Reducing Unhealthy Normative Behavior: The Case of Sports and Energy Drinks

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Abstract

American adolescents consume more sugar-sweetened beverages (SSBs) than any other age group. Sports and energy drinks consumption among adolescents is higher than other SSBs. For sports drinks, there is uncertainty about their "healthiness" and beliefs that these drinks may provide health benefits such as hydration, enhanced athletic performance, heightened mental alertness, and rapid recovery after exercise. Confusion about relative healthiness and expectations of health benefits suggest that factors that may encourage youth to avoid drinking sports and energy drinks, such as athletic status, psychological reactance, and SSB media literacy, may necessitate different approaches to promoting avoidance of sports drinks compared to avoidance of energy drinks. Using a nationally representative US probability-based web panel augmented by a volunteer nonprobability-based web panel of 500 adolescent participants ages 14-18, we used the Reasoned Action Approach to model intention to avoid sports and to avoid energy drinks. The result show there are similarities and differences in the determinants associated with adolescents' avoidance of sports and energy drinks: attitudes and descriptive normative pressure are both related to increased avoidance for both types of drinks and perceived control over the avoidance behavior is positively associated for with intention to avoid for energy drinks. Sport identification, psychological reactance, and SSB media literacy also play a different role in the sports and energy drink models. Based on our results, the content of prevention messages in interventions to limit sports drinks will need to be quite different from those targeted at reducing energy drink consumption.

Keywords

sugar sweetened beverages; energy drinks; sports drinks; reasoned action

Positive associations between sugar-sweetened beverage (SSB) consumption and weight gain, diabetes risk, dental caries, and other serious health outcomes have been well documented in meta-analyses (Farhangi, Nikniaz, & Khodarahmi, 2020; Imamura et al.,

2015; Laniado, Sanders, Godfrey, Salazar, & Badner, 2020; Malik & Hu, 2019; Malik, Pan, Willett, & Hu, 2013; Valenzuela, Waterhouse, Aggarwal, Bloor, & Doran, 2021). American adolescents consume more sugar-sweetened beverages (SSBs) than any other age group (Marriott, Hunt, Malek, & Newman, 2019) with the highest consumption rates among lower-income youth as well as Black and Mexican American children and teens (Harris, Felming-Milici, Kibwana-Jaff, & Phaneuf, 2020). While total SSB consumption in the US has fallen in the last decade (Valizadeh, Popkin, & Ng, 2020), fifty percent of high school students in the United States reported drinking a sports drink at least weekly and one in ten report drinking sports drinks every day (see Russo, Northridge, Wu, & Stella, 2020; Underwood et al., 2020).

Two aspects of these specific drinks are important to consider. First, there is public uncertainty about the "healthiness" of sports and energy drinks compared to standard SSBs like soda (Harris & Pomeranz, 2021; Hennessy, Bleakley, Piotrowski, Mallya, & Jordan, 2015; Munsell, Harris, Sarda, & Schwartz, 2016) although such "healthiness" comparisons are relatively rare in the research literature. Much better documented is the belief that sports and energy drinks provide health benefits (Burke & Hawley, 2018) such as hydration, enhanced athletic performance (e.g., Hoyte, Albert, & Heard, 2013), heightened mental alertness, and more rapid recovery after exercise (Bolter et al., 2019; Bunting, Baggett, & Grigor, 2013; Costa, Hayley, & Miller, 2014; Moran & Roberto, 2018; Zytnick, Park, & Onufrak, 2016).[1] These health benefit themes are also major components of marketing messages promoting sports and energy drink sales and consumption to adolescents (Brownbill, Miller, Smithers, & Braunack-Mayer, 2020; Buchanan, Kelly, & Yeatman, 2017; Buchanan, Yeatman, Kelly, & Kariippanon, 2018; Coates, Hardman, Halford, Christiansen, & Boyland, 2019; Emond, Sargent, & Gilbert-Diamond, 2015). Both of these factors – confusion about relative healthiness and expectations of health benefits – justify a close examination of the factors that would encourage youth to avoid drinking sports and energy drinks. In this study, Reasoned Action theory is used to identify relevant beliefs and other determinants associated with adolescents' intention to avoid sports and energy drinks.

The Reasoned Action Approach

Reasoned Action (RA) is a cognitive theory used in psychology, advertising/marketing, public health, communication, and business. Its focus is the *intention to perform a specific behavior,* the "target behavior." Here the target behavior is avoiding sports and energy drinks (treated as two separate behaviors) in the next seven days (see Table 1 for measurement details). Intention is a function of one's favorableness or unfavorableness towards performing the behavior (i.e., attitudes), perceptions about what others think and do about performing the behavior (i.e., normative pressure), and beliefs about ability to perform the behavior (i.e., perceived control). Each of these constructs is determined by a corresponding set of salient underlying beliefs. Attitudes are determined by beliefs that performing the behavior will lead to certain positive or negative consequences. Normative

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[1]Another health dimension specifically related to energy drinks is their association with alcohol use (e.g., Caviness, Anderson, & Stein, 2017; Patrick & Maggs, 2014), but this is not our focus here

pressure is determined by beliefs that specific referents think the individual should or should not perform the behavior ("injunctive" normative beliefs) and by beliefs about whether significant others are or are not performing the behavior ("descriptive" normative beliefs) (Manning, 2009; Rivis & Sheeran, 2003). The beliefs determining control reflect both self-efficacy ("capacity") and sufficient personal autonomy to perform the behavior (Yzer, 2012b).

