

Children's consumption of sugar-sweetened beverages

DO ATTITUDE, PARENTING PRACTICES AND PARENTING STRICTNESS HAVE AN INFLUENCE?

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Course Code: YSS-82312

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Abstract

Background: The consumption of sugar-sweetened beverages (SSBs) increases the likelihood of developing overweight in children. This study aimed to estimate the relationship between the attitude of parents towards sugar-sweetened beverages and the consumption of SSBs by their children. Parenting practices mitigating the consumption of SSBs and parenting strictness were explored as underlying factors.

Method: Parents (N=64) of children aged 10-15 completed a questionnaire on education of their child, attitude towards SSBs, parenting practices mitigating the consumption of SSBs, parenting strictness and the consumption of SSBs by their children. Regression analysis was used to predict consumption of SSBs by children from parental attitude towards SSBs, consumption from parenting practices and consumption from parenting strictness.

Results: Mean age of the parents was 46.2 years (SD=5.1) and 78% was female. The mean age of the children was 12.4 (SD=1.7). Most of the children were in primary school (35.4%) or "vwo" (30.8%). The attitude of parents towards sugar-sweetened beverages was positively associated with consumption of sugar-sweetened beverages by children. Parenting practices and parenting strictness were not significantly associated with the consumption of sugar-sweetened beverages, nor with each other.

Discussion: There should be special attention to attitude of parents towards SSBs when reducing the consumption of sugar-sweetened beverages by children.

Inhoudsopgave

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1 Introduction

According to the World Health Organization over 340 million children and adolescents aged 5-19 were overweight or obese in 2016. The rate of overweight children has risen dramatically from just 4% in 1975 to just over 18% in 2016 (World Health Organization (2018, 14 December) 'Obesity and overweight'). Of these overweight children, a quarter is obese, with a significant possibility to develop type 2 diabetes, heart diseases and a variety of other health risks before or during early adulthood (Lobstein, 2004). These health risks will increase even more when aging, when the present childhood obesity passes through to adulthood.

One of the causes of increased body fat is the consumption of sugar-sweetened beverages (SSBs). SSBs are defined as liquids that are sweetened with different forms of sugars that add calories (McGuire, 2011). These drinks contribute to weight gain because of their high added sugar content, low satiety, and potential incomplete compensation for total energy, leading to increased energy intake (Malik, 2010). Added sugars in beverages are also associated positively with children's weight status (Welsh, 2018). Furthermore, regular consumption of SSBs causes excess weight gain and these beverages are unique dietary contributors to obesity and type 2 diabetes (Hu, 2013). High consumption of sugar-sweetened beverages increased the likelihood of obesity in 8-14 year old children (Cantoral, 2016). Reducing the intake of SSBs will have significant impact on the prevalence of obesity and its related diseases, especially type 2 diabetes (Hu, 2013).

Even though it is widely known that the consumption of sugar-sweetened beverages is unhealthy, people keep consuming them. Especially children and young adults still consume them on regular basis. In Australia, daily intake of added sugars are highest amongst adolescents (aged 14-18 years), compared with other age groups and daily consumption of sugar-sweetened beverages is prevalent among adolescents (Hardy et al., 2018). In the US, the highest intake of calories consumed from sugar-sweetened beverages takes place with those aged 12-19 (Rosinger et al., 2017), and 56–85% of children in school consume at least one soft drink daily (Harrington, 2008). Another study found that Dutch children consumed the most SSBs compared to other European countries (Brug et al., 2012). Nowadays, sugar-sweetened beverages are often available at schools; at vending machines or at the cafeteria. Children in The Netherlands can thus choose to drink SSBs during schooltime if they want to. This availability of sugar-sweetened beverages in the adolescents' immediate environment contributes to a higher consumption of these drinks (Vereecken et al., 2005).

When it comes to weight related problems, parents also play a crucial role (Golan, 2004). They provide environments for their children's experience with food and eating, and use certain practices when it comes to the eating behaviour of their children. These environments are important for the development of food preferences, eating styles, patterns of food intake and patterns that form children's weight status (Birch, 2001). Most of the time, parents are responsible for the dietary intake of their children, since they decide which food and beverage choices are available at home. Children are prone to eat foods that are served more often and prefer what has been available at their home (Golan, 2004). There is an association between the eating habits of parents and those of their children. One way they provide a certain food environment is by buying (or not buying) sugar-sweetened beverages for consumption at

home. Whether parents buy or not buy these drinks has something to do with their attitude towards them (van der Horst et al., 2007). If parents do not like sugar-sweetened beverages, they are less likely to buy them for their children. So, the amount of sugar-sweetened beverages parents make accessible for their children at home can influence the amount of consumption by their children (van der Horst et al., 2007). Adolescents whose parents regularly drank soft drinks are 2.88 times more likely to consume soft drinks five or more times per week compared with those whose parents did not regularly drink soft drinks (Grimm, 2004).

