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Beliefs of Adolescents on Sugar-Sweetened Beverages Abstinence: A Reasoned Action Approach Elicitation Study

Les croyances des adolescents sur l'abstinence de consommer des boissons sucrées : une étude basée sur l'approche de l'action raisonnée

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Article abstract

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Keywords

adolescents; sugar-sweetened beverages; beliefs; Reasoned Action Approach; abstinence

Abstract

Introduction: Sugar-sweetened beverage (SSB) consumption is associated with many health problems, such as obesity and cardiovascular diseases. **Objectives**: To identify adolescents' beliefs concerning SSB abstinence. **Methods**: Based on the Reasoned Action Approach, thirty semi-structured interviews were conducted with adolescents (12-17 years). They were selected based on age, sex and setting in order to ensure a broad representation of adolescents from two French-speaking regions of the province of Quebec in Canada (Eastern Canada). Adolescents were invited to answer eight open-ended questions regarding SSB abstinence in the next month. A qualitative content analysis was performed independently by two experts to identify the most important beliefs. **Result**: According to adolescents, the main advantage of abstaining from SSB was that it would be good for their health and the main disadvantage was that they would have to give up products they liked drinking for the taste. Parents and friends seemed to be the most important social influences regarding abstaining from SSB. Adolescents mentioned many barriers to SSB abstinence, such as contextual barriers (e.g., special occasions, eating out, following sports activities), the presence of SSB drinkers, advertisements promoting SSB, and the urge to drink SSB. Facilitating factors included absence of SSB at home/school, having easy access to water and pure fruit juices, and receiving information about the negative health effects of SSB. **Discussion and conclusions**: The results of this preliminary study can be used to guide the development of interventions to promote SSB abstinence among adolescents.

Mots-clés

adolescents; boissons sucrées; croyances; Approche de l'action raisonnée; abstinence

Résumé

Introduction : La consommation de boissons sucrées (BS) est associée à de nombreux problèmes de santé tels que l'obésité et les maladies cardiovasculaires. **Objectif** : Identifier les croyances des adolescents concernant l'abstinence de consommer des boissons sucrées (ACBS). **Méthodes** : Fondées sur l'Approche de l'action raisonnée, trente entrevues semi-structurées ont été réalisées avec des adolescents (12-17 ans). La sélection selon l'âge, le sexe et le milieu a permis d'assurer une large représentation d'adolescents de deux régions francophones du Québec (Est du Canada). Suivant la définition des BS, les adolescents ont répondu à huit questions ouvertes au sujet de l'ACBS au cours du mois à venir. Une analyse qualitative de contenu réalisée indépendamment par deux experts a permis d'identifier les croyances les plus importantes. **Résultats** : Le principal avantage de l'ACBS est le bénéfice pour la santé et le principal désavantage est de ne pas pouvoir boire des produits dont ils aiment le goût. Les parents et les amis semblent les personnes les plus influentes concernant l'ACBS. De nombreux obstacles à l'ACBS ont été identifiés, tels que le contexte (occasions spéciales, au restaurant, après les activités sportives), la présence de personnes qui boivent des BS, les publicités sur les BS et l'envie d'en boire. Les facteurs facilitants comprenaient l'absence de BS à la maison ou à l'école, un accès facile à l'eau et à des jus de fruits purs et l'information sur les conséquences des BS. **Discussion et conclusions** : Les résultats de cette étude préliminaire peuvent guider le développement d'interventions favorisant l'abstinence de la consommation de BS chez les adolescents.

INTRODUCTION

Obesity and overweight are a worldwide public health problem (World Health Organization – WHO, 2003). Canada has not been spared, as 30% of Canadians aged 12 to 17 are overweight or obese (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012), which predisposes them to chronic diseases later in life (WHO, 2000). To counter the problem, the World Health Organization (2015) issued recommendations encouraging populations of all ages to reduce their free sugar intake, including sugar-sweetened beverages (SSB), to less than 10% and possibly 5% of total energy intake.

