energy drinks to study or wake up, with the majority not believing that energy drinks affected their sleeping habits.

When examining the TPB constructs with the question of have you consumed an energy drink in the past 12 months attitude, perceived behavioral control, and intention constructs were predictors for consumption of energy drinks. The logistic regression analysis reflected significant differences for participants in the constructs of attitude, perceived behavioral control, and intention in group membership of having consumed an energy drink in the past 12 months or not having consumed an energy drink in the past 12 months. The items in the attitude construct of the TPB aggregated into a good predictor of behavior. By assessing agreement or disagreement with statements such as "I intend to continue consuming energy drinks," "I intend to decrease my consumption of energy drinks," and "I want to drink energy drinks in the next 30 days," the intention construct of the TPB was also a good predictor of the behavior. The attitude, perceived behavioral control, and intention constructs were major factors in the consumption patterns of energy drink users. The construct of subjective norm was not a significant predictor of

the behavior of consumption of energy drinks in the past 12 months.

In the current study, the participants indicated disagreement (76.9%) with statements such as “my parents or guardian want me to consume energy drinks,” or “my parents or guardian feel that energy drinks are safe to consume.” This indicates that the participants are aware that their parents or guardian may have a negative attitude about energy drinks, but participants’ responses to peer related statements may have differed from parents or guardian. When presented with the statement that my friends want me to consume energy drinks, 59.8% were in disagreement, or my friends feel that energy drinks are safe to consume, 38.5% were in disagreement. The majority of participants selected neither agree nor disagree, indicating that peer expectations may have less of an impact on perception of energy drink consumption. For the statements that my family or guardian approve of my energy drink consumption habits and my friends approve of my energy drink consumption habits, the majority of participants for both questions selected neither agree nor disagree, which may indicate that neither social structure may have much influence on energy drink consumption habits. This research also indicates that the participants may not view their energy drink consumption patterns as a habitual behavior. When prompted about their consumption patterns, a majority of participants indicated they did not wish to increase their energy drink consumption. The participants in the study reported use of energy drinks when presented with a stressor such as lack of sleep or help with studying.

Strengths and Weaknesses

In respect to the weaknesses of the current study, the 2-year college student population may not be generalized to the entire college student population. A lack of

qualitative data from participants limits the conclusions of the current research. By using interviews, the perceptions of the participants could have been studied more extensively. Further research into other health behavior theory to enhance the understanding of energy drink consumption behavior is needed. The TPB focused on the interaction of the individual within themselves and the environment. Continued research into the environment could yield more information as to the reasoning and patterns associated with energy drink consumption. Another weakness or limitation of the study was the use of a convenient sample of students and not a random sample. Also, the inherent nature of a self-report questionnaire could have led some participants to not report truthful information. As a cross-sectional study from one community college in the southern United States, the results cannot be generalized to other colleges. In contrast, the strengths of the study included the ability to predict behavior using health behavior theory. In particular, the TPB was useful in predicting the consumption or non-consumption of energy drinks in the past 12 months. Another strength of the study was enabling students to respond to the questionnaire by using any cellular device that could open the email containing the link to the survey. Also, the addition of data about the consumption patterns of the 2-year college student population may be used to obtain a better understanding of the overall consumption of energy drinks by college students.

Table 7 Descriptive Characteristics of Participants

Characteristics	N (%)
Gender	
Female	390 (62)
Male	239 (38)
Age Group	
18-19	435 (69.2)
20-23	107 (17.0)
24+	87 (13.8)
No response	1 (.2)
Classification	
Freshman	345 (54.8)
Sophomore	283 (45)
No response	1 (.2)
Race/Ethnicity	
White or Caucasian	495 (78.7)
Black or African American	108 (17.2)
Hispanic or Latino	11 (1.7)
Other or Multiracial	12 (1.9)
Asian	3 (.5)
Enrollment Status	
Full-Time	569 (90.5)
Part-Time	57 (9.1)
No response	3 (.5)
Living Situation	
On-Campus	196 (31.2)
At Home with Parent or Guardian	299 (47.5)
Off-Campus or Other	132 (21)
No response	2 (.3)
Marital Status	
Single	541 (86)
Married	34 (5.4)
Single with Children	28 (4.5)
Married with Children	23 (3.7)
No response	3 (.5)
Employment/Hours Worked A Week	
None	243 (38.6)
20 Hours a Week or Less	199 (31.6)
21-39 Hours a Week	148 (23.5)
40 Hours a Week or More	38 (6)
No response	1 (.2)