Parenting style may influence the effectiveness of parental child-feeding practices (Golan, 2004). Children whose parents conduct a strict parenting style are associated with lower consumption of sugar-sweetened beverages (van der Horst et al., 2007). In this cross-sectional study by van der Horst, secondary school students completed a self-administered questionnaire on among other things their consumption of sugar-sweetened beverages, attitude, food-related parenting practices and the general parenting style dimensions of 'strictness' and 'involvement'. Furthermore, the same study showed that the association between parenting practices and sugar-sweetened beverage consumption was stronger among children who perceived their parents as moderately strict.

We know that sugar-sweetened soft drinks are bad for overall health. We also know that parents have an influence on their children's sugar-sweetened beverage consumption (van der Horst et al., 2007). What we do not know is how the attitude of parents towards SSBs influences the consumption of SSBs of children and whether this works via parenting practices. To increase the effectiveness of interventions aiming to reduce the consumption of sugar-sweetened beverages it is necessary to identify the factors that influence the consumption. Furthermore, it is unknown if parenting style has an influence as moderator on the consumption of SSBs by young adults. In other words, the relationship between attitude of parents towards sugar-sweetened beverages and parenting practices regarding the consumption of SSBs needs to be examined more closely (i), as well as the relationship between parenting practices regarding the consumption of SSBs and the consumption of SSBs by children (ii). Lastly the relationship between attitude and parenting practices may differ between parents who conduct a strict parenting style and parents who are not strict, so the parenting style also needs to be researched (iii).

The aim of this study is to estimate the relationship between the attitude of parents towards sugar-sweetened beverages and the consumption of SSBs of their children outside their home. The following research question is formed; What is the influence of parents' attitude towards sugar-sweetened beverages on parenting practices, and in turn consumption of sugar-sweetened beverages by their children? To get a full answer on this question, another question is asked; Is this influence moderated by the parenting style of strictness? The method that is used in this study is a cross-sectional survey. Surveys will be conducted amongst parents to get an insight in their attitude towards the consumption of sugar-sweetened beverages by their children, the parenting practices regarding SSBs and what they think the consumption of SSBs by their children is. The outcome of this research can help reduce the consumption of sugar-sweetened beverages by children, by educating parents about the influence they have as a parent.

2 Theoretical background

2.1 Attitude towards the consumption of sugar-sweetened beverages

Attitude refers to the degree to which a person has a favourable or unfavourable assessment of the behaviour in question, in this case the consumption of sugar-sweetened beverages (Ajzen, 1991). An attitude can also be seen as the evaluative dimension of a concept (Fishbein & Raven, 1962), through an attitude someone can respond to an object in a consistently favourable or unfavourable manner (cf. Allport, 1935). So, if the object is sugar-sweetened beverages the attitude of parents decides whether they respond positively or negatively towards these beverages. Parents' feeding attitudes and practices shape what kind of food their children get. Their attitudes also control the timing, size and social context of the meals and snacks they are offering to their children. That is why it is important to keep attitude in mind when researching the consumption behaviour of children. Also, former research shows that attitude may be a predictor of the consumption of sugar-sweetened beverages (van der Horst et al., 2007). In these studies it was proven that attitude, together with subjective norm and perceived behavioural control was a significant predictor of intention to drink regular soda (Kassem & Lee, 2004). Subsequently intention is a predictor of behaviour, in this case the behaviour of consuming sugar-sweetened beverages (Ajzen, 1991). Finally, if you have a certain attitude towards a certain subject, this will directly reflect on the practices you have concerning this subject.

