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Examining the Moderating Effect of Parenting Style and Parental Guidance on Children's Beliefs about Food: A Test of the Parenting Style-as-Context Model

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Research examining the effect of parenting practices on child food consumption has often neglected the role in which global aspects of parenting – such as parenting style – play in shaping children's dietary behaviors. To address this gap, the *parenting style-as-context model* was used to examine the moderating effects of parenting style – defined as the perceived emotional climate communicated to children by their parents – on the association between parental guidance of food consumption and children's beliefs surrounding food. A cross-sectional survey of 1,113 child/adolescent participants between the ages of 9 and 18 was conducted to test the theoretical propositions derived from the *parenting style-as-context model*. Results suggest desirable relationships between different dimensions of parental guidance of food consumption on children's beliefs surrounding foods were stronger among children who were under an authoritative parenting style compared to other parenting styles. The results offer some support for the *parenting style-as-context model* and has theoretical and practical implications for research targeted at understanding the role parents play in inculcating healthy dietary habits among children.

There is increasing recognition that the home environment shape children's eating behaviors (Vaughn et al., 2016). Specifically, parents model food consumption behaviors, determine the types of food available at home, and communicate about food through education and rule-setting (Yee, Lwin, & Ho, 2017). Understanding how parents contribute to children's food preferences is important, as these preferences are developed early in life and can affect individuals' physical wellbeing through their lives (Ventura & Worobey, 2013).

Existing research has highlighted two main ways in which parents influence children's food preferences. First, researchers have sought to understand what types of food parenting practices – defined as specific goal-directed parental behaviors targeted at shaping children's eating behaviors – are associated with various child food consumption behaviors (O'Connor et al., 2017). Second, parenting style – which reflects more global, general, and non-context-specific communication (Darling & Steinberg, 1993, p. 488) – have also been identified and integrated into research examining parental influence on child food consumption to better understand the theoretical mechanisms behind how parents influence children's food consumption (e.g. Hughes, Power, Fisher, Mueller, & Nicklas, 2005; Lopez et al., 2018).

Despite this, extant research in health communication and public health has largely focused on identifying effective food parenting practices, with a lack of studies examining the theoretical linkages between parenting style and food parenting practices in fostering desirable dietary outcomes in children. Building on theoretical foundations in developmental psychology (Darling & Steinberg, 1993), this study aims to test the *parenting style-ascontext model* in the food consumption context, and examine if parenting style moderates the effect of parental guidance – a specific form of food parenting practice – on children's attitudinal, normative, and control beliefs toward both healthy foods such as fruits and vegetables, as well as toward unhealthy foods such as sugar-sweetened beverages (SSB).

The Parenting Style-as-context Model

Generally, socialization researchers have distinguished between three conceptually distinct constructs in examining the effects of parental socialization on children: socialization goals (e.g. encouraging a healthier diet), parenting practices enacted to guide children in a specific context (e.g. active guidance of food consumption), and perceived parenting style (e.g. authoritarian parenting) (Darling & Steinberg, 1993). The following sections include a review of active and restrictive parental guidance – a form of food parenting practice – and parenting style, followed by an explication of the theoretical foundations behind their hypothesized effects.

Communicative Food Parenting Practices: Active and Restrictive Parental Guidance

Myriad food parenting practices have been identified by public health and health communication researchers over the years,

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such as modeling, praise, and availability (e.g. Vaughn, Dearth-Wesley, Tabak, Bryant, & Ward, 2017). Amongst them, and of interest to health communication researchers, are the concepts of *active* and *restrictive* parental guidance, which was built on a conceptual synthesis of existing communication and public health research (Yee, Lwin, & Lau, 2019).

Active parental guidance refers to the degree and intensity of verbal interactions regarding food consumption, and which includes parents' own opinions and evaluation about various foods (e.g. fruits and vegetables are important and nutritious). The practice of active parental guidance about food can include nutrition education, active verbal reasoning, and communicating health beliefs. Meanwhile, *restrictive* guidance refers to the practice of setting limits, restrictions, or rules around food consumption.