Table 7 (Continued)

Personal income	
Less than \$10,000	479 (76.2)
\$10,000 to \$19,999	85 (13.5)
\$20,000 to \$29,999	26 (4.1)
\$30,000 +	24 (3.8)
No response	15 (2.4)
Ever Consumed Energy Drink	
Yes	466 (74.1)
No	162 (25.8)
No response	1 (.2)
Consumed Energy Drink Last 12 Months	
Yes	296 (47.1)
No	332 (52.8)
No response	1 (.2)
How often do you usually drink energy drinks?	
Never	276 (43.9)
Rarely, Once a Month	233 (37)
1-3 Times a Month	50 (7.9)
1-2 Times a Week	32 (5.1)
3-6 Times a Week	22 (3.5)
1 or more times per day	16 (2.5)
No response	1 (.2)
How much energy drink do you consume each time you drink it?	
None, I never drink energy drinks	269 (42.8)
Less than 8 Ounces	119 (18.9)
8 to 16 Ounces	210 (33.4)
More than 16 Ounces	30 (4.8)
No response	1 (.2)
At what age did you first drink an energy drink?	
I have not consumed energy drinks	170 (27)
12 Years of Age or Younger	79 (12.6)
13-15 Years of Age	204 (32.4)
16-17 Years of Age	110 (17.5)
18 Years of Age or Older	66 (10.5)
How long have you been consuming energy drinks?	
I have not consumed energy drinks	223 (35.5)
Less than 1 Year	83 (13.2)
1-2 Years	62 (9.9)
3-4 Years	104 (16.5)
5 Years or Longer	156 (24.8)
No response	1 (.2)
Tried to Quit Consuming Energy Drinks	
No	220 (35)
Yes	188 (29.9)
I have not consumed energy drinks	221 (35.1)

Table 7 (Continued)

Were you successful in quitting the consumption of energy drinks?	
No	24 (3.8)
Yes	205 (32.6)
I consume but have not tried to quit	164 (26.1)
I do not consume energy drinks	235 (37.4)
No response	1 (.2)
Consumption of Energy Drinks at Night	
No	538 (85.5)
Yes	90 (14.3)
No response	1 (.2)
Consumption of Energy Drinks in the Morning	
No	474 (75.4)
Yes	148 (23.5)
No response	7 (1.1)
Energy Drink Consumption Impact Sleeping Habits	
No	282 (44.8)
Yes, Slightly	60 (9.5)
Yes, Majorly	10 (1.6)
Yes, When I use them Late at Night	39 (6.2)
I Do Not Consume Energy Drinks	237 (37.7)
Have you ever consumed an energy drink with alcohol in it?	
No	513 (81.6)
Yes	112 (17.8)

Table 8 Comparison of Energy Drink Consumption and Theory of Planned Behavior Constructs

Construct	Ever Consumed Energy Drink	N	Mean ± standard deviation	<i>p</i> value
Attitude	Yes	296	4.8 ± 1.0 ^a	<.001*
	No	332	5.6 ± 1.1	
Subjective Norm	Yes	296	5.2 ± 1.0	<.001*
	No	332	5.7 ± 1.1	
Perceived Behavioral Control	Yes	296	4.1 ± 1.5	.366
	No	332	4.0 ± 1.9	
Intention	Yes	296	4.6 ± 1.2	<.001*
	No	332	5.6 ± 1.1	

^aValues ranged from 1=Strongly Disagree to 7=Strongly Agree; negatively worded items were reverse coded for directional consistency.

*Significant difference between the two groups ($p < .001$).