2.2 Parenting Practices

Parenting practices are defined as specific behaviours that parents use to socialize their children (Spera, 2005). Parents use different parenting practices for different behaviour. These practices are directly related to the behaviour of their children, for example going to teacher-parent conferences, helping with homework or buying certain types of food and drinks. When parents teach their children to have a healthy lifestyle, they are less prone to let them consume sugar-sweetened beverages. The active buying of soft drinks for the household is also a parenting practice. If parents consume soft drinks regularly, it is more likely that their children consume soft drinks regularly than if parents do not consume soft drinks regularly (Grimm, 2004). Parenting practices operate in the context of parenting style, for example a restrictive parenting style. Perceiving more restrictive parenting practices is associated with lower consumption of SSBs by children (van der Horst et al., 2007). In the study by van der Horst, data were collected at Dutch secondary schools. The subjects were 383 adolescents from first and second grades. They filled in a questionnaire that was based on other approved questionnaires that assessed food and drinks intake and behaviour-specific cognitions, habit strength and variables concerning parenting in adolescent populations. Former studies state that children of parents who express healthier parenting practices towards the consumption of sugar-sweetened beverages by their children are reported to have a lower SSB intake (van de Gaar, 2017).

2.3 Parenting Strictness

Parenting style refers to general patterns of parenting and the emotional climate in which the parents' behaviour is expressed (Golan, 2004). Parenting style refers to parent-child interactions in general, whereas parenting practices are related to particular behaviours, which can be seen in for example food rules. Parenting style has two dimensions: parental strictness and parental involvement. The elements involved with strictness are control, supervision and maturity demands whereas the elements involved with involvement are warmth and acceptance (McCoby, 1983). The interaction between these two dimensions resulted in four distinctive parenting styles; authoritative, authoritarian, neglective, and permissive (Baumrind, 1991). Authoritative parents are both demanding and compassionate. They tend to have high levels of warmth and support, as well as high levels in control and disciplinary limits. Authoritarian parents are demanding and directive, but not compassionate. These parents tend to have a low level of warmth and support. They expect their orders to be obeyed without explanation and give their children an organized environment and a clear set of rules (Tur-Porcar, 2017). Neglective (uninvolved) parenting is characterized by the low levels of warmth and low levels of control. These parents are disengaged and are not supportive and do not give their children an structured environment. Lastly, permissive parenting is characterized by low control and relatively high levels of warmth. These parents are non-traditional and lenient. Parenting style could be very important in the prevention of childhood obesity because it provides the environmental and emotional context for children's growth as well as the context in which specific parenting behaviours are expressed (Rhee, 2008).

In this study the focus will only be on the dimension of parenting strictness, due to time constraints. The amount of strictness parents conduct towards their children has a bigger influence on the behaviour of their children when comparing involvement and strictness. It is hypothesized that the stricter parents are, the less SSBs their children will drink. Unfortunately, research shows that strict parental control practices may have adverse effects. Restriction of certain food practices can contribute to an unhealthy diet by supporting preferences for, and intake of, energy-dense foods high in sugar and fat (Birch, 1998). Also, by restricting access to certain types of food, the attention of the children will be drawn to these restricted foods, while increasing their desire to consume those foods (Fischer, 1999). On the other hand, there are different studies which have yielded the opposite results. For example, adolescents who described their parents as high controlling ate more fruit and fewer unhealthy snacks per day than those who described their parents as low controlling (Kremers et al., 2003). Additionally, more restrictive parenting practices are associated with lower consumption of sugar-sweetened beverages by adolescents (van der Horst et al., 2007).

2.4 Conceptual model and hypotheses

Three hypotheses are formed, as can be seen in figure 1. The first hypothesis concerns the attitude of parents and their parenting practices. It is hypothesized that the attitude of parents towards the consumption of sugar-sweetened beverages is negatively related to the parental practices mitigating the consumption of SSBs by their children (H1). In other words, the more parents have positive thoughts about sugar-sweetened beverages, the less mitigated parenting practices they perform regarding the consumption of SSBs. The second hypothesis concerns the relationship between parenting practices and the consumption of SSBs by

children. It states that parenting practices regarding mitigating consumption of SSBs are positively related to the consumption of SSBs by children aged 10-15 (H2). So the more parents mitigate the consumption of sugar-sweetened beverages by their children, the less SSBs children will consume. The third hypothesis concerns a moderator, parenting strictness. It states that parenting strictness has a positive influence on the relationship between attitude of parents towards sugar-sweetened beverages and parenting practices mitigating the consumption of SSBs (H3). In other words, the more restrictive parents are, the more mitigating parenting practices they will conduct concerning the consumption of sugar-sweetened beverages, including the attitude of parents towards sugar-sweetened beverages.