Previous research have found that the practice of active and restrictive guidance – under a variety of different nomenclatures – can desirably impact children's food consumption preferences and behaviors, such as attitude, perceived social norm, perceived behavioral control, intention, and consumption of fruits, vegetables, and SSB (e.g. Lwin, Shin, Yee, & Wardoyo, 2017; Musher-Eizenman & Holub, 2007; Van Lippevelde et al., 2013).

Parenting Style as the Child's Perceived Emotional Climate

Beyond parenting practices, developmental psychologists have argued for the importance of a more global aspect of parenting which considers the totality of parenting behaviors toward a child. Researchers have termed this concept *parenting style*, which is defined as "a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent's behaviors are expressed" (Darling & Steinberg, 1993, p. 488). Parenting styles are theorized to consist of two dimensions: responsiveness and demandingness (Baumrind, 1991; Maccoby & Martin, 1983).

Responsiveness broadly refers to how warm, involved, open, emotionally supportive, and autonomy granting parents are, manifesting in parental behaviors that are conducive for the healthy development of self-regulation and individuality. Meanwhile, demandingness refers to parents' degree of maturity demands for the child. These dimensions are then combined to reflect four types of parenting styles: authoritative (parents are high in both responsiveness and demandingness), authoritarian (parents high in demandingness but low in responsiveness), indulgent (parents moderate to high in their responsiveness, but low in demandingness), and uninvolved (parents low in both responsiveness and demandingness, disengaged from their child's life) (Maccoby & Martin, 1983).

While context-specific parenting practices are related to specific socialization goals, parenting styles are aspects of parenting behavior which are not necessarily goal-directed. Since parenting style is not constrained to a behavioral context, it conveys parents' emotional attitude toward the child, rather than toward the behavior of the child. Terming this the *parenting style-as-context model*, Darling and Steinberg (1993) argued that while parenting practices are direct mechanisms of

influence on child socialization outcomes, parenting style "alters the parents' capacity to socialize children by changing the effectiveness of their parenting practices (p. 493)." In other words, parenting style can be understood as a moderating variable which interacts with context-specific parenting behaviors in influencing child behavior (Spera, 2005). As Koerner and Fitzpatrick (2006) argue, "behavior that is functional in the context of one family type might be dysfunctional in the context of another family type, and vice versa (p. 59)."

Theoretical Justifications for the Moderating Influence of Parenting Style

There are several proposed theoretical reasons for this. First, it is argued that parenting style transforms the nature of the interaction between parent and child, such that parenting practices employed by authoritative parents are qualitatively different from those employed by other types of parents (Darling & Steinberg, 1993). One example is that the exertion of *control* is qualitatively different between authoritative and authoritarian parents. While both authoritative and authoritarian parents are highly demanding, researchers have argued that demandingness can be qualitatively different in that authoritative parents exhibit *behavioral control*, while authoritarian parents exhibit *psychological control* (Barber, 1996; Baumrind, 1989; Steinberg, Elmen, & Mounts, 1989).

Psychological control is characterized by the withdrawal of affection, appeals to pride and guilt, personal attacks, and shaming, leading to the manipulation of the relationship between parent and child in order to exert control over the child's thought processes and behavior (Barber, 1996). Meanwhile, behavioral control refers to pressures to conform to rules and regulations. This can manifest in the style in which certain parenting practices are enacted by parents. For example, in the context of this study, psychologically controlling restrictive guidance might include parents saying that a child is too fat, and hence need to cut down in sugary drink consumption. If a child breaks those rules, a psychologically controlling parent might withdraw affection and induce guilt. Meanwhile, restrictive guidance absent of psychological control might involve parents appealing to the rules that have been set and focus on how it is important to follow the rules that have been set. Hence, while psychological control may foster negative developmental outcomes, behavioral control may help parents better achieve certain socialization goals (Darling & Steinberg, 1993).

Second, it is argued that authoritative parenting might encourage children to be more receptive to parental efforts which are targeted at shaping their values, beliefs, and attitudes (Darling & Steinberg, 1993). The authoritative parent's respect for the child, comfort in their authority, and their recognition of the child's separateness and capacity to behave autonomously, is posited to positively affect the child's willingness to be socialized by his or her parents. In other words, authoritativeness can increase the effectiveness of parenting practices because children of authoritative parents are more open to the socialization attempts by parents (Darling & Steinberg, 1993).