Table 9 Descriptive Statistics for Theory of Planned Behavior Constructs

Construct	Mean ± SD ^a
Attitude	5.3 ± 1.1 ^b
Subjective Norm	5.5 ± 1.0
Perceived Behavioral Control	4.1 ± 1.7
Intention	5.1 ± 1.2

^aSD is Standard Deviation.

^bValues ranged from 1=Strongly Disagree to 7=Strongly Agree; negatively worded items were reverse coded for directional consistency.

Table 10 Logistic Regression Results for Predictor Values of Theory of Planned Behavior Constructs

Variables in the Equation ^{abc}	B	Standard Error	Wald	<i>p</i> value	Odds Ratio (95% CI ^d)
Gender (male)	.709	.197	13.013	<.001	2.032 (1.382, 2.986)
Race/ethnicity				<.001	
African American	-1.210	.761	2.529		.298 (.067, 1.325)
Caucasian	.153	.721	.045		1.166 (.284, 4.791)
Attitude	-.664	.122	29.602	<.001	.515 (.405, .654)
Subjective Norms	.183	.117	2.460	.117	-
Perceived Behavioral Control	.252	.062	16.389	<.001	1.287 (1.139, 1.454)
Intention	-.578	.109	28.360	<.001	.561 (.454, .694)
Constant	4.081	.919	19.707	<.001	59.223

^aDependent variable: Consumed an energy drink in past 12 months (yes or no).

^bDegrees of freedom = 1 except for race/ethnicity (*df* = 4) with only African American and Caucasian results shown.

^cGender and race were controlled for as covariates in the model; variables entered in step 1 of the logistic regression were attitude, subjective norms, perceived behavioral control, and intention, negatively worded items were reverse coded for directional consistency.

^dConfidence Interval

CHAPTER V

CONCLUSION

The use of energy drinks may cause adverse events such as anxiety, myocardial infarction, convulsion, and numerous other serious health reactions including death (United States Department of Health and Human Services, Food and Drug Administration, Center for Food Safety and Applied Nutrition, n.d.). The purpose of this study was to determine the consumption of energy drinks by college students, the perception of energy drinks in the college student population, and examine the TPB constructs of attitude, subjective norm, perceived behavioral control, and intention of college students' energy drink consumption habits, and to determine if intention is a good predictor of energy drink behavior. The questionnaire used in this study was developed based on the TPB (Ajzen, 2011).

Unlike other studies that have focused on the 4-year college population, the current study focused on the 2-year college population. Overall, the participants had a negative perception of energy drinks with a majority indicating energy drinks were not a good source of energy. This differed from previous research that indicated college students consumed energy drinks to stay up late, study, and wake up in the morning. In addition to focusing on a unique population, the current study employed the TPB to understand the consumption patterns of energy drinks.

Participants of the study were separated into two categories of having consumed an energy drink in the past 12 months or having not consumed an energy drink in the past 12 months. These two groups were analyzed using logistic regression with the four constructs of the TPB. It was determined that three of the four constructs were significant predictors of the behavior of the consumption of energy drinks. Attitude, perceived behavioral control, and intention were the constructs that were significant predictors of the target behavior, with subjective norm showing non-significance in the prediction of the behavior of consumption of energy drinks.

The TPB is used to determine reasoning behind many varied behaviors. The TPB was selected to determine the extent of the behavior of energy drink consumption in college students. After developing and piloting the questionnaire based on the TPB, the researcher collected data on 2-year college students. The results indicated that attitude, perceived behavioral control, and intention were predictors of behavior, but participants' results for the subjective norm construct was useful in examining the energy drink habits of the population.