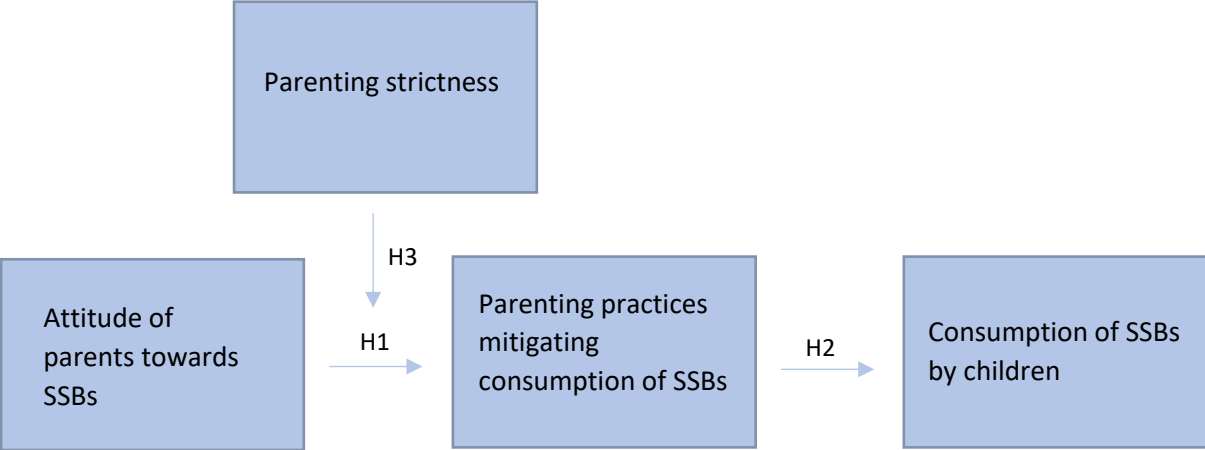


Figure 1. Conceptual framework and hypotheses

3 Method

3.1 Participants & Design

In total, 76 parents with children aged 10-15 started the cross-sectional questionnaire. A cross-sectional study was done, which means that data from a population at a specific point in time is measured by means of a questionnaire. Of those seventy-six parents, thirteen did not finish the questionnaire. The data of 12 of these respondents will not be analysed, the other respondent sufficiently completed the questionnaire. So, data of 64 respondents was suitable to analyse. The average age of the children was 12.4 (SD=2.0), the average age of the parents was 46.2 (SD=5.1). Data was collected for two weeks in February 2019 in different ways. The boards of several high schools in The Netherlands were approached by email which explained the research and asked for their participation. They were asked if they could distribute the web link to the questionnaire amongst the parents of the children who went to the particular high school. This way, all parents would have had the possibility to participate. Unfortunately, none of the high schools were willing to participate. Furthermore, the questionnaire was published in a special Facebook group. The group was called "Onderwijs, Ouders & Kinderen" where some of the members fitted the target group. A Facebook message with the link to the questionnaire was also placed on the personal page of the researcher, this message was shared by other people on Facebook. Additionally, personal relations were used to distribute the questionnaire amongst as many parents as possible. Informed consent was obtained from all participants. The questionnaires were completed on a private computer. The conditions could not be controlled. The self-administered questionnaire was pre-tested for length and clarity, by means of conducting the survey by people not participating in the study.

3.2 Procedure

When the respondents clicked on the weblink, they were sent to a Qualtrics survey. After reading the introduction and giving their consent, the questionnaire begun. The first questions regarded general information (age of the child, grade of the child, education level). Respondents were asked to think about their youngest child in the age category of 10-15. After the general part, a question about attitude towards sugar-sweetened beverages followed. Sugar-sweetened beverages were defined as carbonated soft drinks, water based beverages that contain sugar and sport drinks. Afterwards, questions about parenting practices regarding sugar-sweetened beverages and questions about strictness had to be answered. Subsequently, questions about consumption of sugar-sweetened beverages were asked. The questionnaire ended with some more general items (age respondent, gender respondent). It took about seven minutes to complete the questionnaire and participants could win a gift card for €10 if they provided their email address. They could also leave their email address if they wished to receive emails about other studies of Wageningen University.

3.3 Measures

Attitude. Attitude was assessed with the statement 'I think consuming sugar-sweetened beverages is ..' measured on a five-point scale, ranging from 'bad' to 'very good' (van der Horst et al, 2007).