In the context of food consumption, a small number of studies have shown that food parenting practices are more

effective when conducted in positive parenting styles (e.g. Ray, Kalland, Lehto, & Roos, 2013; Sleddens et al., 2014; Van Der Horst et al., 2007). For example, Lessard, Greenberger, and Chen (2010) found that persuasion can have opposite effects depending on whether the parent is perceived to be high or low in parental warmth. They further argued that "the emotional tone of the parent-adolescent relationship may play a crucial role in modulating how adolescents respond to parental attempts to influence their dietary habits (p. 75)." Another study found that the effects of parenting practices on weight status was most effective among children of authoritative mothers (Tung & Yeh, 2014). Despite the theoretical importance of parenting style, and recent interest and emphasis on the role of general parenting style on children's food consumption (Kiefner-Burmeister & Hinman, 2020), there is a paucity of research which examines the interacting influence of parenting styles and practices on child food beliefs. (Yee et al., 2017).

Based on the literature review, we can postulate that the effects of both active and restrictive guidance on children and adolescent attitudinal, normative, and control beliefs in three food consumption contexts (toward consuming fruits, vegetables, and SSB) are stronger when they are employed by a parent perceived to be authoritative, compared to parents who are perceived to be authoritarian, indulgent, or uninvolved, manifesting in the following hypotheses:

H1: The *positive* association between active parental guidance and (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming fruits is moderated by perceived parenting style, such that their relationships will be stronger among children who perceived an authoritative parenting style (compared to children who perceived an authoritatian, indulgent, or uninvolved parenting style).

H2: The *positive* association between restrictive parental guidance and (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming fruits is moderated by perceived parenting style, such that their effects will be stronger among children who perceived an authoritative parenting style.

H3: The *positive* association between active parental guidance and (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming vegetables is moderated by perceived parenting style, such that their effects will be stronger among children who perceived an authoritative parenting style.

H4: The *positive* association between restrictive parental guidance and (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming vegetables is moderated by perceived parenting style, such that their effects will be stronger among children who perceived an authoritative parenting style.

H5: The *negative* association between active parental guidance on (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming SSB is moderated by perceived parenting style, such that their effects will be stronger among children who perceived an authoritative parenting style. **H6**: The *negative* association between restrictive parental guidance on (a) attitude, (b) perceived norms, and (c) perceived behavioral control toward consuming SSB is moderated by perceived parenting style, such that their effects will be stronger among children who perceived an authoritative parenting style.

Method

To test the hypotheses, an in-person computerized selfadministered survey with a large-scale sample of 1,113 elementary and high school students aged between 9 and 18 (M = 12.56, SD = 1.77) was conducted. As this is a secondary analysis of the dataset reported in Yee, Lwin, and Ho (2020), a full description of the participant characteristics, study procedures, and ethics board approval details for this study can be found there.

Measures

Active and restrictive guidance of food consumption was measured using the active guidance, prevention-focused restrictive guidance, and promotion-focused restrictive guidance subscales of the Active and Restrictive Parental Guidance Questionnaire (PARQ; Yee et al., 2020). Seven items measured active parental guidance on five-point scales, which asked participants how much they agree to statements describing how often their parents provided verbal explanations and conveyed opinions about why certain foods are better for them, with 1 being "Strongly Disagree" and 5 being "Strongly Agree." Seven items measured restrictive parental guidance (preventive) on five-point scales, which asked participants how much they agree to statements describing how often their parents set rules which prevented them from consuming SSB. Finally, four items measured restrictive parental guidance (promotive) on five-point scales, which asked participants how much they agree to statements describing how often their parents set rules about consuming a higher number of fruits and vegetables.