Attitude

As previously stated, attitude towards the behavior of consumption of energy drinks was a significant predictor. The responses that indicated a negative attitude toward energy drink consumption was observed in the participants' responses. Through self-reported data, the participants indicated that energy drinks were not a healthy way to obtain energy. The participants of the study appeared to exhibit thoughtful behavior when asked about attitudes toward energy drinks. This differed from previous research that indicated a positive attitude toward energy drink consumption. Through analyzing the

responses of the participants, it appeared that their attitude towards energy drinks was that energy drinks are unhealthy. On questions that prompted them on the health aspects of energy drinks, they consistently indicated they were not a healthy choice. Yet, when prompted about helping them study or be more alert, they were less likely to disagree with the statement. This indicates a likelihood to consume energy drinks in stressful situations. This may also indicate that the perceived enhanced performance aspect of consuming energy drinks can outweigh the potential health issues.

Subjective Norm

Subjective norms measured in the questionnaire gave a glimpse of the important social aspect of the participant's lives. Parents or guardian seemed to have more influence on the perception of subjective norms on energy drink consumption in the current population. This is indicated through the responses to the subjective norm construct. The role of friends in the current study was less negatively associated with subjective norms than that of parents or guardians. While the subjective norms of the population tended to be negative, a majority of the students had at least tried energy drinks at some point in their life. The negative perception of energy drinks could not accurately predict the behavior of consumption of energy drinks in the current population, this can be explained by the expectations of the population. The surrounding social environment produced a negative climate pertaining to energy drink consumption, but expectations of social influences could cause the participant to consume energy drink.

Perceived Behavioral Control

The participants' responses indicated a positive perception of their perceived behavioral control. They indicated no issues with not consuming energy drinks over the span of one day, seven days, or thirty days. By self-reporting attempts to stop the consumption of energy drinks, the results showed that the majority of participants who wanted to stop the behavior of energy drink consumption were successful. The self-reporting on perceived behavioral control indicates that the consumption of energy drinks is not a habitual behavior, but more likely a behavior influenced by stressors. Not consuming energy drinks did not cause the population worry and concern. Their responses show they are not habitually consuming energy drinks, but through descriptive data, it is clear that a significant portion consumes energy drinks on a regular basis. It is important to note that a small percentage of the population had tried to quit without being successful. This shows that consumption of energy drinks can possibly be addictive, and should probably be monitored.

Intention

As with attitude and perceived behavioral control, logistic regression analysis determined intention as a significant predictor of consumption of energy drink behavior. The participants of the study did not indicate an intention to significantly increase or decrease their current consumption patterns. This further indicates the participants' need for a reason to consume energy drinks. Responses to energy drink consumption over the next day, week, and month indicated that the participants' behavior was not habitual, but it was a significant predictor of whether the participant had or had not consumed an

energy drink. This is unique to the research as no other study was found to determine intention as a predictor of energy drink consumption behavior.

Implications

The growth of the energy drink industry has grown significantly over the past three decades, because of this rapid growth careful monitoring must take place. The consumption patterns of energy drinks needs to monitored (Usman & Jawaid, 2012). Medical professionals keeping a comprehensive history of energy drink consumption habits can be influential in our accumulating knowledge of the effects of energy drinks. Acute overconsumption of energy drinks is an area that needs to be understood further, as well as data on chronic consumption of energy drinks.

Health behavior theory is another area of energy drink research that needs to be expanded. There is a lack of research determining the multiple social levels involved in energy drink consumption. Further investigation into the intrapersonal reasoning behind consumption patterns as well as environmental influences that provoke energy drink consumption must be understood further. Lastly, continued monitoring of the growth of the energy drink industry is an area of need. The lack of regulation on energy drinks can continue to affect individuals if not closely monitored.

Future Research

The current study indicates several key aspects of energy drink consumption that have not previously been reported. While researchers have focused on the 4-year college student, research exploring energy drink consumption patterns of the 2-year college student have been lacking in the literature. The current study expands the research to

include the 2-year college student, and further research to compare the patterns with 4-year college students needs to be investigated. Also, using the TPB to assess the reasons for consuming energy drinks in the college student population has been sparse. The current research using the TPB yielded results that add to the overall knowledge of energy drink consumption of college students. In the current population, attitude and intention toward energy drink consumption were significant predictors, but the participants did not view the behavior as habitual.