Unfortunately, adolescents drink large amounts of SSB. In the United States, 20.5% of high school students aged 14 to 18 consumed soft drinks (e.g., soda or pop) daily in 2015 (Miller, Merlo, Demissie, Sliwa, & Park, 2017). According to U.S. data from 2011-2014, calories from SSB consumed on a given day increased with age for both boys and girls, peaked between 12 and 19 years of age, and represented 9.3% and 9.7% of total daily kilocalories for boys and girls, respectively (Rosinger, Herrick, Gahche, & Park, 2017). Canadian data from 2009-2010 indicated that 80.3% of adolescents aged 13 to 18 from two provinces of Canada (Ontario and Prince Edward Island) reported consuming at least one SSB the previous day and 44.1% consumed three or more SSB daily (Vanderlee, Manske, Murnaghan, Hanning, & Hammond, 2014). Moreover, data from a province-wide survey carried out in 2014-2015 in Quebec, Canada, indicated that 23.3% of adolescents and young adults aged 15 to 24 drank at least one SSB a day (Camirand, Traoré, & Baulne, 2016).

The consumption of SSB provides no health benefits and may reduce the consumption of other drinks containing nutrients for optimal health (WHO, 2015). Moreover, SSB consumption contributes to excessive sugar intake, which is associated with many health problems, including heart disease (Johnson et al., 2009; Malik, Popkin, Bray, Despres, & Hu, 2010; Yang et al., 2014), stroke (Yang et al., 2014), obesity (Olsen & Heitmann, 2009; Sievenpiper et al., 2012; Te Morenga, Mallard, & Mann, 2012; Wang, Steffen, Zhou, Harnack, & Leupeker, 2013), type 2 diabetes (Basu, Yoffe, Hills, & Lustig, 2013; Cozma et al., 2012; Malik et al., 2010), hypercholesterolemia (Sievenpiper et al., 2009; Welsh et al., 2010), cancer (Larsson, Bergkvist, & Wolk, 2006) and tooth decay (Moynihan & Kelly, 2014).

Adolescents are an essential population to target in order to promote healthy behaviors, such as abstaining from consuming SSB, since habits developed in adolescence tend to persist throughout the lifespan (WHO, 2003). Adolescence is also a critical period where youngsters seek to make their own nutritional choices (Breinbauer & Maddaleno, 2005). To develop effective interventions, it is imperative to identify which factors influence a given behavior in a target population (Bartholomew, Parcel, Kok, Gottlieb, & Fernandez, 2011).

Previous studies found that adolescents aged 11 to 14 frequently cited taste as the main reason for consuming SSB (Broughton, Fairchild, & Morgan, 2016; Krukowski, Conley, Sterling, & Rainville, 2016). Adolescents aged 11 to 14 also mentioned they drank SSB for the energy they provided (Krukowski et al., 2016) and some aged 12 to 17 believed sports drinks to be healthy (Zytnick, Park, & Onufrak, 2016). Parental factors, such as having parents, especially fathers (Harris & Ramsey, 2015), who kept SSB in the home (i.e., home availability) and who drank SSB, influenced SSB consumption among youngsters aged 3 to 13 (Harris & Ramsey, 2015) and 10 to 14 (Bogart et al., 2017; Santiago-Torres, Adams, Carrel, LaRowe, & Schoeller, 2014). Similarly, adolescents aged 12 to 17 were more likely to consume sports drinks if their parents believed these drinks to be healthy and required for hydration (Zytnick et al., 2016). Friends, too, can exert an influence on SSB consumption among adolescents. Indeed, research has shown that adolescents aged 11 to 18 were more likely to consume SSB if their friends consumed these drinks (Bruening et al., 2014).