To more fully understand relevant traits that influence the attitude, normative pressure, and control factors that predict intention, the effects of three precursor variables are included: reactance, sport identification, and SSB media literacy. Note that reasoned action assumes that precursor variables influence intention indirectly: intention is assumed to be completely mediated by the proximal predictors of attitudes, normative pressure, and control (i.e., this assumption is "theoretical sufficiency"). However, whether a specific precursor will have a non-zero direct effect on the proximal predictors of intention is always an empirical question (Hennessy et al., 2010).

Reactance (Rosenberg & Siegel, 2018) is important when health promotion messages contradict the desire to perform a valued behavior (Dillard & Shen, 2005). It can lead people to become further entrenched in their initial behavior in order to resist a perceived threat to their freedom of choice: one study found that anti-SSB advertising elicited reactance, and this reactance was associated with reduced message effectiveness (Dillard, Kim, & Li, 2018).

Athletic identification (Brewer, Van Raalte, & Linder, 1993; Miller, 2008) is important because access to and approval of sports and energy drinks may be influenced by athletic norms, celebrity athlete endorsements, and corporate sponsorship of sports events, all of which are common in sports and energy drink advertising (e.g., Gorse, Chadwick, & Burton, 2010; Heckman, Sherry, & De Mejia, 2010). In addition, formal sport programs that make sports drinks available during practice and games may reduce the self-efficacy to avoid them. We would therefore expect that reactance and athletic status would be associated with lower intention to avoid these drinks and negatively related to determinants of intention.

Media literacy (Weintraub Austin, Pinkleton, Chen, & Austin, 2015; Zoellner et al., 2011) is important because understanding the limitations and biases of commercial persuasive arguments in favor of sports and energy consumption may increase the likelihood of avoiding these drinks.

Research Questions

1. For each behavior (i.e., avoid sports drinks, avoid energy drinks), to what extent are attitudes, types of normative pressure, and control associated with avoidance intention?

2. For each avoidance behavior, to what extent are reactance, sport identification and SSB media literacy associated with attitude, normative pressures, and control?

3. Are there differences in these relationships between sports and energy drinks?

Methods and Measures

The TeenADE Study

Our data come from *TeenADE,* a project to identify modifiable individual factors (like beverage preferences) and environmental factors (like advertising content and exposure) to design health messages to specifically discourage energy and sports drink consumption. The project has three components. The first is a national survey of teens to understand attitudes and beliefs concerning sports and energy drink consumption as well as intention to avoid these beverages. The second component of *TeenADE* is designed to understand the persuasive logic of sports and energy drink advertising through a content analysis of their advertisements using a coding manual derived from the elaboration likelihood model (O'Keefe, 2008) and the reasoned action approach. The third component is sports and energy drink avoidance message development (Yzer, 2012a) based on the integration of the survey and the content analysis results. Only results from the online survey are reported here.

Data were collected using a U.S. nationally representative probability-based web panel (the SSRS Opinion Panel, https://ssrs.com/opinion-panel/*)* augmented by volunteer nonprobability-based web panel to reach parents of adolescents ages 14-18 fielded from October 1 through 18, 2020. Members of the probability-based panel are recruited randomly in one of two ways: from a dual-frame random digit dial sample through the SSRS Omnibus survey platform or through invitations mailed to respondents randomly sampled from an address-based sample. The SSRS Omnibus survey is a nationally representative bilingual telephone survey designed to meet standards of quality associated with custom research studies. Each weekly wave of the SSRS Omnibus consists of 1,000 interviews, of which 700 are obtained with respondents on their cell phones and approximately 35 interviews completed in Spanish. From this base, SSRS screens for internet access and then recruits those who have access to be part of the SSRS Opinion Panel. Addresses for the SSRS Omnibus were obtained through Marketing System Groups (ww.m-s-g.com). Address based sample respondents are randomly sampled by Marketing System Groups through the U.S. Postal Service's computerized delivery sequence, a regularly-updated listing of all known addresses in the U.S although for this survey known business addresses were excluded from the sample frame. Specific quotas were employed to reach similar numbers adolescents across age and gender: quota targets were two samples of 250 males and females evenly divided between the ages of 14-16 and 17-18 for an achieved total sample of 501 adolescents. This gender quota was based on a power analysis of an 1-7 coded intention measure with a flat frequency distribution (M = 4 SD = 2, therefore; this approach is conservative because behavioral intention is always skewed and thus has a smaller SD in practice). To detect a detect a half point difference between two groups (the effect size is .25 which is generally considered to be "small"), 252 respondents per group are necessary using a two tailed test because there was no expectation about the direction of group differences between males and females. Hence, the 250 per gender quota requirement.

Data were weighted to provide nationally representative estimates of teens ages 14 to 18. Data weighting ensures that the demographic profile of the sample matches the profile of

the target population. The first stage of the weighting was the application of a base weight to account for different selection probabilities and response rates across sample strata. Then self-reported sample demographics were matched to population parameters. Unless noted otherwise, all results here use the weighted data.