Further study is needed in the overconsumption of energy drinks. As indicated in the present study, the behavior of energy drink consumption is not habitual, but a response to a stress stimulus. This can lead to consumption of dangerous amounts of energy drinks in a short time period. Through a review of the literature, the researcher sees a major need to determine the prevalence of short term massive consumption of energy drinks. When a stressor is introduced into the college student population, the perception of performance enhancement of energy drinks can be dangerous. Consuming numerous energy drinks to cope with stressors such as studying, staying up late, or waking up early is a scenario that may occur frequently in the college student population. The current study focused on the overall consumption patterns of the population, future study on short term use is needed. The positive perception of energy drinks coupled with stressors is a combination that may continue to cause adverse health incidents.

The rapid growth of the energy drink industry over the past twenty years shows that the consumption of energy drinks has become more common in society. The research in energy drink consumption should focus on the habitual use of energy drinks in our society. The possibility of energy drinks becoming a standard in our society and not a

niche product is a realistic possibility. Continued study of the energy drink consumption patterns of college students is an area of research that is vital to understanding the population. Using the current research and comparing it to the 4-year college student is an area that is needed to fully understand the energy drink consumption patterns of college students.

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APPENDIX A
QUESTIONNAIRE

This research survey investigates the use of energy drinks by college students. Mr. Justin Treloar, an Instructor at Northeast Mississippi Community College and a doctoral student at Mississippi State University is conducting this study. Mr. Treloar would appreciate your participation in answering all of the questions. You are under no obligation to participate in this survey or complete any part of this survey. Participation is completely voluntary and anonymous. Your email address will be delinked from your response when you submit the survey to ensure anonymity. If you decide to participate, your completion of the survey indicates your consent. Any questions may be directed to Mr. Treloar, jatreloar@nemcc.edu or his academic advisor, Dr. Diane Tidwell, d.tidwell@msstate.edu, 662-325-0239. This study involves human subjects and therefore has been reviewed collaboratively by the Mississippi State University Institutional Review Board and Northeast Mississippi Community College. Individuals must be 18 years of age or older to participate. Please choose one answer for each question.

1. What is your gender? Female
 Male

2. What is your age? 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30+

3. What is your classification? Freshman
 Sophomore

4. What is your race/ethnicity? Black or African American
 Hispanic or Latino
 White or Caucasian
 Asian
 Native American Indian
 Hawaiian/Pacific Islander

- Alaskan Native
- Other or Multiracial

5. Are you a full-time or a part-time student? Full-Time
 Part-Time

6. What is your living situation? On-Campus
 At home with parents or guardian
 Off-Campus or other living situation

7. What is your marital status?
 Single
 Married
 Single with children
 Married with children

8. Estimated hours worked in a week? None, I do not have a job
 20 or less hours a week
 21 – 39 hours a week
 40 hours a week or more

9. What is your personal yearly income?
 Less than \$10,000
 \$10,000 - \$19,999
 \$20,000 - \$29,999
 \$30,000 - \$39,999
 \$40,000 - \$49,999
 \$50,000 or more

10. Have you ever consumed an energy drink? Popular brands are RedBull, Monster, 5 Hour Energy, and Rockstar.
 Yes
 No

11. Over the past 12 months, have you consumed one or more energy drinks? Energy drinks are marketed as providing physical or mental stimulation and usually contain caffeine.
 Yes
 No

12. How often do you usually drink energy drinks?
 Never
 Rarely, once a month or less

- 1 - 3 times a month
- 1 - 2 times per week
- 3 - 4 times per week
- 5 - 6 times per week
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

13. Each time you consume an energy drink, how much do you usually drink? (Red Bull 12 oz., Monster 16 oz.)

- None, I never drink energy drinks
- Less than 8 ounces or less than 1 cup
- 8 to 16 ounces or 1 to 2 cups
- More than 16 ounces or more than 2 cups

14. At what age did you first drink an energy drink?

- I have not consumed energy drinks
- 12 years old or younger
- 13 years old
- 14 years old
- 15 years old
- 16 years old
- 17 years old
- 18 or older

