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Impact of Nutritional Knowledge on Student Purchase Intention of Sugar-Sweetened Beverages

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IMPACT OF NUTRITIONAL KNOWLEDGE ON STUDENT PURCHASE INTENTION OF SUGAR-SWEETENED BEVERAGES

By
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ABSTRACT

MARY CLAIRE FORD: Impact of Nutritional Knowledge on Student Purchase Intention of Sugar-Sweetened Beverages (Under the direction of Victoria Zigmont)

The college years are a critical time in an individual's life in which dietary habits are developed and will likely carry on for years to come. Mississippi has been ranked highly in health issues such as obesity for years; dietary decisions are one factor that can influence a person's obesity risk. Therefore, it is imperative that changes be made to dietary decisions at a young age. With the proper adjustments made, preventable issues such as obesity can be avoided. Thus, research investigating how nutritional information affects college students' purchase intention at the University of Mississippi is warranted. In this study, 489 students completed an online survey in which their nutritional knowledge and purchase intention were measured. Based on students' estimations of calories, sugar, and fat contents in their selected sugar-sweetened beverage, the majority underestimated calories, underestimated sugar content, and either overestimated or had accurate estimations of fat content. However, there was only a significant relationship between those who underestimated sugar content with a decrease in purchase intention. When asked about their reasoning behind their change in purchase intention, most students reported that being more aware of the nutritional content of their beverage led them to decrease their purchase intention. On the other hand, those who reported taste and/or convenience as the largest determinate in their beverage purchases had an increase

in purchase intention. These results indicate that nutritional knowledge alone is not enough to impact students' purchase intention.

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INTRODUCTION

College years are full of decisions that will shape an individual's lifestyle for years to come. One decision is what to eat and drink. Since this is likely the first time a person has lived on their own, it can be difficult to decide what is healthy and what is not. Up until that point, an individual's diet has likely been determined by their parents or guardian. Because of this, nutritional knowledge of college students can be a determining factor of whether or not they will experience weight gain. These dietary decisions will often carry on to their life after college, so it is important to develop healthy eating and drinking habits at an early age.

Substantial research has been conducted on the nutritional knowledge of adults, but there is a gap in literature regarding how and why college students change their purchase intentions based on their nutritional knowledge. Sugar-sweetened beverages (SSBs) make up a large portion of most college students' diet. However, the consumption of SSBs may cause numerous negative effects on one's health. Obesity and dental caries are two health issues that are caused by substantial intake of SSBs and can lead to other serious diseases such as diabetes and cancer. Obesity specifically is prevalent in the United States, especially in Mississippi. Therefore, studies focusing on college students in this state is warranted.

As students navigate their new environment, it is imperative that they understand nutritional information and how the beverages they are consuming can affect their health. The role of nutritional knowledge of students at the University of Mississippi and other universities is important to investigate so that improvements can be made to lower prevalence of preventable diseases.

LITERATURE REVIEW

SSB Consumption Rates

While there has been a decrease in the consumption of SSB in recent years, intake is still considered high (Kit et al., 2013). Current guidelines for sugar consumption are 10% of the total calorie intake while reducing this amount to 5% would have a positive impact on one's health ("Sugars and Dental Caries," 2017). Added sugars make up 16% of calories in the average American's diet. Even though beverages are not usually considered to be a main part of a person's diet, soda, energy drinks, and sports drinks make up 36% of the added sugar intake, and sugar-sweetened fruit drinks make up 10% of this value (Office of Disease Prevention and Health Promotion [ODPHP], 2015). College-aged people in particular consume more calories from sodas than any other age group (230 calories per day) (Block et al., 2013). In order to reduce the intake of SSBs, the *2015-2020 Dietary Guidelines for Americans* suggest starting by drinking smaller portions. These SSBs are responsible for an overabundance of calories and do not provide the nutrients a person needs in their diet. It is suggested that SSBs only be consumed after essential nutrient goals have been met and consuming them will not cause the daily calorie limit to be exceeded. According to a study done by Vilaro et al. (2018), the diets of college-aged Americans consist of a high amount of SSBs and low amounts of fruits and vegetables. Since the consumption rates of SSBs for college students is so high, it is clear there needs to be efforts made to decrease consumption in order to promote a healthier lifestyle. This is especially true in Mississippi as it is one of the most obese states in the country (Centers for Disease Control and Prevention [CDC], 2022).

Negative Effects of SSBs Intake

Consumption of SSBs have been linked to numerous health issues. Excessive consumption of SSBs puts individuals at higher risk for dental caries, one of the most common preventable chronic diseases in the world (Patenaude et al., 2020). Dental caries are caused by acid production from bacterial metabolism of sugars. This loss of tooth substance can lead to overall poor oral health and decrease quality of life. Ultimately these conditions can increase psychological stress and decrease productivity in school and work (Urwannachotima et al., 2020). Another concerning health issue is obesity which has become an epidemic in the United States, almost doubling in the past twenty years. In Mississippi, there is an increasing number of adults who fall into the two highest-risk BMI categories (Mendy et al., 2017). Interestingly, SSB consumption is related to weight gain and a genetic predisposition to an elevated BMI (Mayes,1993 & Qi et al., 2012). Epidemiological studies indicate that being overweight and obese are important risk factors for type 2 diabetes mellitus, cardiovascular disease, cancer, and premature death (Malik et al., 2010 & Vilaro et al., 2018). College students in particular are at a higher risk for these health issues than other age groups (Wengreen & Moncur, 2009). When looking at this population specifically, it has been reported that 74% of college students experienced weight gain in their first semester (Anderson, Shapiro, & Lundgren, 2003). These issues are important to consider when analyzing the intake of the beverages included in this study. One Monster energy drink, for example, includes 54g of added sugars which is over the recommended daily value of 50g per day (Food et al., n.d.).

Nutritional knowledge and purchase intention

There is substantial literature on the impact of SSBs on one's health status, but studies on how nutritional knowledge affects purchase intentions show varied results. One study concluded that participants who understood nutritional information had better eating habits and were within a normal weight range (Scalvedi et al., 2021). Another study concluded that individuals who underestimated caloric content were more likely to decrease their purchase intention of this food after being shown the nutritional label (Zigmont, 2012). In a qualitative, focus-group study done by Block et al. (2013), it was discovered that among all of the factors that contribute to college students' purchases of beverages, that nutritional value was of little concern (Block et al., 2013). These studies call for more research to be done to investigate how students perceive the information found on nutritional labels and their intent to change their consumption habits.