Perceived parenting style was measured using an adapted version of the 17-item Authoritative Parenting Index (API; Jackson, Henriksen, & Foshee, 1998), an established measure of perceived parenting style among children as young as fourth-grade. Nine items measured *parental responsiveness* on five-point scales, which asked participants how much they agree to statements describing how responsive (or non-responsive) their parents are to them across various general contexts, with 1 being "Strongly Disagree" and 5 being "Strongly Agree." Seven items measured *parental demandingness* on five-point scales, which asked participants how much they agree to statements describing how demanding their parents are toward them across various general contexts, with 1 being "Strongly Disagree" and 5 being "Strongly Disagree" and 5 being "Strongly Disagree" and 5 being "Strongly Agree." Table 1 details the descriptive statistics from the PARQ and API.

A median split technique was utilized to assign participants to the four different parenting style types. This involved dichotomizing both the responsiveness and demandingness scores, and then assigning participants to the four different parenting types based on their relative placements on these dimensions. Children who placed above the median on both responsiveness and demandingness were categorized to be under authoritative parenting. Children who placed above the median on responsiveness but below the median on demandingness were assigned as being under indulgent parenting. Likewise, children who placed below the median on responsiveness but above the median on demandingness were assigned as being under indulgent parenting. Likewise, children who placed below the median on responsiveness but above the median on demandingness were assigned as being under authoritarian parenting, while children who placed below the median on both dimensions were assigned as being under uninvolved parenting. In total, the number of children under authoritative, indulgent, authoritarian, and uninvolved parenting were 373 (33.5%), 190 (17.1%), 264 (23.7%), and 286 (25.7%) respectively.

Attitude, perceived norms, and intention toward consuming fruits/vegetables/SSB were measured by asking participants to rate how much they agree with statements indicating how positive or negative they felt about fruits/vegetables/SSB, their perceived norms toward consuming fruits/vegetables/ SSB, and their perceived behavioral control toward each respective food category. These were all measured on fivepoint scales, with 1 being "Strongly Disagree" and 5 being "Strongly Agree." Three statements per food category were utilized to measure their attitude, five statements per food category were used to measure their perceived norm, and four items per food category were utilized to measure their perceived behavioral control toward consuming fruits/vegetables/ SSB. These items were developed using guidelines from Fishbein and Ajzen (2010). The Cronbach's alpha for all the latent measures were above .70, indicating acceptable reliability.

Analytical Approach

To test the hypotheses, the *R* package, *MeMoBootR*, was utilized to (1) run moderation analyses based on hierarchical multiple regression, and (2) further probe moderation effects with simple slopes analyses when interaction terms were statistically significant (Buchanan, 2018). As parenting style is a four-level multi-categorical moderating variable, it was dummy coded, resulting in three dummy variables, with authoritative parenting being used as the reference category. Last, significant interaction effects were plotted using the *R* package, *interactions*, to visually examine the significant moderation effects identified (Long, 2021). As the hypotheses pertain only to the interaction effects, all significant main effects are reported as footnotes in each section.

Results

First, bivariate correlations between parenting styles and the three subscales in the PARQ were calculated to ensure that the measures were not isomorphic (See Table 2). Next, mean scores and standard deviations for all the outcome variables were calculated by parenting style (See Table 3). Finally, hier-archical multiple regressions which included parental guidance, parenting style, their interaction terms, as well as child age and gender as covariates, were conducted to test H1 to H6.

Fruit Consumption

To test **H1**, age, gender, active parental guidance, parenting style, and their interaction terms, were included in a hierarchical multiple regression to predict fruit consumption attitudes, perceived norms, and perceived behavioral control. The variables accounted for 10.09% of the variance in attitude toward consuming fruits (F(9, 1103) = 13.76, p < .001), 16.83% of the variance in perceived norms toward consuming fruits (F(9, 1103) = 24.79, p < .001), and 7.99% of the variance in perceived behavioral control toward consuming fruits (F(9, 1103) = 10.65, p < .001).¹

First, there were no significant interaction effects between parenting style and parental guidance on attitude toward consuming fruits. For perceived norms toward consuming fruits, active guidance by authoritarian parenting versus authoritative parenting (b = -.22, p < .01), by uninvolved versus authoritative parenting (b = -.22, p < .01), and by indulgent versus authoritative parenting (b = -.18, p < .05) were significant. Simple slopes analysis revealed that active guidance was more predictive of perceived norms toward consuming fruits among children under authoritative parents (b = .50, p < .001) compared to those under uninvolved (b = .26, p < .001), indulgent (b = .31, p < .001), and authoritarian parents (b = .28, p < .001).