In the unweighted sample, 50% were female, 51% were 14-16 years of age and the internal cells of this crosstabulation were consistent with the desired quota sample (i.e., about 25% of the total sample in each cell). For racial identity, 79.5% of respondents identified as White, less than .5% as native Hawaiian or Pacific Islanders, 9% as Black or African American, 6.4% as Asian-American, and 1.6% as American Indian or Alaskan Native. All others self-identified as some combination of these categories. Eleven percent self-identified as Hispanic independent of their racial identity.

Consent Procedures

Parents were invited to an online survey where they were asked to confirm that they had a child between the ages of 14-18. If they had more than one eligible child, the program randomly selected one child to participate and then asked if the parent consented to their child's participation. If the child was available at the time of this screening process, the program asked for the child to come to the computer or other device and automatically routed to the survey for the adolescent to complete. If the child was not available, the program asked for an email address to send a link for the child to complete the survey later. A total of 403 adolescents completed the survey through volunteer web panels using this procedure. Another 100 completed the survey through the SSRS Opinion panel. These procedures were approved by the sponsoring institution's Institutional Review Board.

Measures

All measures included in this analysis are listed in Table 1. When appropriate, reliability was calculated using a polychoric alpha (Gadermann, Guhn, & Zumbo, 2012; Zumbo, Gadermann, & Zeisser, 2007) and are included in the table. The Reasoned Action measures were adapted from Fishbein and Ajzen (2011). In the survey "sports drinks" were defined as: '…drinks like Gatorade, Powerade, and Vitamin Water". "Energy drinks" were defined as "…drinks like Monster Energy, 5 Hour Energy, and Red Bull". "Regular sodas" were defined as "…(not diet sodas) like Coke, Pepsi, and Mountain Dew". *Avoidance Intention* for sports drinks was framed as: "We are going to ask you your thoughts about you avoiding sports drinks in the next 7 days. Again, by sports drinks we mean drinks like Gatorade, Vitamin Water, and Powerade. Please answer each question as best you can." *Avoidance Intention* for energy drinks was framed as: "Now we are going to ask you similar questions, but these next ones are about avoiding energy drinks in the next 7 days. When we say "energy drinks," we are talking about drinks like Red Bull, Monster Energy, and 5 hour Energy".

Note that the injunctive and descriptive norm measures used here were not combined into a single "Normative Pressure" item because these items were not highly correlated with each other (for sports drinks, the correlation was .54 and for energy drinks the correlation

was .47). Thus, both normative measures are used in the analysis below consistent with the meta-analysis of Connor et al. (Conner, McEachan, Lawton, & Gardner, 2017).

Statistical Analysis

Bar charts of means and box plots of distributions are used for summary displays. Both types of drinks are analyzed using the corresponding Reasoned Action model (i.e., sports drink avoidance intention is predicted by the sports drink reasoned action mediators; energy drink avoidance intention is predicted by the energy drink reasoned action mediators; the precursors are common to both analyses) using structural equation modeling (Ullman & Bentler, 2012). For each avoidance outcome, the error terms of the reasoned action mediators are correlated because reasoned action does not account for causal effects of these determinants of intention on each other (Hennessy et al., 2010).

Coefficients are unstandardized so they can be compared directly - different variable variances by drink type model would make standardized coefficients misleading (Arnold, 1982; Greenland, Maclure, Schlesselman, Poole, & Morgenstern, 1991; King, 1986). Significant differences within and between outcomes for precursor effects on reasoned action mediators (attitude, the two normative variables, and perceived control) as well as the effects of the mediators on avoidance intention were identified using likelihood ratio tests comparing free and constrained models across drink types. All analyses were performed with **STATA 16** (StataCorp, 2017). The relationships between the precursors, the reasoned action mediators, and avoidance intention are shown in the generic model presented in Figure 1.

Results

Weekly consumption for sports drinks, energy drinks, and (as a comparison) regular sodas was analyzed first. For all drink outcomes, regression comparisons with interactions showed that the only significant difference in consumption was between males and females for sports drinks (main effect $p = .018$; unadjusted g effect size = .27). There was no significant difference between genders for any outcome and none of the three consumption measures indicated a significant interaction between gender and age. The age/gender group data are therefore pooled in the analysis below. Perceived healthiness for all three drinks was also examined. All gender/age groups evaluated energy drinks and sodas as at least less than −2 on the −4.5 to +4.5 healthiness scale. However, sports drinks ratings ranged from −.42 healthiness (for females, 14-16 years of age) to .36 (for males, 14-16) on the −4.5 to +4.5 healthiness scale . These results are consistent with earlier research that shows uncertainty about the negative health effects of sports drinks compared with other SSBs.

Figure 3 shows summaries of the precursors and the determinants of avoidance intention by type of drink. In the original metric, the average reactance was approximately the midpoint of the index (Mean = −.01, CI (−.10 to .08)) while sport identification was negative (Mean = −.78 CI(−.95 to −.59)) and media literacy was positive (Mean = .58 CI(.48 to .67)). Because the precursors have different scales – sport identification media literacy were coded "−3 to 3" but reactance items were coded "−2 to 2" the distributions are displayed here in Z scores rather than the original metric. Compared to reactance, sport identification is skewed to the

right toward positive values and SSB media literacy to the left toward negative ones, see Figure 3(A).