Role of demographic characteristics on beverage choices

There is a wide variety of demographic groups present at the University of Mississippi, so it is important to evaluate how one's background affects their dietary choices. However, there is limited research that investigates the multitude of demographic groups that are present on a college campus. One study concluded that females based dietary decisions more heavily on weight control compared to men. It was also shown that adults who lived in an apartment or house were more concerned about their dietary decisions than those who lived in campus housing (Vorage et al., 2020). Finally, it was observed that gender, age, and educational status affected positive nutritional behaviors. (Hakli et al., 2016). Zigmont (2012) also found that non-white, female, and those who are within normal weight or underweight were more likely to

decrease purchase intention of a specific food in the future. However, other groups included in the study did not show a significant relationship between initial underestimation of caloric content and a decrease in purchase intention. The author concluded that more research is warranted to explain why students did not change their purchase intentions even after being shown the nutrient content of the item. While the information found in other pieces of literature is important, it is necessary to go into more depth when identifying the variables that affect beverage choices and to explain students' reasoning behind their changes in purchase intention.

Nutrition label's role in dietary decisions

Nutritional labels are included on beverage packaging in attempt to inform the consumer on the nutritional value of that beverage. However, the effectiveness of these labels has been questioned in previous years. In a study done by Grunert et al. (2010), it was found that only a small portion of shoppers looked for the nutritional label and that there was a higher degree of understanding the nutritional label than the degree of using the label. Further investigation into this concept observed consumers wanted to consume products with low sugar content, the nutritional label did not change their purchase intention after they tasted to product. Therefore, regardless of the nutritional content, consumers are more focused on the way the item tastes (Lima et al., 2019). In a qualitative study done by Block et al. (2013), similar results were shown. Beverage preferences were found to be based highly on taste and price. The healthiness of the beverage was the third most considered aspect when deciding on whether to consume the beverage. Understanding the impact of nutritional labels could help reduce consumption of SSBs and improve health status.

METHODOLOGY

Study Design

The five beverages included in the questionnaire were selected based on frequently purchased SSBs from the Provisions on Demand (PODs) on the Oxford campus during the Spring semester of 2022. The PODs on campus provide easy and quick access for students to purchase snacks and beverages. This list was obtained from the University's Retail Food Service Director. Beverages selected include a 340 mL bottle of 26g protein Core Power Chocolate Shake, 16 oz Body Armor Strawberry Banana, 20 oz Coke, 16 oz Monster Energy Original, and 13.7 oz Dunkin Donuts Original Iced Coffee. Nutritional labels can be found in Appendix A. This is an experimental design because it is analyzing the change in purchase intention once the participant sees the label. Demographic variables include gender, year in college, race/ethnicity, residential status, campus affiliations, major, weight status, financial situation, perceived body weight, and frequency of exercise. These variables were included to examine how nutritional knowledge and purchase intention varies across different groups of people. The Qualtrics Survey (see Appendix B) asked participants to pick a beverage they would most likely consume and followed up with questions about how frequently they consume that beverage and about how healthy they perceived it. Once these questions were answered, participants were shown the nutrition label for that beverage and asked again how healthy they perceived the beverage and if they would consume it in the future. By asking these questions, the participants' understanding of the nutrition label can be measured along with their purchase intention.

Study Population

This study consisted of students enrolled in classes at the University of Mississippi during the Spring 2023 semester. Both undergraduate and graduate students were included. Students were excluded if they were not enrolled at the Oxford campus. Recruitment emails with a link to the questionnaire were sent to 500 students randomly selected by the University of Mississippi Office of Institutional Research, Effectiveness, and Planning. A second panel was used to send the questionnaire to 5,000 students. The questionnaire was sent three times to students to serve as a reminder.

Institutional Review Board

An application was submitted to the University of Mississippi's Institutional Review Board (IRB) and approved before publication of the survey and data collection. The IRB approval letter is included in Appendix C.

Data Collection and Analysis Procedures

In order to gauge whether or not participants underestimated, overestimated, or accurately estimated the caloric, sugar, and fat content of their selected beverage, values were assigned to each category. Accurate estimations for calories were values +/- 20 calories. Participants were also asked to estimate the sugar and fat content of the beverage. Accurate estimations for sugar were values +/- 5, and accurate estimations for fat were values +/- 1.5 grams. BMI was calculated by using participants' self-reported height and weight. Height and weight of each participant was imported into a Microsoft Excel document in which the BMI equation ($kg/(m^2)$) was used. Participants were then classified as underweight (BMI < 18.5), normal weight (BMI 18.5-24.9), and overweight (BMI 25-29.9). Due to the small sample size, those who were categorized as class one

(BMI 30-24.9), class two (BMI 35-39.9), or class three (BMI>40) were combined to form one category of obesity (BMI > 29.9) (Centers for Disease Control and Prevention [CDC], 2022). Because only one student reported being affiliated with ROTC, they were included into the athletics category. Because of the small sample sizes, race was categorized into white/non-white in later analyses. Statistical Package for Social Sciences (SPSS) was used to calculate frequencies and to conduct Chi Square tests which analyze the relationship between variables.

RESULTS

Description of the Sample

A total of 804 responses were recorded. 315 were excluded due to incomplete responses thus leaving 489. Table 1 provides the descriptive characteristics of the sample of students who completed the survey (n = 489). Most of participants were female (68.1%) and white (81%). Undergraduate students made up the majority of the population consisting of freshmen (23.3%), sophomores (12.7%), juniors (17.8%), and seniors (25.8%). Graduate students made up less than a fourth of the sample population (20.4%). Over half of the participants lived on campus (56.6%). The majority of participants fall within the BMI category of normal weight (49.3%), but a significant number fall into either the overweight category or one of three classes of obesity (40.5%). Participants were also asked about their involvement on campus. Perceived body weight was measured by asking participants their intentions to lost, maintain, or gain weight. Only 38 participants stated that they are trying to gain weight (7.8%). However, 14 students did not answer this question (2.9%). Most participants (56.4%) were not involved in a fraternity/sorority, or athletics. When asked to report their financial situation, over half of the responses were that their finances were tight, but they are doing fine (52.8%). Frequency of exercise was measured by asking participants how many hours per week they spent doing moderate to vigorous exercise in the past 30 days. The majority of students reported exercising five or more hours (31.5%), and 13 (2.7%) left this answer blank. Only 13.3% reported less than one hour of exercise.