Parenting practices. Parenting practices towards the consumption of SSBs were assessed by three items; 'I tell my children how many sugar-sweetened beverages they are allowed to consume' 'I tell my children which sugar-sweetened beverages they are allowed to consume' 'My child can always get sugar-sweetened beverages at home themselves' (van der Horst et al., 2007) The last item was re-coded. All items were measured on a five-point scale ranging from 'completely disagree' to 'completely agree'. All three items could be combined ($\alpha=0.67$) into parenting practices.

Parenting strictness. Strictness was assessed by four items. The items were again placed on a five-point bipolar scale ranging from 'completely disagree' to 'completely agree'. The items were; 'I have rules that my child has to follow', 'I tell my child when exactly they should be home', 'I check if my child does his/her homework' (Jackson et al., 1998) and 'I am a strict parent'. The items that measured strictness could not be combined ($\alpha=0.54$).

Consumption. The consumption of sugar-sweetened beverages by the children was assessed by two questions: 'How many times does your child drink sugar-sweetened beverages?', with five answering categories ranging from every day (seven days a week) to never. The second question was 'On the days that your child drinks sugar-sweetened beverages, how many glasses does he/she drink?', with six categories ranging from 0-2 glasses a week to more than 6 glasses a week (van der Horst et al., 2007). These items were first re-coded into numbers and then multiplied with each other so the measure became 'glasses per week' labelled as 'Consumption'.

Characteristics respondents Several questions were asked to get general information about the respondent. First, a question about the education level of the child; "Which level of education is your child in?" with the answer categories primary school, "vmbo", "havo", "vwo" and "other". Secondly, the age of the child was asked where the respondent could choose between 10, 11, 12, 13, 14 or 15 years old. Thirdly, the grade where the child was in was asked; "Which grade is your child in?" with the following answering categories: grade 7 / 8 primary school, first grade high school, second grade high school, third grade high school and other. Furthermore, general information about the respondents themselves was inquired by asking for gender, where they could choose between male and female, and age, where they had to fill in their age.

3.4 Data Analyses

Data were analysed using SPSS. In all analyses a significance level of <0.05 was used, unless stated otherwise. Pearson correlation coefficients were performed to assess correlations between the variables attitude, "I have rules which my child has to follow", "I tell my child when he/she has to be home", "I check whether my child does his/her homework", "I am a strict parent", parenting practices mitigating the consumption of sugar-sweetened beverages and consumption of sugar-sweetened beverages by children. A multiple regression was run to predict parenting practices (dependent) from attitude (independent). Another multiple

regression was run to predict consumption from parenting practices. The initial plan was to conduct a moderator analysis (with parenting strictness as moderator) in order to determine whether the relationship between attitude and parenting practices is moderated by parenting style. However, strictness turned out not to be a reliable construct. Therefore it was decided to instead look at the direct relationship between strictness and consumption.

4 Results

The aim was to assess the influence of attitude of parents towards sugar-sweetened beverages, parenting practices regarding mitigating sugar-sweetened beverages and parenting strictness on the consumption of sugar-sweetened beverages by children.

4.1 Sample characteristics (N=64)

The sample characteristics are presented in table 1. Most of the children of the respondents were in primary school (35.4%) or "vwo" (30.8%). The average age of the children is 12,4 (SD=2.0). 77% of the respondents were female. The average age of the respondents was 46,2 (SD=5.1).

Table 1. *Sample Characteristics*

Age child (mean, SD)	12.4 (1.67)
Grade	
Primary school	23
1st grade	14
2nd grade	8
3rd grade	12
other	7
Educational level	
Primary school	23
Vmbo	8
Havo	7
Vwo	20
Other	6
Age parent (mean, SD)	46.2 (5.1)
Gender parent	
Female	50
Male	13

Table 2 Means, standard deviations and correlations: attitude towards sugar-sweetened beverages, rules, curfew, homework, strict, parenting practices and consumption of SSBs

Variable	M	SD	1	2	3	4	5	6
1. Attitude of parents towards sugar-sweetened beverages	2.22	.600						
2. "I have rules which my child has to follow"	4.08	.650	-.085					
3. "I tell my child when he/she has to be home"	4.09	.729	-.264	.252				
4. "I check whether my child does his/her homework"	3.47	.992	.303	-.082	.136			
5. "I am a strict parent"	3.08	.841	-.034	.337	.273	.108		
6. Parenting practices mitigating the consumption of sugar-sweetened beverages	3.55	.870	-.191	.092	.202	.134	.237	
7. Consumption of sugar-sweetened beverages by children	2.72	2.55	.362	-.025	-.051	.152	.028	-.213

(N=64, P<0.05, bold=sign.)