SSB consumption among adolescents aged 11 to 18 has often been associated with eating at fast-food restaurants (Bruening et al., 2014; Cantor, Breck, & Elbel, 2016), as many of these offer meal combos that include an SSB, such as a soft drink or iced tea. Adolescents' consumption of certain SSB, such as sports and energy drinks, has also been associated with specific contexts, such as playing video games and smoking, while the consumption of sports drinks has been related to moderate- and high-intensity physical activity and organized sports participation among adolescents aged 11 to 18 (Larson, Dewolfe, Story, & Neumark-Sztainer, 2014). Similarly, a study reported that energy drink consumption among adolescents aged 12 to 17 was related to consumption of high-sugar foods, such as candy, chocolate, cookies, cake, frozen desserts and sugary cereals, as well as high-fat foods, such as fried potatoes, fried chicken and potato chips (Williams, Odum, & Housman, 2017). Availability of SSB at school is another factor that can influence SSB consumption. Indeed, it has been shown that adolescents aged 14 to 18 were less likely to consume soft drinks (e.g., soda or pop) on a regular basis if they attended school in a district where policies had been adopted to limit the sale of and access to SSB (Miller, Sliwa, Brener, Park, & Merlo, 2016).

To our knowledge, few studies have used the Theory of Planned Behavior (TPB; Ajzen, 1991) or its updated version, the Reasoned Action Approach (RAA; Fishbein & Ajzen, 2010), to investigate adolescents' beliefs about SSB consumption. A previous study used the TPB to conduct qualitative interviews with adolescents aged 11 to 14 to identify the reasons behind their consumption of SSB (Krukowski et al., 2016). Another study used the TPB to determine actual consumption of SSB among adolescents aged 12 to 18 and to identify the determinants of intention to limit their SSB consumption to less than a cup per day (Riebl et al., 2016). However, no study has used the RAA to investigate French-Canadian adolescents' beliefs about SSB abstinence.

The aim of our study was to fill this gap in the scientific literature by identifying the beliefs about SSB abstinence of adolescents aged 12 to 17 from a French-speaking region in Eastern Canada. This information is necessary to develop evidence- and theory-based interventions aimed at promoting SSB abstinence adapted to adolescents living in a French-Canadian context.

METHODS

STUDY DESIGN AND THEORETICAL FRAMEWORK

This was a qualitative descriptive study informed by the RAA (Fishbein & Ajzen, 2010). According to the RAA, behavior is influenced by behavioral intention and perceived behavioral control (PBC). Intention represents the motivation to engage in a target behavior while PBC refers to a sense of control and the capacity to adopt the behavior. Three factors define intention: 1) attitude (i.e., a subjective analysis of the advantages and disadvantages of adopting a behavior), 2) perceived norm (i.e., the perceived social pressure to engage in a behavior), and 3) PBC. It is worth noting that PBC contributes to explain both behavior and the intention to adopt the behavior. Under the RAA, there are two types of attitude: instrumental or cognitive attitudes, which are factual consequences of adopting a behavior (e.g., useful/useless or healthy/unhealthy), and experiential or affective attitudes, which are emotional consequences of adopting a behavior (e.g., pleasant/unpleasant or interesting/boring) (Fishbein & Ajzen, 2010). Each of these factors (attitude, perceived norm and PBC) is related to a specific set of beliefs: attitude is associated with behavioral beliefs, perceived norm with normative beliefs, and PBC with control beliefs. According to the RAA, variables related to the sociodemographic context of individuals do not directly affect their behavior, but rather have an impact through the beliefs and other determinants of the theory (Fishbein & Ajzen, 2010) (see Figure 1). A meta-analysis of the RAA found that intention and capacity (i.e., PBC) explained 30.9% of the variance in overall health-related behaviors, with intention being the best predictor of behavior, explaining 30.4% of the variance (McEachan et al., 2016). Attitude, perceived norm and capacity (i.e., PBC) explained