TABLE 1
Characteristics of the Sample (N=489)

Characteristics	f	%
Gender		
Male	156	31.9
Female	333	68.1
Race/Ethnicity		
White	404	82.6
African American	29	5.9
Hispanic	24	4.9
American Indian/Alaskan Native	1	0.2
Middle Eastern/Arab American	2	0.4
Asian/Asian American	23	4.7
Other	6	1.2
Residence		
Non-Resident	212	43.4
Resident	277	56.6
Classification		
Freshman	114	23.3
Sophomore	62	12.7
Junior	87	17.8
Senior	126	25.8
Graduate	100	20.4
School		
College of Liberal Arts	153	31.3
General Studies	21	4.3
Graduate School	69	14.1
Patterson School of Accountancy	23	4.7
School of Applied Sciences	50	10.2
School of Business Administration	47	9.6
School of Education	17	3.5
School of Engineering	31	6.3
School of Journalism and News Media	31	6.3
School of Law	24	4.9
School of Pharmacy	23	4.7
Weight Status (BMI)		
Underweight	20	4.1
Normal weight	241	49.3
Overweight	121	24.7
Obese	77	15.7
Perceived Body weight		
Lose weight	227	46.4
Maintain weight	210	42.9
Gain weight	38	7.8

Involvement		
Fraternity/sorority	189	38.7
Athletics	24	4.9
None	276	56.4
Financial Situation		
Financial struggle	37	7.6
Financial situation is tight, but manageable	258	52.8
Finances are not a problem	194	39.7
Frequency of Exercise in the Past 30 Days		
Less than 1 hour per week	65	13.3
1-2 hours per week	123	25.2
3-4 hours per week	134	27.4
5 or more hours per week	154	31.5

*BMI represents body mass index. Some questions were left blank by some students.

Nutritional Knowledge

Before seeing the nutritional label, participants were asked how many calories they estimate to be in the beverage they selected. The majority of students who completed the survey underestimated caloric content (52.6%). When asked about the sugar content, most students underestimated (73.2%). On the other hand, a large portion of students overestimated the fat contents of the chosen beverage (62.8%). Coke had the highest percentage of underestimations for calories (73%), and Body Armor had the lowest (17.8%). Core Power Shake had the highest percentage of sugar underestimations (80%) while the Dunkin' Donuts beverage had the lowest percentage (65%). Accurate estimations make up the smallest portion of the responses with 22.3% for calories, 14.1% for sugar, and 32.7% of fat estimates. Table 2 illustrates students' estimations for calories, sugar, and fat content of each beverage.

TABLE 2.1
Caloric Knowledge of Each Beverage

		Underestimate		Accurate		Overestimate	
Beverage	n	f	%	f	%	f	%
Body Armor	107	19	17.8	37	34.6	51	47.7
Coke	135	99	73.3	16	11.9	20	14.8

Core Body Shake	110	65	59.1	21	19.1	24	21.8
Dunkin Donuts	78	39	50	21	26.9	18	23.1
Monster Energy	59	35	59.3	14	23.7	10	16.9
Total	489	257	52.6	109	22.3	123	25.2

TABLE 2.2
Sugar Knowledge of Each Beverage

		Underestimate		Accurate		Overestimate	
Beverage	n	f	%	f	%	f	%
Body Armor	107	71	66.4	18	16.8	18	16.8
Coke	135	107	79.3	17	12.6	11	8.1
Core Body Shake	110	88	80	15	13.6	7	6.4
Dunkin Donuts	78	51	65.4	12	15.4	15	19.2
Monster Energy	59	41	69.5	7	11.9	11	18.6
Total	489	258	73.2	69	14.1	62	12.7

TABLE 2.3
Fat Knowledge of Each Beverage

		Underestimate		Accurate		Overestimate	
Beverage	n	f	%	f	%	f	%
Body Armor	107	0	0	45	42.1	62	57.9
Coke	135	1	0.7	43	31.9	91	67.4
Core Body Shake	110	3	2.7	40	36.4	67	60.9
Dunkin Donuts	78	18	23.1	11	14.1	49	62.8
Monster Energy	59	0	0	21	35.6	38	64.4
Total	489	22	4.5	160	32.7	307	62.8

Tables 3.1-3.3 display nutritional knowledge for calories, sugar, and fat by participant characteristics. No significance was found between characteristics and nutritional knowledge of sugar or caloric content, but there was significance between involvement and knowledge of fat content (p=0.04).

TABLE 3.1
Caloric Knowledge across Participant Characteristics

	Underestimate		Accurate/Overestimate				
Characteristics	f	%	f	%	x^2	*Df*	P value
Gender							
Male	76	48.7	80	51.3	1.35	1	0.25
Female	181	54.4	152	45.6			

Race/Ethnicity							
White	209	52.8	187	47.2	0.04	1	0.84
Non-White	48	51.6	45	48.4			
Residence							
Non-Resident	104	49.1	108	50.9	1.84	1	0.18
Resident	153	55.2	124	44.8			
Classification							
Freshman	59	51.8	55	48.2	4.05	4	0.40
Sophomore	32	51.6	30	48.4			
Junior	54	62.1	33	37.9			
Senior	63	50.0	63	50.0			
Graduate	49	49.0	51	51.0			
Weight Status (BMI)							
Underweight	11	55.0	9	45.0	0.37	3	0.95
Normal weight	131	54.4	110	45.6			
Overweight	62	51.2	59	48.8			
Obese	42	54.5	35	45.5			
Perceived Body weight							
Lose weight	113	49.8	114	50.2	1.54	2	0.46
Maintain weight	117	55.7	93	44.3			
Gain weight	20	52.6	18	47.4			
Involvement							
Fraternity/sorority	97	51.3	92	48.7	0.78	2	0.68
Athletics	11	45.8	13	54.1			
None	149	54.0	127	46.0			
Financial Situation							
Financial struggle	23	62.2	14	37.8	1.72	2	0.42
Financial situation is tight, but manageable	131	50.8	127	49.2			
Finances are not a problem	103	53.1	91	46.9			
Frequency of Exercise in the past 30 Days							
Less than 1 hour per week	32	49.2	33	50.8	5.60	3	0.13
1-2 hours per week	65	52.8	58	47.2			
3-4 hours per week	62	46.3	72	53.7			
5 or more hours per week	92	59.7	62	40.3			

*$p<0.05$

TABLE 3.2
Sugar Knowledge across Participant Characteristics

	Underestimate		Accurate/Overestimate				
Characteristics	f	%	f	%	x^2	*Df*	P value
Gender							
Male	113	72.4	43	27.6	0.07	1	0.79
Female	245	73.6	88	26.4			
Race/Ethnicity							
White	290	73.2	106	26.8	0.00	1	0.98
Non-White	68	73.1	25	26.9			
Residence							
Non-Resident	165	86.4	26	13.6	4.27	2	0.12
Resident	193	81.8	43	18.2			
Classification							
Freshman	86	75.4	28	24.6	6.46	4	0.17
Sophomore	52	83.9	10	16.1			
Junior	65	74.7	22	25.3			
Senior	86	68.3	40	31.7			
Graduate	69	69.0	31	31.0			
Weight Status (BMI)							
Underweight	14	70.0	6	30.0	0.51	3	0.92
Normal weight	180	74.7	61	25.3			
Overweight	88	72.7	33	27.3			
Obese	55	71.4	22	28.6			
Perceived Body weight							
Lose weight	168	74.0	59	26.0	3.64	2	0.16
Maintain weight	158	75.2	52	24.8			
Gain weight	23	60.5	15	39.5			
Involvement							
Fraternity/sorority	147	77.8	42	22.2	3.28	2	0.19
Athletics	17	70.8	7	29.2			
None	194	70.3	82	29.7			
Financial Situation							
Financial struggle	25	67.6	12	32.4	1.42	2	0.49
Financial situation is tight, but manageable	186	72.1	72	27.9			
Finances are not a problem	147	75.8	47	24.2			
Frequency of Exercise in the Past 30 Days							
Less than 1 hour per week	42	64.6	23	35.4	5.49	3	0.14