Looking the reasoned action predictors, for sports drinks, the average avoidance intention is negative, as is descriptive norm. The respondents do not want to avoid sports drinks, report little social pressure to do so, and believe that their important referents will not avoid sports drinks. Respondents do believe they could avoid sports and energy drinks if they wanted to: perceived control over avoidance is high so avoidance behavior is volitional, see Figure 3(B). For energy drinks, the pattern is different. Intention to avoid is positive as is attitude toward avoidance while significant others are perceived as desiring the respondent's avoidance and as performing this behavior themselves. Like sports drinks, avoidance is volitional, see Figure 3(C).

Figures 3(B) and 3(C) also show the bivariate correlations between avoidance intention and the mediators for each drink. All correlations are similar except for the correlation between perceived control and intention for energy drinks. Finally, the correlation between the two intention measures is small (e.g., .21, although with this sample size any correlation greater than .11 in absolute value is statistically significant at $p < .05$, two tailed test) and suggests that the model might be quite different for each type of drink.

Table 2(A) and 2(B) shows the results of the analysis for each type of drink avoidance. In each table, the top section shows the mediator effects on avoidance intention on the specific path. The sections below each path diagram shows the effects of the precursors on the mediators in a table format for clarity. Both models fit well, especially for energy drinks.

Looking first at the model for sports drinks (Table 2(A)) shows that attitude toward avoidance is the primary predictor (note that because all of variables are in the same metric, direct comparison of unstandardized coefficients between and within drink type is legitimate) but descriptive norm also has a statistically discernable association with avoidance intention. Table 2(A) also shows the relationships of the three precursors to the mediators (see Research Question 2). Reactance is not associated with any of the sports drinks mediators, media literacy is positively associated with all of them, and sport identification is negatively associated with injunctive norms and perceived control.

Energy drink results are in Table 2(B). For these drinks, all four of the reasoned action mediators positively influence avoidance intention. Cross-drink comparisons on the two types of drink avoidance shows that the attitude coefficient is significantly larger for sports than energy drinks (.82 vs. .51) and the control coefficient significantly larger for energy drinks than sports drinks (.33 vs. −.16) , consistent with the bivariate correlations shown in Figure 3(B) and 3(C). Reactance is negatively associated with all reasoned action mediators as is athletic identification, but media literacy is positively related to energy drink avoidance in the same manner of sports drinks: understanding the persuasive logic of advertising increase the likelihood of drink avoidance. The positive results of media literacy on energy drink mediators are the largest in the table (see Research Question 3).

Cross-drink comparisons for the reasoned action mediators on intention associations show a significant difference between the attitude/intention path (e.g., .82 versus .51) and for the

control/intention path (−.16 versus .33). The cross-drink comparison for precursors show that athletic identification is more negative in relation to drink avoidance for energy drinks than sports drinks and athletic identification and literacy play a larger role in predicting injunctive norm for avoiding energy drinks than sports drinks.

Discussion

Sports and energy drinks remain popular among adolescents despite declines in general SSB consumption in the US (Shi & van Meijgaard, 2010; Simon et al., 2013; Valizadeh et al., 2020; Vercammen, Moran, Soto, Kennedy-Shaffer, & Bleich, 2020). Using reasoned action theory to identify determinants associated with intention to avoid these types of drinks, this study demonstrates that there are similarities and differences in the determining factors for avoidance of sports and energy drinks. Attitudes and descriptive norms are both related to increased intention to avoid both drinks, but perceived control is positively associated for energy drinks. The lack of injunctive pressure to avoid sports drinks combined with a negative intention to avoid is a challenge to reducing sport drink consumption among US adolescents. The question becomes how to raise awareness that *avoiding sports drinks is a healthy behavior* when commercial marketing efforts specifically suggest otherwise and there is apparently little perceived normative pressure to do so. For energy drinks, there are lower consumption rates, high intention to avoid, high perceived injunctive and descriptive pressure to do so, and perceived behavioral control over the avoidance behavior. This may suggest that prevention efforts may be more effective for energy drinks than sports drinks, but the reactance effect (especially for current drinkers) may be a barrier to active behavior change (i.e., reducing energy drink consumption).

The precursor results also highlight the differences between the two kinds of drinks. Reactance has no influence on the mediators for sports drinks, while it is always negative for energy drinks. Reactance is a response to a reduction or manipulation of freedom of choice or personal agency from the point of view of the respondent (Brehm & Brehm, 1981; Quick & Stephenson, 2007). Why is reactance not relevant in the case of sports drinks? Because avoidance intentions are negative and injunctive pressure to avoid them is essentially non-existent, respondents may not perceive any "threat to choice" when it comes to sports drinks. Rather, they perceive approval of and reinforcement for theirs and important others' consumption behavior. In other words, the prototypical "consumer of sports drinks" is positively evaluated (Hennessy, Bleakley, & Ellithorpe, 2017) regardless of reactance level. Energy drinks are different: they are less frequently consumed, and highly reactive individuals may perceive pressure to reduce consumption. For these respondents, reactance motivates negative effects on the mediators focused on energy drink avoidance (e.g., "No one is going to take away my energy drink"). Sport identification also complex. For sports drinks, it has negative effects (as predicted) on all the reasoned action mediators but the negative attitude and injunctive pressure coefficients are larger for energy drinks than sports drinks. We have no explanation for this: negative effects were expected, but why they are larger for energy drinks and not the reverse is unknown. Finally, SSB media literacy works essentially as predicted: it increases pro-avoidance attitudes, injunctive and descriptive pressures to avoid, and perceived control for both types of drink.