Table 3. Regression Coefficients (parenting practices mitigating consumption of sugar-sweetened beverages and consumption of sugar-sweetened beverages by children)

Independent Variables	Dependent Variables			
	Parenting Practices		Consumption	
	Beta	t-Value	Beta	t-Value
Attitude of parents towards sugar-sweetened beverages	-.191	-1.534	.320	3.053
"I have rules that my child has to follow"	.001	.009	-.003	-.021
"I tell my child when he/she has to be home"	.137	1.032	-.081	-.594
"I check whether my child does his/her homework"	.095	.744	.158	1.1211
"I am a strict parent"	.189	1.391	.034	.242
Parenting practices mitigating the consumption of sugar-sweetened beverages			-.213	-1.714

(N=64, p<0.05, bold=sign.)

4.2 Descriptives

Table 2 shows the mean scores, standard deviations and correlations of the studied variables. Striking is that none of the respondent thinks that sugar-sweetened beverages are "good" or "very good" ($M=2.22$, $SD=.60$). However, there is a modest positive correlation between consumption of sugar-sweetened beverages and parents' attitude towards sugar-sweetened beverages ($r(64)=.36$, $p<0.01$). Spearman's correlations showed that more variables significantly correlated with each other. There was a low negative correlation between attitude of parents towards sugar-sweetened beverages and whether children have a curfew or not ($r(64)=-.26$, $p<0.05$). A modest positive correlation between whether parents have a curfew for their children and whether they have set rules for them ($r(64)=.25$, $p<0.05$) was detected. Furthermore, there was a modest positive correlation between whether parents check homework and attitude of parents towards sugar-sweetened beverages ($r(64)=.30$, $p<0.05$).

Additionally, there was a low positive correlation between whether parents perceive themselves as strict and whether parents have rules ($r(64)=.34$, $p<0.01$). Lastly, a low positive correlation between whether parents perceive themselves as strict and whether parents tell their child when to come home ($r(64)=.27$, $p<0.05$) was detected.

4.3 Hypotheses Testing

A regression analysis was carried out to test the effect of parents' attitude towards sugar-sweetened beverages on parenting practices mitigating the consumption of sugar-sweetened beverages (H1), the effect of parenting practices mitigating the consumption of sugar-sweetened beverages by children and consumption of SSBs by children (H2), and the effect of parenting strictness on the consumption of sugar-sweetened beverages. Additionally, the effect of parents' attitude towards SSBs on consumption of SSBs by children was tested. In table 3, the regression coefficients are presented. The results indicate that parents' attitude towards sugar-sweetened beverages has a statistically significant positive influence on consumption ($\beta=.320$). Other interactions between the variables were not statistically significant.

5 Conclusion and Discussion

The aim of this study was to investigate whether the attitude of parents towards sugar-sweetened beverages has an influence on the consumption of sugar-sweetened beverages by children, by means of investigating the effect of parenting practices regarding mitigating the consumption of sugar-sweetened beverages and parenting strictness. The present study showed that the more positive parents look at sugar-sweetened beverages, the more sugar-sweetened beverages their children consume. However, "positive" should not be interpreted as easily as it looks since none of the parents thought sugar-sweetened beverages were "good" or "very good". Former studies also found this relationship between attitude and consumption. Attitude was significantly associated with sugar-sweetened beverage consumption (van der Horst et al., 2007) and parental attitudes influence the eating behaviour of children (Scaglioni, Salvioni & Galimberti, 2008).

No relationship was found between attitude and parenting practices (H1), parenting practices and consumption (H2) and between parenting strictness and consumption. It could be that parents do not conduct these kind of practices. One of the reasons for this could be that when the parents were children themselves, the negative health impact of sugar-sweetened beverages was not yet in the picture. Therefore, they did not receive restrictive parenting practices concerning sugar-sweetened beverages, which may lead to them not conducting parenting practices mitigating the consumption of SSBs towards their own children. If this is the case, the questions asked were not familiar with them and they had to think on the spot instead of already knowing in what way they conducted certain parenting practices. The same applies to parenting strictness; or children do not conform with it and/or parents do not conduct parenting strictness as measured in this study.