1-2 hours per week	88	71.5	35	28.5			
3-4 hours per week	99	73.9	35	26.1			
5 or more hours per week	122	79.2	32	20.8			

*p<0.05

TABLE 3.3
Fat Knowledge across Participant Characteristics

	Underestimate		Accurate/Overestimate				
Characteristics	f	%	f	%	x^2	*Df*	P value
Gender							
Male	7	4.5	149	95.5	0.00	1	0.99
Female	15	4.5	318	95.5			
Race/Ethnicity							
White	18	4.5	378	95.5	0.10	1	0.92
Non-White	4	4.3	89	95.7			
Residence							
Non-Resident	11	5.2	201	94.8	0.41	1	0.52
Resident	11	4.0	266	96.0			
Classification							
Freshman	3	2.6	111	97.4	3.65	4	0.46
Sophomore	5	8.1	57	91.9			
Junior	5	5.7	82	94.3			
Senior	4	3.2	122	96.8			
Graduate	5	5.0	95	95.0			
Weight Status (BMI)							
Underweight	1	5.0	19	95.0	0.81	3	0.85
Normal weight	10	4.1	231	95.9			
Overweight	5	4.1	116	95.9			
Obese	5	6.5	72	93.5			
Perceived Body weight							
Lose weight	7	3.1	220	96.9	2.13	2	0.35
Maintain weight	12	5.7	198	94.3			
Gain weight	1	2.6	37	97.4			
Involvement							
Fraternity/sorority	3	1.6	186	98.4	6.32	2	0.04*
Athletics	2	8.3	22	91.7			
None	17	6.2	259	93.8			
Financial Situation							
Financial struggle	1	2.7	36	97.3	0.30	2	0.86

Financial situation is tight, but manageable	12	4.7	246	95.3			
Finances are not a problem	9	4.6	185	95.4			
Frequency of Exercise in the Past 30 Days							
Less than 1 hour per week	5	7.7	60	92.3	4.06	3	0.26
1-2 hours per week	3	2.4	120	97.6			
3-4 hours per week	8	6.0	126	94.0			
5 or more hours per week	5	3.2	149	96.8			

*$p<0.05$

Change in Purchase Intention After Seeing Nutrition Label

Students were asked how likely they would be to consume the beverage before and after seeing the accurate nutritional information of their selected beverage. Tables 4.1-4.3 illustrate the relationship between demographics, change in purchase intention, and nutritional knowledge. According to the Chi Square Test, there was no significance found for calories and change in intention. There was also no significance found for fat and change in intention. However, there were multiple significant relationships found regarding sugar knowledge and change in purchase intention. Being a female was significantly related to not changing or increasing purchase intention after underestimating the sugar content of a beverage item ($p<0.01$). Being white ($p=0.02$) or non-white ($p<0.01$) and underestimating sugar content was also significantly related to no change in purchase intention. In addition, there was a significant relationship for both residents ($p=0.03$) and non-residents ($p<0.01$) with purchase intention and sugar knowledge. Seniors who underestimated sugar content were more likely to not change or to increase their purchase intention of SSBs ($p=0.01$). Those who were categorized as

obese and underestimated sugar content were also more likely to not change or to increase their purchase intention (p=0.03). Surprisingly, those who underestimated sugar content and reported trying to lose weight (p<0.01) or those who exercise five or more days per week (p=0.03) were more likely not to change or to increase their purchase intention.

TABLE 4.1
Change in Purchase intention with Caloric Knowledge

	Decrease				No Change/Increase					
	Underestimate		Accurate or Overestimate		Underestimate		Accurate or Overestimate			
Characteristics	f	%	f	%	f	%	f	%	X^2	P
Gender										
Male	16	10.3	15	9.6	60	38.5	65	41.7	0.13	0.72
Female	31	9.3	27	8.1	150	45.0	125	37.5	0.03	0.88
Race/Ethnicity										
White	33	37.1	33	37.1	14	15.7	9	10.1	0.25	0.62
Non-White	14	15.1	9	9.7	34	36.6	36	38.7	1.05	0.31
Residence										
Non-Resident	21	9.9	27	12.7	83	39.2	81	38.2	0.70	0.40
Resident	26	9.4	15	5.4	127	45.8	109	39.4	1.30	0.25
Classification										
Freshman	11	9.6	16	14.0	48	42.1	39	34.2	1.72	0.19
Sophomore	5	8.1	6	9.7	27	43.5	24	38.7	0.20	0.65
Junior	11	12.6	3	3.4	43	49.4	30	34.5	1.93	0.17
Senior	12	9.5	10	7.9	51	40.5	53	42.1	0.22	0.64
Graduate	8	8.0	7	7.0	41	41.0	44	44.0	0.13	0.72
Weight Status (BMI)										
Underweight	1	5.0	1	5.0	10	50.0	8	40.0	0.22	0.88
Normal weight	26	10.8	20	8.3	105	43.6	90	37.3	0.11	0.74
Overweight	10	8.3	12	9.9	52	43.0	47	38.8	0.36	0.55
Obese	8	10.4	8	10.4	34	44.2	27	35.1	0.17	0.68
Perceived Body weight										
Lose weight	23	10.1	28	12.3	90	39.6	86	37.9	0.58	0.45
Maintain weight	18	8.6	12	5.7	99	47.1	81	38.6	0.26	0.61
Gain weight	4	10.5	2	5.3	16	42.1	16	42.1	0.56	0.45
Involvement										
Fraternity/sorority	18	9.5	27	14.3	79	41.8	65	34.4	3.03	0.08
Athletics	3	12.5	1	4.2	8	33.3	12	50.0	1.65	0.20
None	9.4	17.4	5.1	11.0	44.6	82.6	113	40.9	3.39	0.13
Financial Situation										

Financial struggle	6	16.2	2	5.4	17	45.9	12	32.4	0.72	0.40
Financial situation is tight, but manageable	22	8.5	17	6.6	109	42.2	110	42.6	0.58	0.45
Finances are not a problem	19	9.8	23	11.9	84	43.3	68	35.1	1.33	0.25
Frequency of Exercise in the Past 30 Days										
Less than 1 hour per week	4	6.2	7	10.8	28	43.1	26	40.0	0.88	0.35
1-2 hours per week	7	5.7	7	5.7	58	47.2	51	41.5	0.05	0.82
3-4 hours per week	13	9.7	14	10.4	49	36.6	58	43.3	0.05	0.83
5 or more hours per week	22	14.3	14	9.1	70	45.5	48	31.2	0.04	0.85