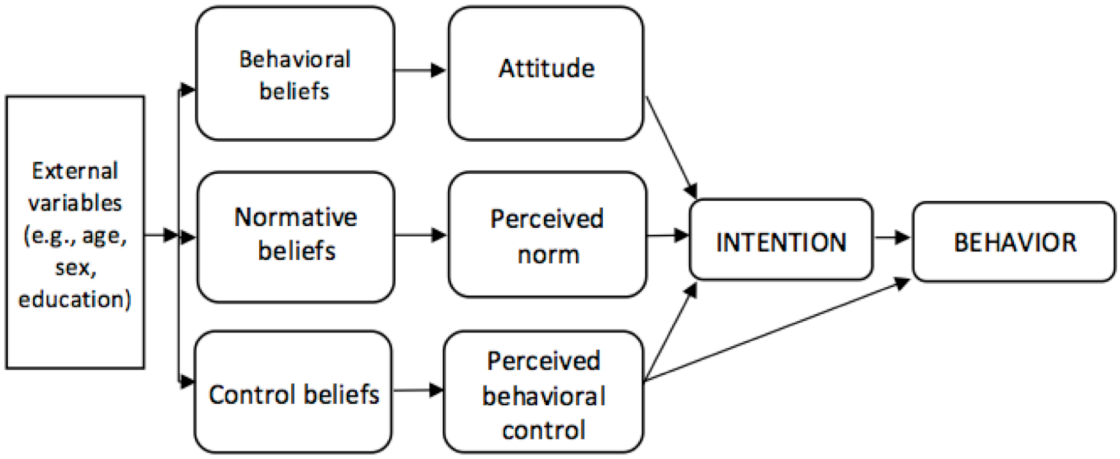

Figure 1. Theoretical framework (adapted from Fishbein & Ajzen, 2010).

58.7% of the variance in intention for different health-related behaviors (McEachan et al., 2016).

Sample and Data Collection

The methodology recommended by the authors of the RAA (Fishbein & Ajzen, 2010) and the approach described by Gagné and Godin (2012) was applied. According to these authors, a sample size of 25 to 30 individuals representative of a study population is sufficient to reach data saturation (i.e., no new ideas elicited). Participants met the three following inclusion criteria: 12 to 17 years of age; fluent in French; and resident of one of the two regions of the province of Quebec targeted by the study. From February to May 2015, semi-structured interviews were conducted with adolescents aged 12 to 17 selected according to pre-established demographic criteria of age, sex and setting (i.e., school, sports arena, outdoor recreation center, and shopping center) in order to ensure a broad representation of this population in two French-speaking regions in Eastern Canada. In each setting, adolescents accompany by a parent were solicited to participate in the interview that lasted about 10 to 15 minutes. Parental consent and adolescent assent were obtained before beginning the interview. The interview was conducted by a nurse experienced in this data collection procedure (DoB), in a quiet area away from the parent, in order to ensure confidentiality. At the end of the interview, the adolescents were offered CA$5 as compensation for their time. The study was approved by the Research Ethics Committee of Université du Québec à Rimouski (CER-84-566, 04-02-2015).

The interview followed a pre-established canvas pre-tested with three adolescents representative of the target population. At the beginning of the interview, the following definition of SSB was given: “Sugar-sweetened beverages are defined as beverages that contain added sugar (e.g., sugar, glucose-fructose, corn syrup, liquid sugar). These include soft drinks (e.g., Coke/Pepsi, Seven Up/Sprite, Orange Crush, Ginger Ale), sports drinks (e.g., Gatorade, Powerade), fruit drinks (e.g., fruit cocktails, fruit punches), energy drinks (e.g., Red Bull, Guru, Monster), vitamin waters, and iced teas.” The adolescent was then asked eight open-ended questions about abstaining from SSB in the next month. The questions addressed the following beliefs about SSB abstinence: behavioral beliefs (i.e., advantages, disadvantages, likes, and dislikes), normative beliefs (i.e., people who would agree or disagree with this behavior), and control beliefs (e.g., barriers and facilitating factors), as recommended by Gagné and Godin (2012). The questions related to each belief category are presented in Table 1.