In the present study, no relationship was found between parenting practices mitigating the consumption of sugar-sweetened beverages and the consumption of sugar-sweetened beverages by children. However, because the children did not fill in the questionnaire themselves, it is unknown whether children act on the parenting practices mitigating the consumption of sugar-sweetened beverages.

Some limitations of the present study need to be addressed. In this study, the tests were done with sixty-four respondents. This number is too low to get a reliable view of the target population. The hypotheses could be tested better if the questionnaires were filled in by children as well as parents. Unfortunately, due to a time constraint this was not possible. None of the items that were combined had a really high Cronbach's Alpha, which means that they are not suited to measure the same outcome. In this study, the decision was made to use less items per outcome measure to keep the questionnaire relatively short. Because the questionnaire could not be very long, only four items were included in the questionnaire to measure parenting strictness, and three items for parenting practices. This limited amount of items could not have covered all possible strictness measures and parenting practices.

Humans tend to present themselves in the best possible light, which can influence the way they fill in questionnaires. Respondents do not often provide an accurate report when it comes to sensitive topics. The result is data that are biased towards what is socially acceptable (Fisher, 1993). In this study, the subject was sensitive. Parents had to say how much sugar-sweetened

beverages their children consume, knowing that these drinks are bad for overall health. So, they may have answered this question not truthfully. Additionally, parents can give the correct amount of consumed sugar-sweetened beverages if children consume them not at their watch.

One of the items that measured strictness was "I check if my child does his/her homework". In the Netherlands, children get homework as soon as they go to high school. A high percentage of the children in this study was enrolled in primary school, and often these children do not have homework that needs to be checked. Thus, this was not a reliable item to measure parenting strictness.

In the study of van der Horst et al., the construct of parenting practices was also used to predict consumption, and parenting style was also used as a moderator. The purpose of this study was to investigate whether perceived parenting practices and parenting style dimensions (strictness and involvement) are associated with adolescents' consumption of sugar-sweetened beverages (van der Horst et al., 2007). They found significant interactions between parenting style and parenting practices, whereas in the present study this interaction was not present. An explanation for this is that in the study of van der Horst et al., children filled in the questionnaire instead of parents. This could give a more reliable outcome on the measured constructs. Also, in this study more items were used to measure one construct in comparison with the present study.

Former research showed that children's SSBs intake varies for different ethnic background. For example, differences were found between children with a Dutch ethnic background and children with a Surinamese or Antillean ethnic background. Children with a Dutch ethnic background showed positive associations between the child's SSB intake and attitude of the parents, parenting practices and parental modelling. For children with a Surinamese or Antillean ethnic background, attitude of the parents towards decreasing the intake of SSBs by their children was the only determinant that showed a significant association with the children's consumption of SSBs (van de Gaar et al., 2017). When it comes to children with a Surinamese or Antillean ethnic background, special attention should be given to the attitude of parents' when it comes to reducing the consumption of SSBs by their children. Other studies showed that parental socioeconomic status also has an effect on the consumption of sugar-sweetened beverages by children, and that this effect is mediated by the soft drink related parenting practices. Children from high socioeconomic status consume 0.42 times the amount of soft drinks of children from lower socioeconomic status (de Coen et al., 2012). These factors should be taken in consideration in future research.

Many measures could be taken in order to prevent or treat weight-related problems, also when it comes to the sugar-sweetened beverages consumption in children. Current study results can inform future interventions by highlighting the importance of attitude of parents towards sugar-sweetened beverages, which is associated with a higher intake of sugar-sweetened beverages by children. One way to highlight the importance of parents' attitude on the consumption of sugar-sweetened beverages by children is by involving parents in public health campaigns. One of these campaigns is "DrinkWater", which stimulates the consumption of water instead of sugar-sweetened beverages during schooltime. If parents get more involved in this campaign, they will less likely give their children sugar-sweetened beverages to drink at

school. This will reduce overall consumption of sugar-sweetened beverages by children. Thus, parents should be considered key players when it comes to the reduction of sugar-sweetened beverages consumption by children. The present study showed that interventions aimed at reducing sugar-sweetened beverages consumption will improve when attitude of parents towards sugar-sweetened beverages gets special attention.