*p<0.05

TABLE 4.2
Change in Purchase intention with Sugar Knowledge

	Decrease				No Change/Increase					
	Underestimate		Accurate or Overestimate		Underestimate		Accurate or Overestimate			
Characteristics	f	%	f	%	f	%	f	%	X^2	P
Gender										
Male	25	16.0	6	3.8	88	56.4	37	23.7	1.31	0.25
Female	51	15.3	7	2.1	194	58.3	81	24.3	7.45	0.01*
Race/Ethnicity										
White	56	14.1	10	2.5	234	59.1	96	24.2	5.45	0.02*
Non-White	20	21.5	3	3.2	48	51.6	22	23.7	8.23	0.00*
Residence										
Non-Resident	43	20.3	5	2.4	122	57.5	42	19.8	4.97	0.03*
Resident	33	11.9	8	2.9	160	57.8	76	27.4	8.23	0.00*
Classification										
Freshman	21	18.4	6	5.3	65	57.0	22	19.3	0.10	0.75
Sophomore	9	14.5	2	3.2	43	69.4	8	12.9	0.04	0.84
Junior	13	14.9	1	1.1	52	59.8	21	24.1	2.91	0.08
Senior	20	15.9	2	1.6	66	52.4	38	30.2	6.31	0.01*
Graduate	13	13.0	2	2.0	56	56.0	29	29.0	2.58	0.11
Weight Status (BMI)										
Underweight	1	5.0	1	5.0	13	65.0	5	25.0	0.42	0.52
Normal weight	39	16.2	7	2.9	141	58.5	54	22.4	3.06	0.08
Overweight	18	14.9	4	3.3	70	57.9	29	24.0	1.12	0.29
Obese	15	19.5	1	1.3	40	51.9	21	27.3	4.93	0.03*
Perceived Body weight										
Lose weight	46	20.3	5	2.2	122	53.7	54	23.8	8.96	0.00*
Maintain weight	24	11.4	6	2.9	134	63.8	46	21.9	0.43	0.51
Gain weight	4	10.5	2	5.3	19	50.0	13	34.2	0.11	0.74
Involvement										

Fraternity/sorority	39	20.6	6	3.2	108	57.1	36	19.0	2.70	0.10
Athletics	4	16.7	0	0	13	54.2	7	29.2	1.98	0.16
None	33	12.0	7	2.5	161	58.3	75	27.2	3.34	0.07
Financial Situation										
Financial struggle	7	18.9	1	2.7	18	48.6	11	29.7	1.85	0.17
Financial situation is tight, but manageable	33	12.8	6	2.3	153	59.3	66	25.6	3.38	0.06
Finances are not a problem	36	18.6	6	3.1	111	57.2	41	21.1	2.89	0.09
Frequency of Exercise in the Past 30 Days										
Less than 1 hour per week	8	12.3	3	4.6	34	52.3	20	30.8	0.38	0.54
1-2 hours per week	12	9.8	2	1.6	76	61.8	33	26.8	1.56	0.21
3-4 hours per week	22	16.4	5	3.7	77	57.5	30	22.4	1.01	0.31
5 or more hours per week	33	21.4	3	1.9	89	57.8	29	18.8	4.42	0.03*

*p<0.05

TABLE 4.3
Change in Purchase intention with Fat Knowledge

	Decrease				No Change/Increase					
	Underestimate		Accurate or Overestimate		Underestimate		Accurate or Overestimate			
Characteristics	f	%	f	%	f	%	f	%	X^2	p
Gender										
Male	0	0	31	19.9	7	4.5	118	75.6	1.82	0.18
Female	2	0.6	56	16.8	13	3.9	262	78.7	0.18	0.67
Race/Ethnicity										
White	2	0.5	64	16.2	16	4.0	314	79.3	0.42	0.52
Non-White	0	0	23	24.7	4	4.3	66	71.0	1.28	0.24
Residence										
Non-Resident	1	0.5	47	22.2	10	4.7	154	72.6	1.22	0.27
Resident	1	0.04	40	14.4	10	3.6	226	81.6	0.30	0.59
Classification										
Freshman	1	0.9	26	22.8	2	1.8	85	74.6	0.16	0.69
Sophomore	0	0	11	17.7	5	8.1	46	74.2	1.17	0.28
Junior	1	1.1	13	14.9	4	4.6	69	79.3	0.06	0.81
Senior	0	0	22	17.5	4	3.2	100	79.4	0.87	0.35
Graduate	0	0	15	15.0	5	5.0	80	80.0	0.93	0.34
Weight Status (BMI)										
Underweight	0	0	2	10.0	1	5.0	17	85.0	0.12	0.73
Normal weight	1	0.4	45	18.7	9	3.7	186	77.2	0.56	0.46
Overweight	1	0.8	21	17.4	4	3.3	95	78.5	0.01	0.91
Obese	0	0	16	20.8	5	6.5	56	72.7	1.40	0.24
Perceived Body weight										

Lose weight	0	0	51	22.5	7	3.1	169	74.4	2.09	0.15
Maintain weight	2	1.0	28	13.3	10	4.8	170	81.0	0.06	0.81
Gain weight	0	0	6	15.8	1	2.6	31	81.6	0.19	0.66
Involvement										
Fraternity/sorority	0	0	45	23.8	3	1.6	141	74.6	0.95	0.33
Athletics	0	0	4	16.7	2	8.3	18	75.0	0.44	0.51
None	2	9.7	38	13.8	15	5.4	221	80.1	0.11	0.74
Financial Situation										
Financial struggle	0	0	8	21.6	1	2.7	28	75.7	0.28	0.59
Financial situation is tight, but manageable	1	0.4	38	14.7	11	4.3	208	80.6	0.45	0.50
Finances are not a problem	1	0.5	41	21.1	8	4.1	144	74.2	0.62	0.43
Frequency of Exercise in the Past 30 Days										
Less than 1 hour per week	1	1.5	10	15.4	4	6.2	50	76.9	0.04	0.85
1-2 hours per week	0	0	14	11.4	3	2.4	106	86.2	0.49	0.53
3-4 hours per week	1	0.7	26	19.4	7	5.2	100	74.6	0.31	0.58
5 or more hours per week	0	0	36	23.4	5	3.2	113	73.4	1.58	0.21

*$p<0.05$

Reason for Change in Intention

At the end of the survey, participants were asked about their likelihood to consume their chosen beverage in the future. Written responses were grouped into four categories including the following: purchase of the beverage is based on protein, vitamin, or caffeine content instead of nutritional content included in the study, the provided nutritional information has increased awareness, purchase of the beverage is based solely on taste or convenience, any beverage can be consumed in moderation. The majority of participants that reported a decrease change in purchase intention reasoned that the provided information had increased their awareness of what they are consuming (52.9%). A substantial number of participants that did not change their intentions indicated that taste or convenience was the most important factor in purchasing a beverage (90.8%).