Table 1
Semi-Structured Interview Questions

Belief categories	Interview questions
Behavioral	• What would be the advantages of abstaining from consuming SSB every day for the next month? • What would be the disadvantages of abstaining from consuming SSB every day for the next month? • What would please you about abstaining from consuming SSB every day for the next month? • What would displease you about abstaining from consuming SSB every day for the next month?
Normative	• Who would approve of you abstaining from consuming SSB every day for the next month? • Who would disapprove of you abstaining from consuming SSB every day for the next month?
Control	• What could help you (actions, conditions or situations) abstain from consuming SSB every day for the next month? • What could prevent you (barriers) from abstaining from consuming SSB every day for the next month?

DATA ANALYSES

Qualitative content analyses of the data were carried out independently by two experts in interview coding (DoB and DS) to identify the most frequently mentioned beliefs influencing SSB abstinence in the next month among adolescents aged 12 to 17. These analyses were performed according to the methodology recommended by Fishbein and Ajzen (2010) and applied the method described by Gagné and Godin (2012) and Sutton et al. (2003). The first step allowed the identification of beliefs in each of the three categories of variables pertaining to the RAA: behavioral beliefs (advantages, disadvantages, likes, and dislikes), normative beliefs (people who agree or disagree with this behavior), and control beliefs (barriers and facilitating factors). This step was performed by listing the different beliefs mentioned by participants in each of the three categories, using the exact wording from the transcribed interviews. The second step consisted of grouping, within each category, similar notions in sets and noting the frequency of mention. The third step allowed to determine the salient beliefs in each category for SSB abstinence. The most frequently mentioned beliefs, using a 75% frequency of mention criterion, were considered as modal salient beliefs among adolescents. Disagreements were resolved by consensus or with the help of a third party (LAVI), when required.

RESULTS

PARTICIPANTS

The sample comprised 30 adolescent boys and girls who completed a semi-structured interview. They had a mean age of 14.5 ± 1.6 years and represented all five grades of high school. The adolescents were recruited at four different settings: sports arena, outdoor recreation center, school, and shopping center. The sociodemographic characteristics of the

sample and information on the data collection settings are presented in Table 2.

Table 2

Sociodemographic Characteristics of the Sample (n = 30)

Variables		*n*	%
Sex	Girl	13	43.3
	Boy	17	56.7
Grade (age)	7th (12-13 years)	6	20.0
	8th (13-14 years)	7	23.3
	9th (14-15 years)	5	16.7
	10th (15-16 years)	6	20.0
	11th (16-17 years)	6	20.0
Setting	Sports arena	6	20.0
	Outdoor recreation center	8	26.7
	School	12	40.0
	Shopping center	4	13.3

Salient Beliefs

The most popular beliefs in each of the three categories (behavioral, normative and control) are presented in Tables 3, 4, and 5, respectively, along with examples of quotes and frequency of mention. The presentation follows the interview canvas.

According to the adolescents' perceptions, abstaining from consuming SSB would be good for their health but this would mean giving up products they liked drinking for the taste. They were also afraid of not having enough energy without the sugar that SSB provided and some thought that certain SSB, such as energy drinks, provided better hydration than water did. Parents and friends were the key social influences when it came to abstaining from consuming SSB, although school staff and trainers could also exert influence. Adolescents mentioned many barriers to SSB abstinence, such as context (e.g., special occasions, eating out, after sports activities), peer influence (i.e., presence of SSB drinkers), SSB advertisements, and urge to drink SSB. Facilitating factors included absence of SSB at home and at school, easy access to water or 100% pure fruit juices, and receiving information about the negative effects of SSB on health.