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Appendix

Questionnaire

Beste ouder,

Ten eerste, hartelijk dank voor uw interesse! Deze vragenlijst is bedoeld voor ouders met kinderen tussen de 10 en 15 jaar oud. Dankzij u krijgen we meer inzicht in de consumptie van suikerhoudende dranken door kinderen en welke factoren dit beïnvloeden. Het is belangrijk om hier meer over weten te komen omdat het drinken van suikerhoudende dranken gezondheidsrisico's met zich meebrengt.

Het invullen van de vragenlijst duurt minder dan 7 minuten en onder de deelnemers wordt een tijdschriftenbon ter waarde van 20 euro verloot.

Al uw antwoorden worden anoniem verwerkt. U kunt op elk moment stoppen met deze vragenlijst als u dat wilt. Er zijn geen risico's verbonden aan deelname, uw antwoorden geven ons echter meer inzicht in consumentengedrag.

Voor vragen en/of opmerkingen kunt u mailen naar meyke.kamstra@wur.nl

Met vriendelijke groet,

Meyke Kamstra

Vierdejaarsstudent Bedrijfs- en Consumentenwetenschappen

Wageningen Universiteit

Door op 'ja' te klikken geeft u aan dat u bovenstaande heeft gelezen en ermee instemt: ja, ik doe mee met deze studie.

Denk bij het beantwoorden van de vragen aan uw jongste kind in de leeftijd 10-15 jaar. Wat voor soort onderwijs volgt uw kind?

- basisschool
- vmbo
- havo
- vwo
- anders, namelijk...

Hoe oud is uw kind?

- 10 jaar
- 11 jaar
- 12 jaar
- 13 jaar

- 14 jaar
- 15 jaar

Welke klas zit uw kind?

- groep 7/8 van de basisschool
- 1e klas voortgezet onderwijs
- 2e klas voortgezet onderwijs
- 3e klas voortgezet onderwijs
- anders, namelijk

Wat is uw mening over suikerhoudende dranken?

Met suikerhoudende dranken bedoelen we dranken zoals cola, sinas en aanmaaklimonade, maar ook sappen, energiedrank en sportdranken.

Ik vind het drinken van suikerhoudende dranken... Heel slecht Slecht Neutraal Goed Heel goed

De volgende vraag gaat over uw stijl van opvoeden.

In hoeverre bent u het eens met de volgende stellingen?

Ik heb regels die mijn kind moet volgen Helemaal niet mee eens Niet mee eens Neutraal Mee eens Helemaal mee eens

Ik vertel mijn kind hoe laat hij/zij thuis moet zijn
Ik check of mijn kind zijn/haar huiswerk doet
Ik ben een strenge ouder

In hoeverre gelden thuis de volgende regels wat betreft het drinken van suikerhoudende dranken?

Ik vertel mijn kind welke suikerhoudende dranken hij/zij mag drinken Helemaal niet Niet Neutraal Wel Helemaal wel

Ik vertel mijn kind hoeveel suikerhoudende dranken hij/zij mag drinken Helemaal niet Niet Neutraal Wel Helemaal wel

Mijn kind kan thuis altijd zelf suikerhoudende dranken pakken Helemaal niet Niet Neutraal Wel Helemaal wel

Hoe vaak drinkt uw kind suikerhoudende dranken? Maak een inschatting als u het niet zeker weet.

- Elke dag (7 dagen per week)
- Bijna elke dag (5 of 6 dagen per week)
- Niet elke dag (3 of 4 dagen per week)
- Soms (1 tot 2 dagen per week)
- Nooit

Indien uw kind suikerhoudende dranken drinkt, hoeveel glazen drinkt hij/zij per dag?

Minder dan 1 glas per dag

Ongeveer 1 glas per dag

Ongeveer 2 glazen per dag

Ongeveer 3 glazen per dag

Ongeveer 4 glazen per dag

5 glazen of meer per dag

Wat is uw geslacht?

- Man
- Vrouw

Wat is uw leeftijd?

Als u verder nog opmerkingen hebt voor de onderzoekers, schrijf ze dan hieronder:

Als u kans wilt maken op een VVV-bon ter waarde van €10, laat dan uw e-mailadres achter.

Na de verloting van de bonnen wordt uw mailadres vernietigd.

Aan Wageningen Universiteit worden vaker studies verricht waarvoor wij op zoek zijn naar deelnemers. Mogen wij u hiervoor af en toe (maximaal 1 keer per maand) benaderen per e-mail?

Zo ja, schrijf hieronder uw e-mailadres:

Dit is het einde van de vragenlijst.

Hartelijk dank voor uw deelname.