Students' reason was significantly associated with their change in intention ($p<0.01$). These results are shown in Table 5.

TABLE 5
Reason for Change in Intention

	Decrease change		No change/Increase				
Reason	n	%	n	%	x^2	df	p
Other macronutrients/caffeine	13	12.0	95	88.0	63.8	3	0.00*
Increased awareness	36	52.9	32	47.1			
Moderation	12	13.8	75	86.2			
Taste/convenience	11	9.2	109	90.8			

*$p<0.05$

DISCUSSION

The current study's purpose was the identify the role of students' nutritional knowledge on impacting their purchase intentions of sugar-sweetened beverages. Through self-reported answers on an online survey, data was collected on participant characteristics, nutritional knowledge (sugar, fat, and calorie content), purchase intention, and reason for purchasing the beverage.

Nutritional Knowledge

Students' nutritional knowledge was collected by asking them to estimate the number of calories, sugar, and fat of their selected beverage. The estimations were then compared to the accurate values found on the corresponding nutritional label. Overall, the majority of students underestimated the calorie and sugar content and overestimated the fat content (Table 2.1-2.3).

While there was no significant relationship found between participant characteristic and caloric knowledge, it is important to note that over half of the estimations for caloric knowledge were underestimations (52.6%). This indicates that the majority of students were not aware of how many calories are in the beverages they are purchasing. This finding is consistent with multiple other research studies which have found that consumers tend to underestimate the caloric content (Zigmont, 2012; Elbel, 2011; Franckle et al., 2016).

From the data, it can be concluded that students were more likely to underestimate sugar content than calories or fat (73.2%). This category also had the lowest percentage of participants who had accurate estimations (14.1%). There was no significant

relationship between characteristics and estimations, however, it is clear that students have the least amount of knowledge on the sugar content of the beverages they are choosing to consume. In a study done by Miller et al. (2019) similar results were found in which SSB consumers were more likely to underestimate sugar content. Futher, Putzer (2018) noted that students are more likely to underestimate sugar content than calories or fat.

Students were the most accurate when estimating the fat content of their selected beverage (32.7%). Only 4.5% of students underestimated the fat content of the beverage, but 62.8% overestimated. This overestimation indicates a lack of knowledge of the fat content of that drink. According the Chi Square test, there was a significant relationship between involvement and estimations of fat content ($p<0.05$). Putzer (2018) also found that students were less likely to underestimate fat content.

Change in Purchase Intention

Students were asked how likely they were to purchase the beverage in the future after seeing the calorie, sugar, and fat information of that beverage. With this information conclusions can be made on how important the nutritional information is to students. The majority of students (81.8%) reported not changing or increasing their future purchase intention of their chosen beverage. This is alarming because it reveals that regardless of the high amounts of calories, sugar, and fat in a beverage, students still plan to consume it. Participants who underestimated the nutritional content of their SSB were less likely to purchase that beverage in the future. On the other hand, participants who overestimated nutritional content were more likely to have no change or an increase in their future purchase intentions of that beverage. Similar intention changes were discovered by Putzer

(2018) who concluded that students who underestimated nutritional content on sweetened coffee were more likely to decrease their purchase intention than students who had accurate estimations or overestimations.

Reason for Change in Intention

This study is one of the first to examine the reasoning behind students change in purchase intention. Participants' reason was significantly related to their change in purchase intention ($p<0.01$). Students who reported having an increased awareness after seeing the nutritional label were more likely to decrease their purchase intention (52.9%). This statistic is encouraging because it reveals that if a student reads the nutritional label before purchasing a SSB, they are more likely to not purchase that beverage. Those who indicated taste and convenience being the motivating factor in their purchase intention were more likely to not change or increase their purchase of SSBs in the future (90.8%). This is not surprising because they are likely not concerned with the nutritional content of the beverage and will consume it if it tastes good and is easily accessible. Similar results are found in studies done by Block et al. (2013) and Lima et al. (2019) who both found that taste is the most important factor when it comes to purchasing a beverage. They also found that participants valued caffeine over the nutritional content, and that some participants viewed SSBs as a treat to have in moderation. These results are also consistent with the results found by Zigmont and Bulmer (2015). They found that one of the main reasons why students were less likely to consume a beverage in the future was because they were surprised by the nutritional content and decided the beverage was two high in those categories.

Limitations

A limitation of this study includes using self-reported height and weight to calculate BMI. Because of the nature of an online questionnaire, there is no way to be certain that students are accurate with their height and weight. Therefore, BMI may not be accurate. Another limitation is that the questionnaire was sent to a representative sample of college students, however, those who chose to complete the survey may differ from the full group that received the survey. Additionally, the measures of purchase intention may not accurately predict participants' actual behavior. Also, this study was conducted at a southern school, so results may not be comparable to campuses across the country.

Conclusion

This study reveals how nutritional knowledge and change in purchase intention can vary across different participant backgrounds. Examining the reasons students decrease, increase, or do not change their purchase intentions is important as advancements are being made to increase awareness of nutritional information. These results support the idea that if a student is already aware of the nutritional content, they are more likely to continue to consume the beverage. However, if they underestimate the nutritional content, they are less likely to consume it in the future. Because of this, campus administration should focus on providing nutritional information for students on vending machines, or soda machines in the Student Union. Campus administration should also focus on educating students on the negative health effects that are associated with excessive consumption of SSBs.

Additional research that includes nutrition labels containing protein content in addition to calories, sugar, and fat is needed. Almost a third of students (30.5%) did not

change or increased their purchase intention because of macronutrients like protein that are in the beverage. This study did not investigate students' knowledge on the amount of protein they need in a balanced diet, so further research around this is needed. It would also be beneficial to conduct more research examining why students who underestimated sugar content were more likely to decrease purchase intention compared to those who underestimated calories or fat content.

It is clear that student's do not have an accurate understanding of the calorie, sugar, and fat content of the beverages they are consuming. With the provision of nutritional information, only those who underestimated sugar content were likely to decrease purchase intention. Despite being given nutritional information, students are still choosing to continue to purchase beverages high in calories, sugar, and fat. In order to combat preventable diseases like obesity, more research needs to be conducted to establish interventions that would educate students on the effects of consuming SSBs.