Regarding perceived behavioral control toward consuming fruits, active guidance by authoritative versus indulgent parenting was significant (b = -.23, p < .01). The simple slopes analysis showed that active guidance was significantly related to perceived behavioral control toward consuming fruits for children under authoritative (b = .28, p < .001), authoritarian (b = .21, p < .001), and uninvolved parents (b = .23, p < .001), but not for children under an indulgent parenting style (b = .03, p = .65). These findings offer partial support for H1.

In the test for **H2**, age, gender, promotion-focused restrictive parental guidance, parenting style, and their interaction terms accounted for 8.59% of the variance in attitude toward consuming fruits (F(9, 1103) = 11.52, p < .001), 13.16% of the variance in perceived norms toward consuming fruits (F(9, 1103) = 18.57, p < .001), and 5.85% of the variance in perceived behavioral control toward consuming fruits (F(9, 1103) = 5.77, p < .001).²

¹Significant main effects were found for active parental guidance and attitude toward consuming fruits (b = .20, p < .001), perceived norms toward consuming fruits (b = .49, p < .001), and perceived behavioral control toward consuming fruits (b = .25, p < .001). Uninvolved and authoritarian parenting styles were also significantly related to attitude toward consuming fruits (b = -.19, p < .01; b = -.13, p < .05) compared to an authoritative parenting style. For the covariates, females were more likely to hold positive attitude (b = .21, p < .001) and perceived behavioral control toward consuming fruits (b = .14, p < .001) and perceived behavioral control toward consuming fruits (b = .14, p < .001).

²Significant main effects were found for the relationship between promotion-focused restrictive guidance and attitude (b = .08, p < .05) and perceived norms toward consuming fruits (b = .25, p < .001). In this model, uninvolved and authoritarian parenting style were significantly related to attitude (b = -.30, p < .001; b = -.24, p < .001), perceived norms (b = -.31, p < .001; b = -.16, p < .05), and perceived behavioral control toward consuming fruits (b = -.24, p < .001; b = -.21, p < .01), when compared with authoritative parenting style.

Parenting Style-as-Context and Children's Food Beliefs

Table 1. Descriptive statistics for the PARQ and API

	М	SD	α/r
Active Parental Guidance My parents discuss with me why it's important to	3.44 3.39	.97 1.23	.92
eat healthy foods My parents explain to me why I should eat more or loss of a particular food	3.70	1.09	
My parents discuss with me about the health benefits of a food	3.48	1.17	
My parents discuss with me the importance of eating a variety of foods	3.45	1.15	
My parents explain to me the effects of different nutrients (e.g., Vitamin C, calcium)	3.12	1.21	
My parents explain to me why some foods like sweet foods/drinks serve no purpose to my body	3.43	1.24	
My parents explain to me why it is important to have a balanced diet	3.51	1.18	
Restrictive Guidance (Preventive)	3.10	1.09	.92
If I had some sweet drinks already, my parents would tell me I can't have it anymore.	3.23	1.34	
My parents set limits to how much sweet drinks I can drink	3.32	1.34	
When my parents give me a sweet drink, they tell me I can only have one	2.98	1.35	
My parents limit the amount of sweet drinks I drink	3.09	1.31	
My parents limit opportunities for me to drink sweet drinks	3.16	1.32	
My parents limit how often sweet drinks are in the home	2.79	1.33	
allowed to consume	3.16	1.35	00
My parents insist that I must ast vagatables during	3.50	1.11	.89
meals with them	3.00	1.27	
My parents give me runs and makes me eat them My parents give me vegetables during meals and makes me eat them	3.54 3.54	1.27	
My parents insist I must finish my vegetables	3.54	1.30	
Parental responsiveness	3.36	.71	.80
My parents are always telling me what to do (R)	2.59	1.04	
My parents make rules without asking what I think (R)	3.14	1.29	
My parents make me feel better when I am upset	3.4/	1.20	
My parents are too busy to talk to me (R)	3.54	1.10	
My parents like major the way I am	3.43 2.71	1.10	
My parents tell ma when I do a good job on things	3./1	1.12	
My parents want to hear about my problems	2.52	1.11	
My parents are plaged with how I behave	2.33	1.10	
Parental domandingnoss	3.14	1.00	73
My parents have rules that I must follow	3.41	1 1 9	.13
My parents tall me the time I must come home	3.32	1.10	
My parents where I tell them where I am going	4.03	1.10	
My parents make sure I go to bed on time	3 40	1 25	
My parents ask me what I do with friends	3.40	1.23	