Discussion

This study identified the salient beliefs of French-speaking adolescents aged 12 to 17 regarding abstaining from SSB every day for the next month. The participants mentioned more advantages (n = 7) to abstaining from consuming SSB than disadvantages (n = 3). After applying the 75% frequency criterion, the number of advantages mentioned was more than twice the disadvantages (69 vs. 32 instances). By far the advantage most frequently mentioned by the adolescents was that SSB abstinence would be good for their health (n = 23 participants). The adolescents also gave specific examples of the health benefits of abstaining from consuming SSB, such as not having ups and downs in terms of energy level, facilitating weight management, avoiding consuming too much sugar, avoiding becoming addicted to SSB, and improving their sleep at night and their concentration at school. The main disadvantage of abstaining from consuming SSB was that the adolescents would have to give up SSB that they liked drinking for the taste. This confirms the results of previous studies that showed that adolescents frequently cited taste as the main reason for consuming SSB such as soda, sweet coffee, energy and sports drinks, sweetened tea and fruit drinks (Krukowski et al., 2016), and sports drinks (Broughton et al., 2016). The adolescents mentioned two other disadvantages. First, SSB abstention would result in having less energy during the day. Second, some of them believed that certain SSB, such as energy drinks, provided better hydration than water.

Table 3

Modal Salient Behavioral Beliefs Associated With SSB Abstinence Among Adolescents

Salient Beliefs	Advantages "Example of quotes"*[sex- participant number, age] (frequency of mention)	Disadvantages "Example of quotes"* [sex-participant number, age] (frequency of mention)
1. I would be in better health	"I am more likely to stay healthy if I don't drink SSB" [boy-2, 13], "I like the idea of not consuming things that harm my health" [girl-30, 15] **(n = 23)**	
2. I would have to give up SSB that I like drinking for the taste		"The idea of abstaining displeases me because I like the taste of SSB " [girl-28, 12] **(n = 18)**
3. I would have less energy during the day	"[Drinking SSB] gives me ups and downs, before a game, this is not good" [girl-3, 14] **(n = 4)**	"Without sugar, I become weaker" [girl-8, 14], "Energy drinks give me an energy boost for a while" [boy-7, 13] **(n = 12)**
4. It would allow me to drink other beverages that are better for my health	"It is useless" [girl-18, 17], "I get better hydration if I just drink water" [girl-26, 17] **(n = 9)**	"Sports drinks hydrate better than water does" [boy-5, 13] **(n = 2)**
5. It would help me manage my weight	"If I don't drink SSB, I will gain less weight" [girl-24, 12], "The corn syrup is not metabolized and it causes obesity" [boy-1, 16] **(n = 10)**	
6. I would avoid consuming too much sugar	"It is a lot of sugar that my body doesn't need" [girl-30, 15], "I will avoid excess sugar in my body" [girl-17, 14] **(n = 8)**	
7. I would avoid becoming addicted to SSB	"A police officer came to school to talk about energy drinks; he told us that we can become addicted to these drinks" [boy-19, 12] **(n = 7)**	
8. It would improve my sleep	"Abstaining from SSB will help me sleep better" [boy-20, 17], "I sleep better if I avoid caffeine" [boy-19, 12] **(n = 4)**	

* Free translation from French

Table 4

Modal Salient Normative Beliefs Associated With SSB Abstinence Among Adolescents

Salient Beliefs	People who would approve "Example of quotes"* [sex-participant number, age] (frequency of mention)	People who would disapprove "Example of quotes"* [sex-participant number, age] (frequency of mention)
1. My parents	"My mom says it is not good for my health to drink SSB" [girl-4, 15] **(n = 25)**	"My father sometimes says try this new drink…" [girl-10, 13] **(n = 2)**
2. My friends	"My friends who drink organic drinks" [boy-16, 13] **(n = 5)**	"My friends because they know I like SSB a lot" [girl-26, 17] **(n = 10)**
3. School staff/coaches	"My teachers" [girl-24, 12], "The school principal" [girl-27, 16] **(n = 4)**	"My coach told me that sports drinks are good to recover after training" [boy-15, 13] **(n = 2)**