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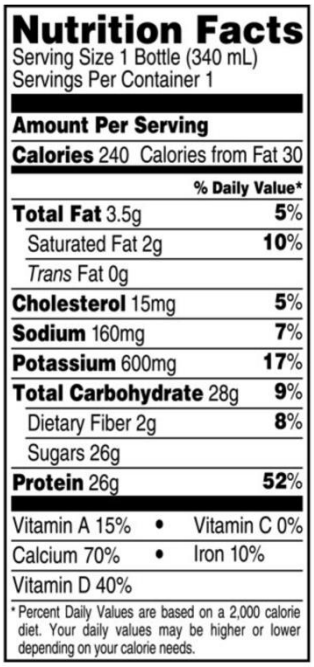
APPENDICES

Appendix A



Nutrition Facts
Serving Size 1 Bottle (340 mL)
Servings Per Container 1

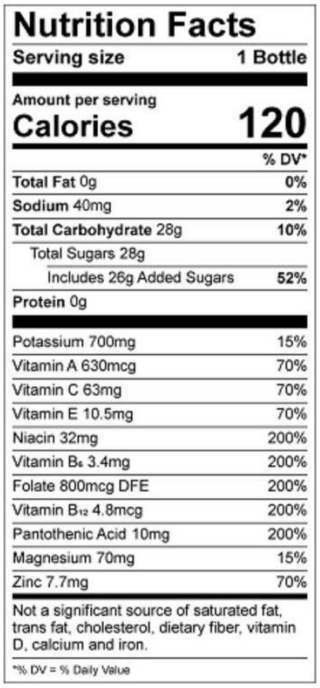
Amount Per Serving
Calories 240 Calories from Fat 30

	% Daily Value*
Total Fat 3.5g	**5**%
Saturated Fat 2g	**10**%
Trans Fat 0g	
Cholesterol 15mg	**5**%
Sodium 160mg	**7**%
Potassium 600mg	**17**%
Total Carbohydrate 28g	**9**%
Dietary Fiber 2g	**8**%
Sugars 26g	
Protein 26g	**52**%

Vitamin A 15% • Vitamin C 0%
Calcium 70% • Iron 10%
Vitamin D 40%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Core power chocolate shake (340mL)



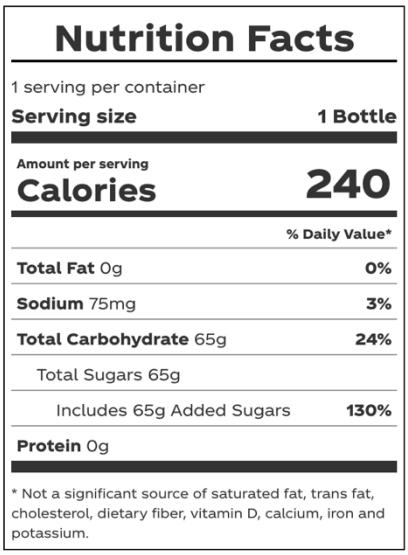
Nutrition Facts

Serving size	**1 Bottle**
Amount per serving	
Calories	**120**
	% DV*
Total Fat 0g	**0%**
Sodium 40mg	**2%**
Total Carbohydrate 28g	**10%**
Total Sugars 28g	
Includes 26g Added Sugars	**52%**
Protein 0g	
Potassium 700mg	15%
Vitamin A 630mcg	70%
Vitamin C 63mg	70%
Vitamin E 10.5mg	70%
Niacin 32mg	200%
Vitamin B_6 3.4mg	200%
Folate 800mcg DFE	200%
Vitamin B_{12} 4.8mcg	200%
Pantothenic Acid 10mg	200%
Magnesium 70mg	15%
Zinc 7.7mg	70%

Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium and iron.

*% DV = % Daily Value

Body armor strawberry banana (16oz)



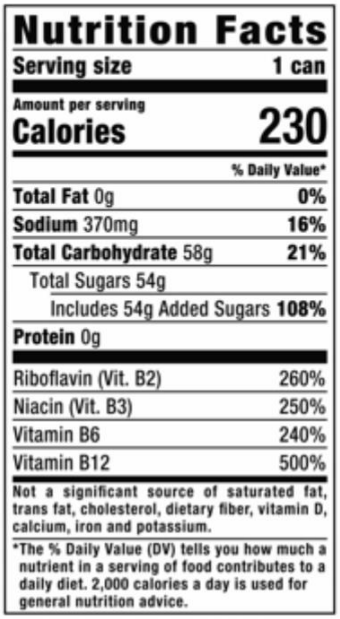
Nutrition Facts

1 serving per container

Serving size	**1 Bottle**
Amount per serving Calories	**240**
	% Daily Value*
Total Fat 0g	**0%**
Sodium 75mg	**3%**
Total Carbohydrate 65g	**24%**
Total Sugars 65g	
Includes 65g Added Sugars	**130%**
Protein 0g	

* Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, iron and potassium.

Coke (20 oz**)**



Nutrition Facts

Serving size	**1 can**
Amount per serving Calories	**230**
	% Daily Value*
Total Fat 0g	**0%**
Sodium 370mg	**16%**
Total Carbohydrate 58g	**21%**
Total Sugars 54g	
Includes 54g Added Sugars	**108%**
Protein 0g	
Riboflavin (Vit. B2)	260%
Niacin (Vit. B3)	250%
Vitamin B6	240%
Vitamin B12	500%

Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, iron and potassium.

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Monster Energy Original (16 oz)

Nutrition Facts

Serving Size	**1 Bottle**
Amount Per Serving Calories	**260**
	% Daily Value*
Total Fat 7g	**9%**
Saturated Fat 4.5g	**23%**
Trans Fat 0g	
Cholesterol 30mg	**10%**
Sodium 100mg	**4%**
Total Carbohydrate 41g	**15%**
Dietary Fiber 0g	**0%**
Total Sugars 39g	
Includes 29g Added Sugars	**58%**
Protein 7g	**14%**
Vitamin D 0mcg 0% • Calcium 240mg 20%	
Iron 0mg 0% • Potassium 0mg 0%	

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Dunkin Donuts original iced coffee (13.7 oz)

Appendix B

Start of Block: Default Question Block

Q1 Do you consent to participate in this research study?

- ○ Yes, I have read the information given above, I am at least 18 years old, and I CONSENT to participate in this study. (1)
- ○ No, I do not wish to participate in this study and understand that there is no penalty for not participating. (2)

Page Break

Q2 Please indicate your gender.

- ○ Male (9)
- ○ Female (10)
- ○ Non-binary / third gender (11)
- ○ Prefer not to say (12)

Q3 Please indicate which of the following best describes your status.

- ○ Non-Matriculated Undergraduate (1)
- ○ Freshman (2)
- ○ Sophomore (3)
- ○ Junior (4)
- ○ Senior (5)
- ○ Graduate Student (6)
- ○ Non-Matriculated Graduate Student (7)

Q4 How do you usually describe your race and/or ethnicity?

- White or Caucasian (1)
- African American/Black (2)
- Hispanic/Latino (3)
- American Indian/Alaskan Native (4)
- Arab/Middle Eastern or Arab American (5)
- Asian/Asian-American (6)
- Pacific Islander (7)
- Other (please specify) (8)

_____

Q5 Where do you live?

- Campus residential hall (1)
- Off-campus, without a parent or guardian (2)
- Parent or guardian's home (3)
- Other (please specify) (4)

_____

Q6 Are you affiliated with any of the following?

- Fraternity/sorority (1)
- Athletics (2)
- ROTC (3)
- None (4)

Q30 What is your major?