Conclusion

Adolescents perceive the health benefits of sports and energy drinks to be different and their willingness to avoid each of these drinks varies. Unfortunately, these distinctions are often not apparent in SSB research because sports and energy drinks are often combined into a unitary consumption category (e.g., Roesler, Rojas, & Falbe, 2021; Rummo, Pho, Bragg, Roberto, & Elbel, 2020; Vercammen et al., 2020; Yin et al., 2020) which impairs the ability to make conclusions about factors that encourage or discourage consumption of each drink. Based on our results, the content of prevention messages in interventions to limit sports drinks may need to be quite different from those targeted at reducing energy drink consumption.

Acknowledgments:

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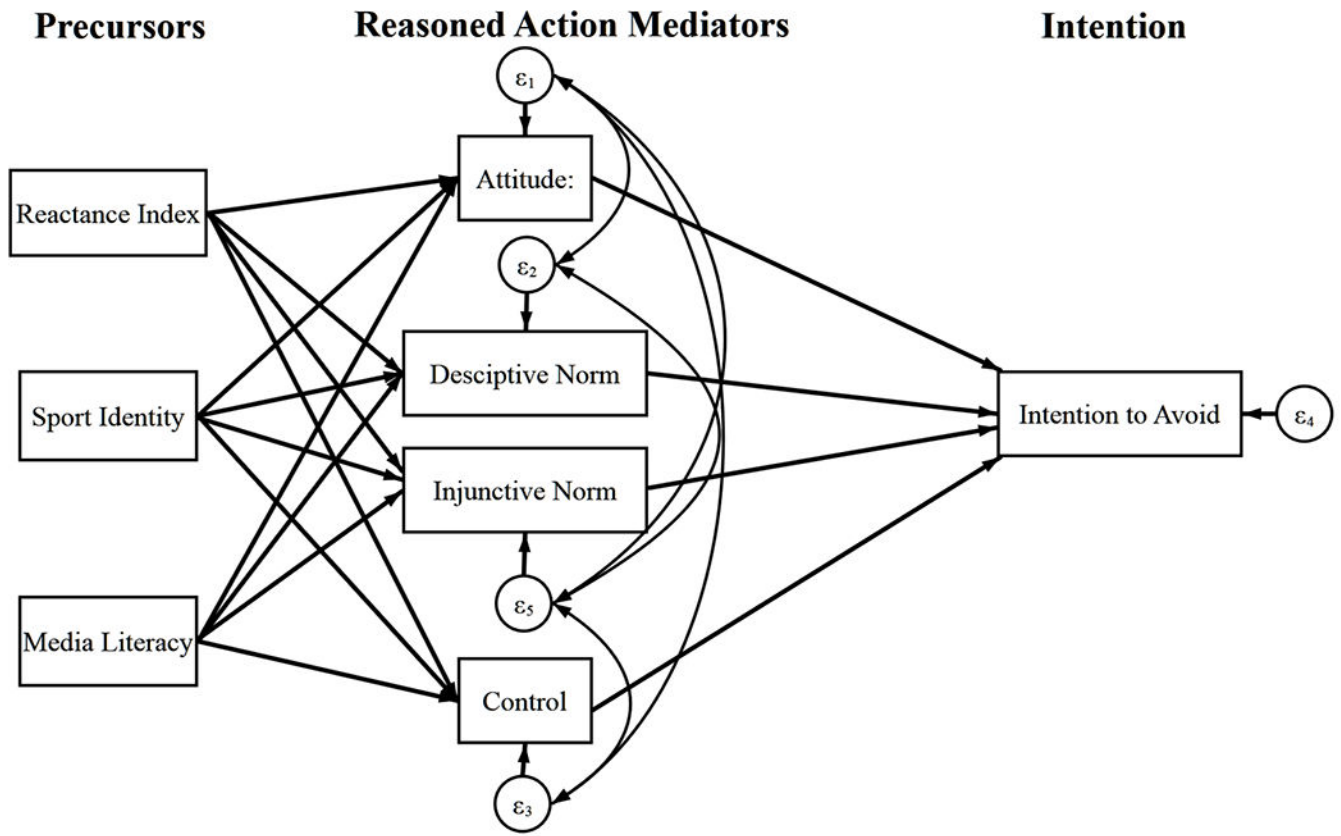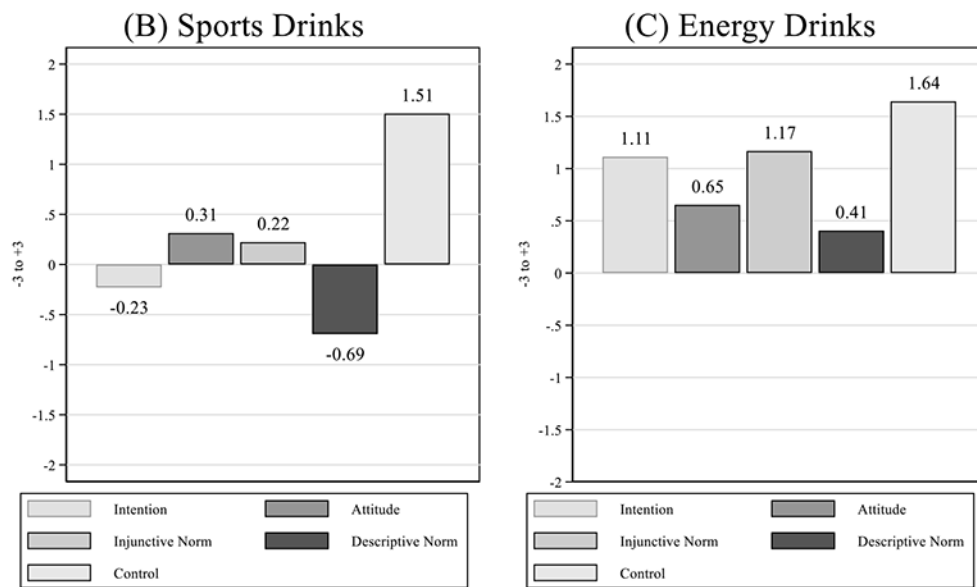
Figure 1:
Generic Model of the Analysis
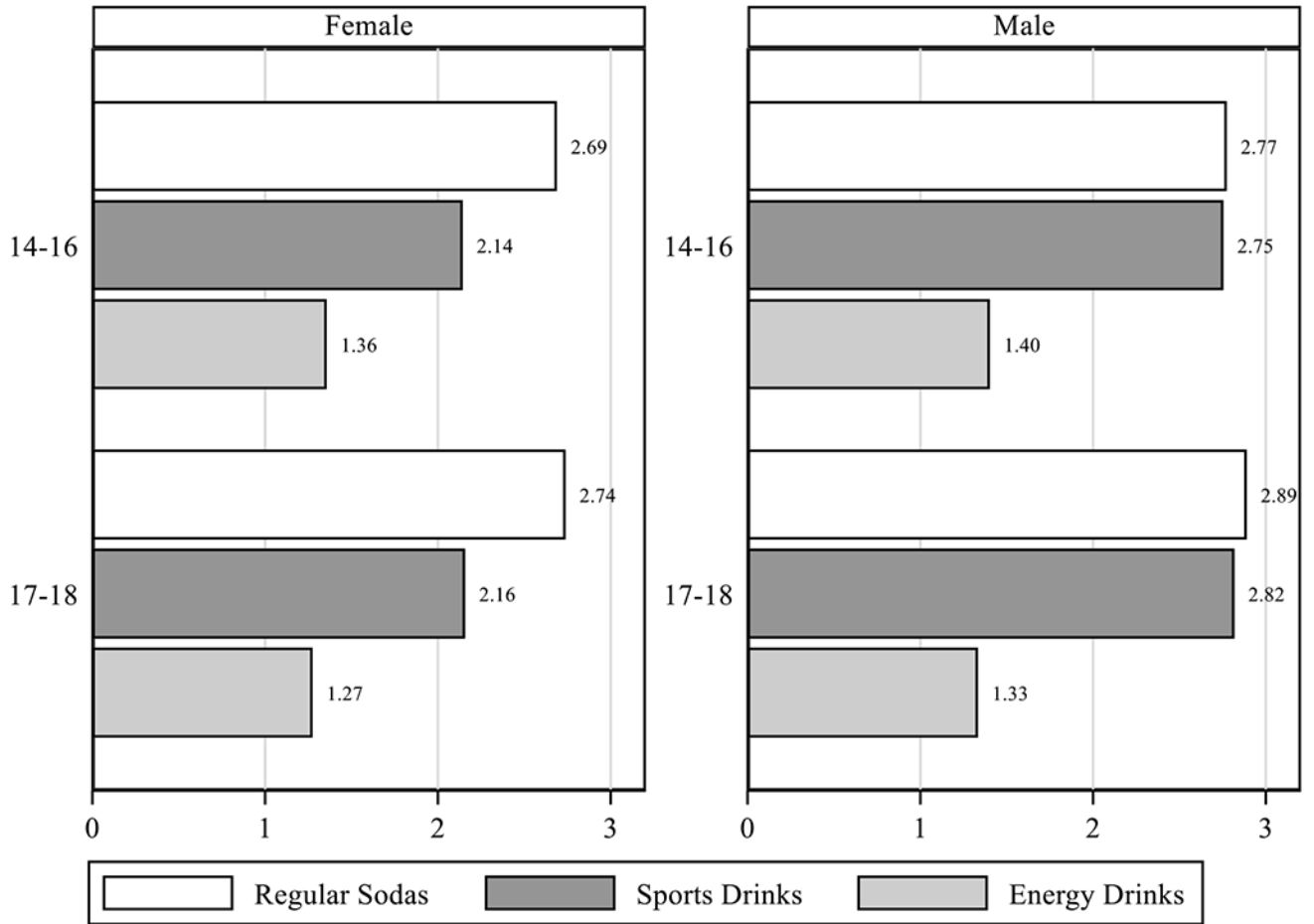
Figure 2:
Average Weekly Consumption of Regular Sodas, Sports Drinks, and Energy Drinks
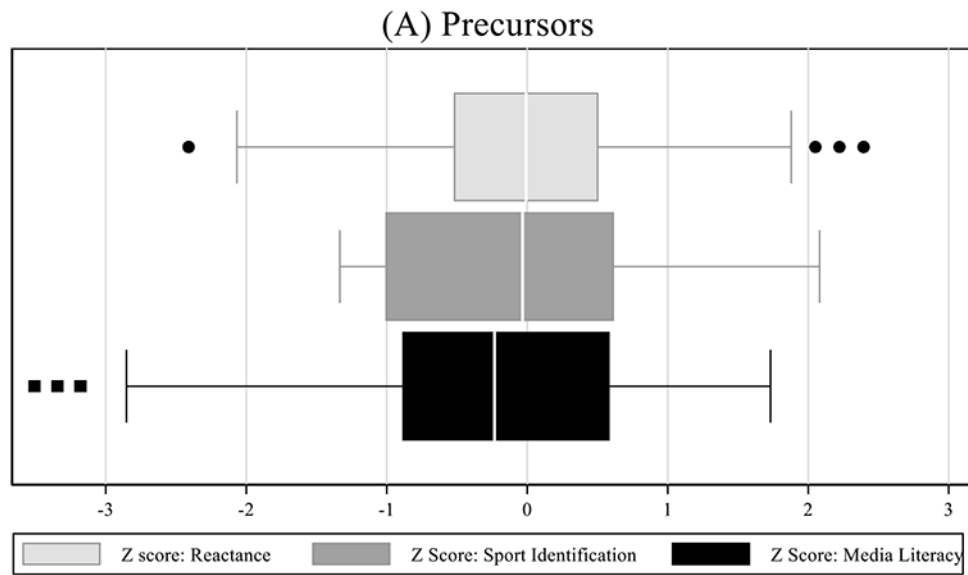
Figure 3:

Precursor Distributions and Reasoned Action Measure Averages and Correlations

Table 1:

Measures used in the analysis

Construct*	Item(s)
SSB Consumption	A list of drinks was evaluated using an ordinal scale (0,2,5,7) corresponding to "Never during the last 7 days", "1-3 times during the last 7 days', "4-6 times during the last 7 days", and "1 time per day". The drinks used here were "Sports drinks like Gatorade, Powerade, and Vitamin Water", "Energy drinks like Monster Energy, 5 Hour Energy, and Red Bull', and "Regular sodas (not diet sodas) like Coke, Pepsi, and Mountain Dew".
Perceived Healthiness	A list of drinks was evaluated using the item stem "How healthy do you think **[drink]** is? The score was scaled from10 ("Very Healthy") to 1 "Very Unhealthy"). Here the drinks were "Soda, not including diet soda", "Sports drinks like Gatorade", and "Energy Drinks like Red Bull". The original 1-10 scale was recoded to be –4.5 to 4.5 with negative values below 5.5 and positive values above 5.5.
Avoidance Intention	How likely is it that you will avoid drinking sports drinks in the next 7 days? How likely is it that you will avoid drinking energy drinks in the next 7 days? Both coded from –3 to +3 anchored at "Extremely Unlikely" to "Extremely Likely".
Attitude	For both types of drinks the semantic differential items were "Bad-Good", "Unpleasant-Pleasant", "Foolish-Wise", "Harmful-Beneficial", "Not Enjoyable-Enjoyable", "Stressful-Not Stressful" and "Unnecessary-Necessary" all coded from –3 to +3. Alpha: 82 for sports drinks; .87 for energy drinks
Injunctive Norm	Do most people important to you think that you should or should not avoid drinking *[sports drinks-energy drinks]* in the next 7 days? coded –3 to +3 anchored at "Should Drink" and "Should Not Drink".
Descriptive Norm	Will most people like you drink or avoid drinking *[sports drinks-energy drinks]* in the next 7 days? coded –3 to +3 anchored at "Will Drink" and "Will Not Drink".
Autonomy	It is completely up to you whether you avoid drinking *[sports drinks-energy drinks]* in the next 7 days" coded –3 to +3 anchored at "Strongly Disagree" and "Strongly Agree".
Capacity (Self-efficacy)	If you really wanted to, you are certain that you could avoid drinking *[sports drinks-energy drinks]* in the next 7 days" coded –3 to +3 and anchored at "Strongly Disagree" and "Strongly Agree".
Control	This is the average of the summed capacity and autonomy items for each drink type. The correlation between autonomy and capacity for sports drinks was .70 and for energy drinks was .80.
Psychological Reactance (Hong, 1992; Hong & Page, 1989)	"I become angry when my freedom of choice is restricted", "I become frustrated when I am unable to make free and independent decisions", "I am contented only when I am acting of my own free will", "The thought of being dependent on others aggravates me", "I consider advice from others to be an intrusion", "Advice and recommendations usually induce me to do just the opposite", "It irritates me when someone points out things which are obvious to me". Items were coded –2 to +2 anchored at "Strongly Disagree" to "Strongly Agree". Alpha=.82
Sport Identification (Brewer et al., 1993; Martin, Eklund, & Mushett, 1997)	"I have many goals related to sports", "Sports is the most important part of my life", "I spend more time thinking about sport than anything else", "I need to participate in sport to feel good about myself", "I feel bad about myself when I do poorly in a sport", Sport is the only thing important in my life", and " I would be very depressed if I were injured and could not compete in sport". Items were coded –3 to +3 anchored at "Strongly Disagree" to "Strongly Agree". Alpha=.95
SSB Media Literacy (Chen, Porter, Estabrooks, & Zoellner, 2017)	"Most movies and TV shows that show people drinking *[sports drinks-energy drinks]* make it look more attractive than it really is", *"[Sports drink ads-energy drink ads]* show a healthy lifestyle to make people forget about the health risks, such as weight gain and diabetes.", "When you see a *[sports drink ad-energy drink ad]*, it is very important to think about what was left out of the ad", and *"[Sports drink-Energy drink]* advertisements usually leave out a lot of important information". Items were coded –2 to +2 anchored at "Strongly Disagree" to "Strongly Agree". Alpha=.84