⁽*Continued*)

Table 1. (Continu	ued)
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	М	SD	α/r
My parents know where I am after school	3.61	1.23	
My parents check to see if I do my homework	2.99	1.32	

There were no significant interaction effects between promotion-focused restrictive parental guidance and parenting style on the three hypothesized outcomes in the context of fruit consumption, leading to a rejection of **H2**.

Vegetables Consumption

For H3, age, gender, active parental guidance, parenting styles, and their interaction terms accounted for 8.62% of the variance in attitude toward consuming vegetables (F(9, 1103) = 11.56, p < .001), 15.54% of the variance in perceived norms toward consuming vegetables (F(9, 1103) = 22.55, p < .001), and 9.67% of the variance in perceived behavioral control toward consuming vegetables (F(9, 1103) = 13.11, p < .001).³

For attitude toward consuming vegetables, active guidance by uninvolved (b=-.21, p<.01) and indulgent (b=-.20, p<.05) versus authoritative parenting styles was statistically significant. Simple slopes analysis revealed that active guidance was significantly related to attitude for children under an authoritative (b=.30, p<.001) and authoritarian parenting style (b=.19, p<.001), but not for children under uninvolved (b=.08, p=.17) and indulgent (b=.09, p=.14) parenting styles. Examining Figure 1, we can see that active guidance had a positive association with attitude toward vegetables consumption among children with authoritative and authoritarian parents but not for those with indulgent and uninvolved parents.

For perceived norms toward consuming vegetables, active guidance by uninvolved (b = -.26, p < .001) and indulgent (b = -.21, p < .05) versus authoritative parenting styles was statistically significant. Simple slopes analysis revealed that active guidance had a stronger association with perceived norms toward consuming vegetables for children under an authoritative (b = .45, p < .001) and authoritarian (b = .31, p < .001) parenting style, compared to those under an uninvolved (b = .17, p < .01) and indulgent parenting style (b = .23, p < .001).

For perceived behavioral control toward consuming vegetables, active guidance by indulgent versus authoritative parenting style was statistically significant (b = -.26, p < .05). Simple

³Significant main effects were found for active parental guidance and attitude (b = .28, p < .001), perceived norms (b = .43, p < .001), and perceived behavioral control (b = .32, p < .001) toward consuming vegetables. Uninvolved parenting style was also significantly related to attitude (b = -.26, p < .001), perceived norms (b = -.26, p < .001), and perceived behavioral control (b = -.25, p < .01) toward consuming vegetables, when compared to authoritative parenting. Authoritarian parenting style was significantly related to perceived norms (b = .16, p < .05) when compared with authoritative parenting. For the covariates, females were more likely to hold more positive attitude (b = .19, p < .001), perceived norms (b = .24, p < .001) toward consuming vegetables.

Variable	1	2	3	4	5	6	7	8
Age	1							
Gender $(2 = F)$	02	1						
Authoritative	06*	01	1					
Indulgent	.00	.01	32***	1				
Authoritarian	.01	.01	40***	25***	1			
Uninvolved	.06	02	42***	27***	33***	1		
Active Guide	05	.01	.31***	.02	03*	33***	1	
Restrict (Pro)	.00	.02	.13***	07*	.13**	21***	.40***	1
Restrict (Pre)	19***	.00	.17***	06	.11**	24***	.42***	.43***

Table 2. Zero-order correlations between age, gender, parenting style, and parental guidance