15. How long have you been consuming energy drinks?

- I have not consumed energy drinks
- Less than one year
- 1 year
- 2 years
- 3 years
- 4 years
- 5 years or longer

16. If you consume energy drinks, have you ever tried to quit drinking energy drinks?

- No
- Yes
- I have not consumed energy drinks

17. If you have ever tried to stop drinking energy drinks, were you successful?

- No
- Yes
- I drink energy drinks but I have not tried to quit
- I do not drink energy drinks

18. Do you drink energy drinks late at night, such as when you are studying for a major exam?

- No
- Yes

19. Do you use energy drinks in the morning to wake up or help get yourself going?

- No
- Yes

20. Do you feel your energy drink consumption impacts your sleeping habits?

- No
- Yes, slightly
- Yes, majorly
- Yes, but only when I stay up late and drink them at night
- I do not consume energy drinks

21. What is the main reason you drink energy drinks?

- I like the way they taste
- I like the way they make me feel
- They make me more alert
- Habit
- I do not drink energy drinks

22. Have you ever consumed an energy drink with alcohol in it?

- No
- Yes

23. Do you ever use any forms of caffeine that are not energy drinks, such as coffee, tea, caffeinated cola beverages, caffeine tabs, etc.?

- No
- Yes

Please indicate how much you agree or disagree to the following statements.

24. I believe energy drinks are a healthy way to obtain energy.

- 1=Strongly disagree
- 2=Moderately disagree
- 3=Slightly disagree
- 4=Neither agree nor disagree
- 5=Slightly agree
- 6=Moderately agree
- 7=Strongly agree

25. I believe energy drinks help me be more alert.

- 1=Strongly disagree
- 2=Moderately disagree
- 3=Slightly disagree

- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

26. I believe energy drinks help me study for exams.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

27. I believe energy drinks cause adverse side effects.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

28. I believe energy drinks can be dangerous to my health.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

29. It is important that I obtain energy through healthy beverages.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

30. It is important that I consume energy drinks to stay alert.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree

___6=Moderately agree
___7=Strongly agree

31. It is important that I consume energy drinks to help me study for exams.

___1=Strongly disagree
___2=Moderately disagree
___3=Slightly disagree
___4=Neither agree nor disagree
___5=Slightly agree
___6=Moderately agree
___7=Strongly agree

32. My parents or guardians want me to consume energy drinks.

___1=Strongly disagree
___2=Moderately disagree
___3=Slightly disagree
___4=Neither agree nor disagree
___5=Slightly agree
___6=Moderately agree
___7=Strongly agree

33. My friends want me to consume energy drinks.

___1=Strongly disagree
___2=Moderately disagree
___3=Slightly disagree
___4=Neither agree nor disagree
___5=Slightly agree
___6=Moderately agree
___7=Strongly agree

34. My parents or guardians feel that energy drinks are safe to consume.

___1=Strongly disagree
___2=Moderately disagree
___3=Slightly disagree
___4=Neither agree nor disagree
___5=Slightly agree
___6=Moderately agree
___7=Strongly agree

35. My friends feel that energy drinks are safe to consume.

___1=Strongly disagree
___2=Moderately disagree
___3=Slightly disagree
___4=Neither agree nor disagree
___5=Slightly agree
___6=Moderately agree
___7=Strongly agree

36. My parents or guardians approve of my current energy drink consumption habits.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

37. My friends approve of my current energy drink consumption habits.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

38. My parents or guardians expect me to consume energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

39. My friends expect me to consume energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

40. It is expected of me that I not consume energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

41. I feel social pressure to consume energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

42. If I go one day without consuming an energy drink I feel that I am doing something positive.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

43. It causes worry and concern if I cannot go one day without consuming an energy drink.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

44. If I go 7 days without consuming an energy drink I feel that I am doing something positive.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

45. It causes worry and concern if I cannot go 7 days without consuming an energy drink.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

46. If I go 30 days without consuming an energy drink I feel that I am doing something positive.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

47. It causes worry and concern if I cannot go 30 days without consuming an energy drink.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