* Free translation from French

Table 5

Modal Salient Control Beliefs Associated With SSB Abstinence Among Adolescents

Salient Beliefs	**Barriers** "Example of quotes"* [sex-participant number, age] (frequency of mention)	**Facilitating Factors** "Example of quotes"* [sex-participant number, age] (frequency of mention)
1. Accessibility (e.g., SSB at home, vending machines, not buying SSB)	"If I see an SSB in the fridge, I feel like drinking it" [boy-21, 14], "In the fridge, if I have to choose between a bottle of water and that (SSB), I would take that." [boy-13, 15] **(n = 11)**	"My parents don't buy any so I have to go out to buy some if I want any" [boy-15, 13] **(n = 13)**
2. On special occasions (party with friends, holidays)	"When there is a party with my friends it is hard to refrain" [boy-2, 13], "The first day of holidays I like to drink SSB" [girl-10, 13] **(n = 12)**	
3. If I have easy access to water		"It's easy to drink water if I prepare a bottle of water for my sport" [boy-5, 13] **(n = 9)**
4. Being in the presence of people who drink SSB	"When I see my sister drinking a soft drink, it makes me want to drink one too" [girl-12, 15] **(n = 9)**	
5. If I received more information about the negative effects of SSB on health		"When an ad on Facebook or on TV that says it's not good" [girl-10, 13], "At school they talk about it" [boy-17, 14] **(n = 7)**
6. When I eat at a restaurant	"At fast-food restaurants that include a soft drink with the meal" [boy-1, 16], "At the snack bar, a poutine with milk is not the same " [girl-8, 14] **(n = 6)**	
7. When I do an activity that makes me thirsty (e.g., sports, eating a salty meal)	"After sports, I like to drink iced tea" [boy-14, 15] **(n = 6)**	
8. When I see advertisements that encourage me to drink SSB	"TV ads when I am thirsty make me want to drink SSB" [boy-18, 17] **(n = 5)**	
9. When I really want to drink SSB	"When I feel like it, I drink one" [girl-10, 13], "I want to be able to have one when I feel like it " [girl-14, 15] **(n = 5)**	
10. If it is forbidden at school		"I cannot buy any at the school cafeteria" [boy-16, 13] **(n = 5)**
11. If I have access to 100% pure fruit juices		"To replace SSB with other beverages that are less sweet, like natural juices" [girl-14, 15] **(n = 4)**

* Free translation from French

Previous studies reported that adolescents mentioned drinking SSB for the energy they provided (Krukowski et al., 2016) and some believed that sports drinks were healthy (Zytnick et al., 2016). Some adolescents might have believed that certain SSB were good for hydration because their parents believed so. In this regard, a previous study mentioned that adolescents aged 12 to 17 were more likely to consume sports drinks if their parents believed them to be healthy and necessary for hydration (Zytnick et al., 2016).

As was reported in previous studies, parents (Bogart et al., 2017; Harris & Ramsey, 2015; Santiago-Torres et al., 2014) and friends (Bruening et al., 2014) were the chief influences when it came to abstaining from consuming SSB among adolescents. In the present study, it is interesting to note the discrepancy of opinions about the perception of parents. Adolescents mentioned that their parents, especially their mothers would approve if they abstained from consuming SSB, whereas their fathers would not. Similarly, a previous study found that fathers exerted a heavy influence on children's and adolescents' SSB consumption. More specifically, it showed that paternal consumption of SSB predicted consumption among children aged 3 to 13 (Harris & Ramsey, 2015). This is a factor that needs to be taken into account in interventions promoting SSB abstinence. Moreover, the adolescents in our study thought that friends who often drank SSB would disapprove if they abstained. This reflects the results of a previous study, which reported that adolescents were more likely to consume soda, sports drinks and energy drinks if their friends consumed them as well (Bruening et al., 2014). Some adolescents also mentioned that school staff, such as teachers and the school principal, and their sports coaches could influence their SSB consumption. For example, some coaches told adolescents that sports drinks could improve their athletic performances.