_____

Q7 How would you describe your current financial situation?

- It's a financial struggle (1)
- It's tight, but I'm doing fine (2)
- Finances really are not a problem (3)

Page Break

Q8 Please select one beverage item that you would be willing to consume.

- Core power chocolate shake (26g) (1)
- Body armour strawberry banana (16oz) (2)
- Coke (20 oz) (3)
- Monster Energy Original (16 oz) (4)
- Dunkin Donuts original iced coffee (13.7 oz) (5)
- I would not consume any of the choices above (6)

End of Block: Default Question Block

Start of Block: Block 2

Q9 How frequently do you consume this beverage?

- ○ Never (1)
- ○ Less than once a month (2)
- ○ Once a month (3)
- ○ 2-3 times a month (4)
- ○ Once a week (5)
- ○ 2-3 times a week (6)
- ○ 4-6 times a week (7)
- ○ Once a day (8)

Q11 If you were to rate this beverage with 1 being the least healthy and 10 being the healthiest, which health score would you assign

- ○ 1 (not healthy) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (neither healthy or unhealthy) (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (healthy) (10)

Q10 Do you intend to consume the beverage in the future?

- ○ Not very likely (1)
- ○ Probably not (2)
- ○ Might or might not (3)
- ○ Probably yes (4)
- ○ Definitely yes (5)

Q13 Describe this beverage item as low, moderate or high in the following categories.

- ○ Fat (1) _____
- ○ Sugar (2) _____

Q12 Make your best guess about the total number of...

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

End of Block: Block 2

Start of Block: Dunkin block

Q1 Nutrition Label for the beverage is shown

Q2 Using the label provided for the beverage you chose, indicate the total number of the following categories.

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

Q3 If you were to rate this beverage with 1 being least healthy and 10 being the healthiest, which health score would you assign

- ○ 1 (not healthy) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (neither healthy or unhealthy) (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (neither healthy or unhealthy) (10)

Q4 Describe this beverage item as low, moderate, or high in the following categories

- ○ Fat (1) _____
- ○ Sugar (2) _____

Q5 After seeing the item's nutritional information, do you intend to consume this beverage in the future

- ○ Not very likely (1)
- ○ Not likely (2)
- ○ Likely (3)
- ○ Very Likely (4)

Q6 Please provide a short explanation about why this nutritional information did or did not influence your future plans to consume this beverage item.

_____

End of Block: Dunkin block

Start of Block: Block 3

Q19 Which of the following best describes your intentions with regard to your body weight?

- ○ I am trying to lose weight (1)
- ○ I am trying to maintain my current weight (2)
- ○ I am trying to gain weight (3)

Q20 What is your height (in feet and inches)?

_____

Q21 What is your approximate weight (in pounds)?

_____

Q22 In the PAST 30 DAYS, about how many HOURS PER WEEK on average did you spend exercising? Include any exercise of moderate or higher intensity, where “moderate intensity” would be roughly equivalent to brisk walking or bicycling

- ○ Less than 1 (1)
- ○ 1-2 (2)
- ○ 3-4 (3)
- ○ 5 or more (4)

End of Block: Block 3

Start of Block: Monster block

Q1 Nutrition Label for the beverage is shown

Q2 Using the label provided for the beverage you chose, indicate the total number of the following categories.

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

Q3 If you were to rate this beverage with 1 being least healthy and 10 being the healthiest, which health score would you assign

- ○ 1 (not healthy) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (neither healthy or unhealthy) (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (very healthy) (10)

Q4 Describe this beverage item as low, moderate, or high in the following categories

- ○ Fat (1) _____
- ○ Sugar (2) _____

Q5 After seeing the item's nutritional information, do you intend to consume this beverage in the future

- ○ Not very likely (1)
- ○ Not likely (2)
- ○ Likely (3)
- ○ Very Likely (4)

Q6 Please provide a short explanation about why this nutritional information did or did not influence your future plans to consume this beverage item.

_____

End of Block: Monster block

Start of Block: coke label

Q1 Nutrition label for the beverage is shown

Q2 Using the label provided for the beverage you chose, indicate the total number of the following categories.

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

Q3 If you were to rate this beverage with 1 being least healthy and 10 being the healthiest, which health score would you assign

- ○ 1 (not healthy) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (neither healthy or unhealthy) (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (very healthy) (10)

Q4 Describe this beverage item as low, moderate, or high in the following categories

- ○ Fat (1) _____
- ○ Sugar (2) _____

Q5 After seeing the item's nutritional information, do you intend to consume this beverage in the future

- ○ Not very likely (1)
- ○ Not likely (2)
- ○ Likely (3)
- ○ Very Likely (4)

Q6 Please provide a short explanation about why this nutritional information did or did not influence your future plans to consume this beverage item.

_____

End of Block: coke label

Start of Block: Body Armour Label

Q1 Nutrition label for the beverage is shown

Q2 Using the label provided for the beverage you chose, indicate the total number of the following categories.

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

Q3 If you were to rate this beverage with 1 being least healthy and 10 being the healthiest, which health score would you assign

- ○ 1 (not healthy) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (neither healthy or unhealthy) (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (very healthy) (10)

Q4 Describe this beverage item as low, moderate, or high in the following categories

- ○ Fat (1) _____
- ○ Sugar (2) _____

Q5 After seeing the item's nutritional information, do you intend to consume this beverage in the future

- ○ Not very likely (1)
- ○ Not likely (2)
- ○ Likely (3)
- ○ Very Likely (4)

Q6 Please provide a short explanation about why this nutritional information did or did not influence your future plans to consume this beverage item.

_____

End of Block: Body Armour Label

Start of Block: Chocolate Shake Label

Q28 Nutrition label for the beverage is shown

Q14 Using the label provided for the beverage you chose, indicate the total number of the following categories.

- ○ Calories (1) _____
- ○ Grams of sugar (2) _____
- ○ Grams of fat (3) _____

Q15 If you were to rate this beverage with 1 being least healthy and 10 being the healthiest, which health score would you assign

- 1 (not healthy) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (neither healthy or unhealthy) (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (very healthy) (10)

Q43 Describe this beverage item as low, moderate, or high in the following categories

- Fat (1) _____
- Sugar (2) _____

Q17 After seeing the item's nutritional information, do you intend to consume this beverage in the future

- Not very likely (1)
- Not likely (2)
- Likely (3)
- Very Likely (4)

Q18 Please provide a short explanation about why this nutritional information did or did not influence your future plans to consume this beverage item.

_____

End of Block: Chocolate Shake Label

Appendix C

PI:

This is to inform you that your application to conduct research with human participants, “The impact of nutritional information on undergraduate students' future sugar sweetened beverage purchase intentions at the University of Mississippi " (Protocol #23x-102), has been determined as Exempt under 45 CFR 46.101(b)(#2). You may proceed with your research.