48. I intend to continue consuming energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

49. I intend to increase my consumption of energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

50. I intend to decrease my consumption of energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

51. I intend to quit drinking energy drinks.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

52. I want to drink energy drinks in the next 7 days.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

53. I intend to drink energy drinks in the next 7 days.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

54. I want to drink energy drinks in the next 30 days.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

55. I intend to drink energy drinks in the next 30 days.

- ___1=Strongly disagree
- ___2=Moderately disagree
- ___3=Slightly disagree
- ___4=Neither agree nor disagree
- ___5=Slightly agree
- ___6=Moderately agree
- ___7=Strongly agree

56. I intend to consume more than one energy drink a day.

- 1=Strongly disagree
- 2=Moderately disagree
- 3=Slightly disagree
- 4=Neither agree nor disagree
- 5=Slightly agree
- 6=Moderately agree
- 7=Strongly agree

57. I want to consume more than one energy drink a day.

- 1=Strongly disagree
- 2=Moderately disagree
- 3=Slightly disagree
- 4=Neither agree nor disagree
- 5=Slightly agree
- 6=Moderately agree
- 7=Strongly agree

58. I do not consume energy drinks because they are too expensive?

- 1=Strongly disagree
- 2=Moderately disagree
- 3=Slightly disagree
- 4=Neither agree nor disagree
- 5=Slightly agree
- 6=Moderately agree
- 7=Strongly agree

59. How often do you drink sports drinks, such as Gatorade, Propel, or PowerAde?

- Never
- 1 time or less in past month
- 2-3 times in past month
- 1-2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

60. Each time you drank a sports drinks, how much did you usually drink?

- Less than 12 ounces or less than 1 can or bottle
- 12 to 16 ounces or 1 can or bottle
- More than 16 ounces or more than 1 can or bottle
- I do not drink sports drinks

61. How often do you drink cola beverages (also called soda or pop)?

- Never
- 1 time or less in past month

- 2-3 times in past month
- 1-2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

62. Each time you drank soda or pop, how much did you usually drink?

- Less than 12 ounces or less than 1 can or bottle
- 12 to 16 ounces or 1 can or bottle
- More than 16 ounces or more than 1 can or bottle
- I do not drink soda or pop

63. How often were these sodas or pop diet or sugar-free?

- Almost never or never
- About $\frac{1}{4}$ of the time
- About $\frac{1}{2}$ of the time
- About $\frac{3}{4}$ of the time
- Almost always or always
- I do not drink soda or pop

64. How often were these sodas or pop caffeine-free?

- Almost never or never
- About $\frac{1}{4}$ of the time
- About $\frac{1}{2}$ of the time
- About $\frac{3}{4}$ of the time
- Almost always or always
- I do not drink soda or pop

65. How often did you drink water including tap, bottled, and carbonated water?

- Never
- 1 time or less in past month
- 2-3 times in past month
- 1-2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2-3 times per day
- 4-5 times per day
- 6 or more times per day

66. Each time you drank water, how much did you usually drink?

- Less than 12 ounces or less than 1 bottle
- 12 to 24 ounces or 1 to 2 bottles
- More than 24 ounces or more than 2 bottles

I do not drink water

67. How often was the water you drank tap water?

Almost never or never

About $\frac{1}{4}$ of the time

About $\frac{1}{2}$ of the time

About $\frac{3}{4}$ of the time

Almost always or always

I do not drink water

68. How often was the water you drank bottled unsweetened water, including carbonated water (examples are Dasani, Aquafina, and other filtered water brands)?

Almost never or never

About $\frac{1}{4}$ of the time

About $\frac{1}{2}$ of the time

About $\frac{3}{4}$ of the time

Almost always or always

I do not drink water

69. How often was the water you drank bottled flavored sweetened water (with low or no-calorie sweetener, including carbonated water)?

Almost never or never

About $\frac{1}{4}$ of the time

About $\frac{1}{2}$ of the time

About $\frac{3}{4}$ of the time

Almost always or always

I do not drink water

Thank you for completing this survey!