Accessibility of SSB was the chief control belief mentioned by adolescents in our study. It could be both a barrier to and a facilitating factor in SSB abstinence. It was a barrier to SSB abstinence when SSB was readily available at home. This confirms home availability as a factor that can influence adolescents' consumption of SSB, such as soda, sports and fruits drinks (Bogart et al., 2017; Harris & Ramsey, 2015; Santiago-Torres et al., 2014). On the other hand, accessibility of SSB was a facilitating factor when parents did not buy them. Again, this confirms the key role that parents can play in their adolescent's SSB consumption. Adolescents also mentioned that not having access to SSB at school could facilitate abstinence. In this regard, a study reported that adolescents were less likely to consume soft drinks (e.g., soda or pop) on a regular basis if they attended school in a district where policies had been adopted to limit the sale of and access to SSB (Miller et al., 2016). In addition, a recent systematic review of school-based interventions aimed at decreasing SSB consumption among adolescents reported that 90% of legislative and environmental interventions to restrict access to SSB at school were effective in reducing SSB consumption among adolescents (Vezina-Im et al., 2017).

Our study identified certain contexts that favor the consumption of SSB, such as on special occasions, at the restaurant, and after activities that make adolescents thirsty (e.g., after sports or after eating a salty meal). It is possible that adolescents find it harder to abstain from consuming SSB on special occasions since, in this context, they tend to consume high-sugar and high-fat foods. A previous study reported that energy drink consumption among adolescents was related to consumption of high-sugar foods, such as candy, chocolate, cookies, cake, frozen desserts and sugary cereals, and of high-fat foods, such as fried potatoes, fried chicken and potato chips (Williams et al., 2017). Previous studies had already reported that the consumption of SSB, such as sodas, sports drinks, energy drinks and other beverages with added sugar, among adolescents was frequently associated with certain contexts, such as eating at fast-food restaurants (Bruening et al., 2014; Cantor et al., 2016), while the consumption of sports drinks was related to moderate- and high-intensity physical activity and to participation in organized sports (Larson et al., 2014). Our results indicated that providing easy access to alternatives to SSB, such as water, and giving adolescents information about the negative effects of SSB on health could

help them abstain from consuming SSB. In fact, the results of a recent systematic review indicated that providing information about the health consequences of adopting the behavior was the behavior change technique most frequently used in school-based interventions aimed at decreasing SSB consumption among adolescents (Vezina-Im et al., 2017).

Our study presents various strengths and limitations. Its strengths include being based on a theory that has previously been shown to adequately predict health behaviors and the inclusion of a diverse sample of adolescents of both sexes and of different grades, recruited at different settings. Also, efforts were made to ensure the credibility, reliability, confirmability and transferability of the qualitative results (Lincoln & Guba, 1985). Credibility was promoted by the transcription of participants' exact words and the neutral attitude adopted by the interviewer regarding the targeted behaviour in order to decrease the likelihood of a social desirability effect. Reliability and confirmability were supported by the implication of three researchers in data analyses, which provided confidence in the accurate interpretation of the data, as well as by the use of a data file to save primary data. Finally, transferability was ensured by the description of the specific context of the study. Nevertheless, the study results are specific to the population targeted and should not be generalized to all adolescents. Another limitation is that beliefs about SSB were measured for SSB in general. It would have been interesting to identify beliefs about specific types of SSB separately, such as energy drinks, sports drinks, fruit drinks and soft drinks, each of which may be associated with a different set of beliefs.

Conclusion

The results of this preliminary study can be used to guide the development of interventions to promote SSB abstinence among adolescents. In fact, they will be used to develop a questionnaire based on the RAA to identify the determinants of SSB abstinence among adolescents from an eastern French-speaking region of Canada in a transversal correlational descriptive study. The information obtained from this future study will serve as a basis to develop a theory-based intervention aimed at promoting SSB abstinence among adolescents. Accordingly, the key factors related to SSB abstinence will be targeted in order to promote this behavior. To this end, the taxonomy of behavior change techniques developed by Michie et al. (2013) as well as the work of Bartholomew et al. (2011) will be used to identify the best techniques to change the determinants of SSB abstinence. In sum, the results of our study will guide public health authorities, health professionals, including school nurses, and school leaders in developing appropriate interventions to promote SSB abstinence and, consequently, improve the health of adolescents.

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