*
All reasoned action constructs from (Fishbein & Ajzen, 2011)

**
Polychoric alpha (Gadermann et al., 2012; Zumbo et al., 2007)

Table 2:

Results of Reasoned Action and Precursor Model Predicting Avoidance Intention (N = 502)

(A) Sports Drinks	Reasoned Action Predictors of Avoidance Intention		

Precursors Predicting Reasoned Action Mediators	Attitude	Injunctive Norm	Descriptive Norm	Control
Reactance	−0.11	−0.05	−0.07	−0.01
	(0.07)	(0.12)	(0.14)	(0.10)
Sport Identification	−0.05[#]	−0.11[*#]	−0.08	−0.10[*]
	(0.04)	(0.06)	(0.06)	(0.04)
SSB Media Literacy	0.48[*#]	0.43[*]	0.29	0.74[*]
	(0.09)	(0.14)	(0.15)	(0.15)
Constant	0.00	−0.12	−0.94[*]	1.01[*]
	(0.08)	(0.12)	(0.13)	(0.13)

(B) Energy Drinks	Reasoned Action Predictors of Avoidance Intention		

Precursors Predicting Reasoned Action Mediators	Attitude	Injunctive Norm	Descriptive Norm	Control
Reactance	−0.18[*]	−0.29[*]	−0.25[*]	−0.17[*]
	(0.06)	(0.09)	(0.11)	(0.08)
Sport Identification	−0.13[*#]	−0.28[*#]	−0.14[*]	−0.12[*]
	(0.03)	(0.04)	(0.05)	(0.04)

(A) Sports Drinks	Reasoned Action Predictors of Avoidance Intention

Precursors Predicting Reasoned Action Mediators	Attitude	Injunctive Norm	Descriptive Norm	Control
SSB Media Literacy	0.71 *#	0.77 *#	0.49 *	0.96 *
	(0.07)	(0.09)	(0.11)	(0.08)
Constant	0.14 *	0.52 *	0.01	1.00 *
	(0.07)	(0.10)	(0.12)	(0.09)
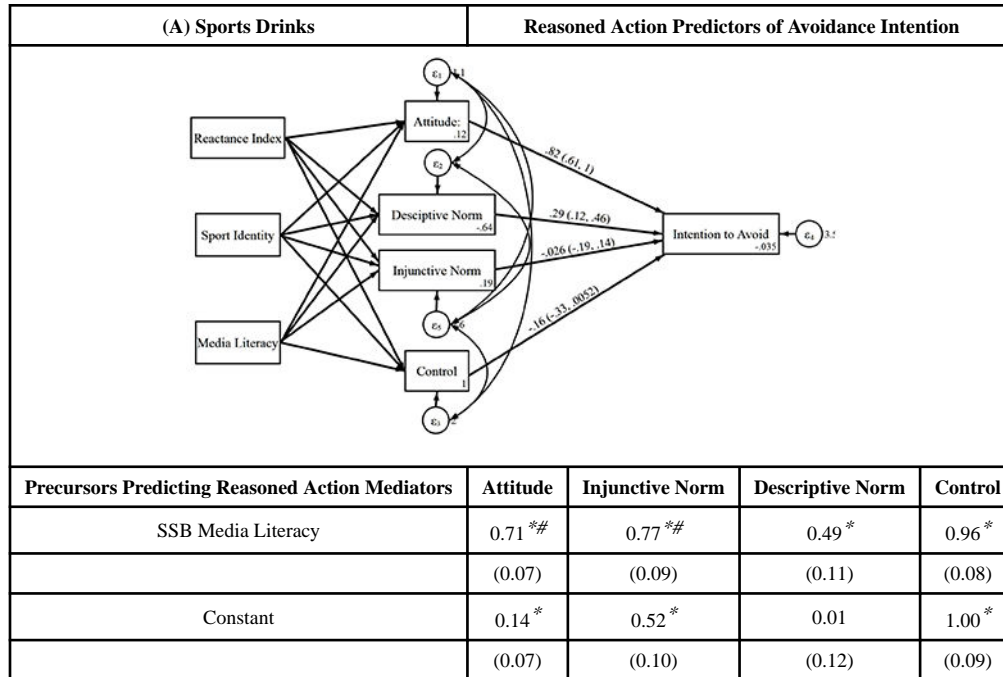
*p < .05. Standard errors in parentheses. χ^2= 12.23, *df* = 3, CFI =.98, RMSEA= .078 , CI(.036 .126)

#Statistically significant cross drink difference in coefficient. R^2 of Avoidance Intention: .28

*p < .05. Standard errors in parentheses. χ2= 2.51, df = 3, CFI = 0, RMSEA = 0, CI(0 .07).

CFI and RMSEA are zero whenever the residual χ^2 is less than the *df* of the model which is the case here.

#Statistically significant cross drink difference in coefficient. R^2 of Avoidance Intention: .37