Note: **p* < .05, ** *p*< .01, *** *p*< .001

 Table 3. Mean scores of outcome variables by parenting style

Parenting Style	Attitude (Fruits)		SN (Fruits)		PBC (Fruits)	
6	Μ	SD	М	SD	Μ	SD
Authoritative	4.36	.73	3.79	.83	4.11	.80
Indulgent	4.30	.72	3.62	.88	4.12	.82
Authoritarian	4.15	.75	3.61	.85	3.92	.81
Uninvolved	3.93	.94	3.32	.90	3.81	.98
	Attitude (Veg)		SN (Veg)		PBC (Veg)	
	М	SD	М	SD	М	SD
Authoritative	4.19	.86	3.96	.87	4.00	.93
Indulgent	4.15	.87	3.91	.84	4.02	.94
Authoritarian	4.04	.89	3.93	.88	3.91	.91
Uninvolved	3.71	1.08	3.42	.96	3.53	1.12
	Attitude (SSB)		SN (SSB)		PBC (SSB)	
	М	SD	Μ	SD	М	SD
Authoritative	2.75	1.18	2.63	1.14	3.23	1.20
Indulgent	2.81	1.08	2.69	1.06	3.58	1.17
Authoritarian	2.93	1.05	2.84	1.04	3.37	1.07
Uninvolved	2.98	1.11	2.86	1.02	3.36	1.02

slopes analysis revealed that active guidance was significantly related to perceived behavioral control for children under an authoritative (b = .34, p < .001), uninvolved (b = .17, p < .05), and authoritarian style (b = .22, p < .001) but not for children under an indulgent parenting style (b = .08, p = .28). These findings offer partial support for H3.

For H4, age, gender, promotion-focused restrictive parental guidance, parenting style, and their interaction terms accounted for 9.01% of the variance in attitude toward consuming vegetables (F(9, 1103) = 12.14, p < .001), 17.65% of the variance in perceived norms toward consuming vegetables (F(9, 1103) = 26.26, p < .001), and 11.04% of the variance in



Figure 1. Interaction effect between active guidance and parenting style on attitude toward consuming vegetables.

perceived behavioral control toward consuming vegetables (F (9, 1103) = 15.21, p < .001).⁴

As in our test of H2, there were no significant interaction effects between promotion-focused restrictive parental guidance and parenting style on the three hypothesized outcomes in the context of vegetable consumption, leading to a rejection of **H4**.

SSB Consumption

Age, gender, active parental guidance, parenting style, and their interaction terms accounted for 4.79% of the variance in attitude toward consuming SSB (F(9, 1103) = 6.17, p < .001), 3.09% of the variance in perceived norms toward consuming SSB (F(9, 1103) = 3.91, p < .001), and 2.85% of the variance in perceived behavioral control toward consuming SSB (F(9, 1103) = 3.60, p < .001).⁵

For the interaction effects, active guidance by uninvolved parenting style versus authoritative parenting style was significant for attitude (b = .23, p < .01), perceived norms (b = .25, p < .01),

and perceived behavioral control (b = .28, p < .01) toward consuming SSB. Simple slopes analysis revealed that active guidance was associated with less favorable attitude toward consuming SSB for children under authoritative (b = -.22, p < .05), indulgent (b = -.16, p < .05), and authoritarian parents (b = -.15, p < .05), but not for those under uninvolved styles (b = -.02, p = .76). Similarly, active guidance was predictive of perceived norms toward consuming SSB among children under an authoritative parenting style (b = -.17 p < .05), but not for those under an uninvolved (b = .04, p = .55), indulgent (b = -.04, p = .62), and authoritarian parenting style (b = -.13, p = .05). Interestingly, while active guidance had no significant association with perceived behavioral control for children under authoritative parenting (b = -.09, p = .24), it had a *positive* and significant relationship with perceived behavioral control under an uninvolved parenting style (b = .13, p < .05). These findings offer some support for H5.

Meanwhile, age, gender, prevention-focused restrictive parental guidance, parenting style, and their interaction terms accounted for 5.47% of the variance in attitude toward

⁴Significant main effects were found between promotion-focused restrictive guidance and attitude (b = .18, p < .001), perceived norms (b = .30, p < .001), and perceived behavioral control (b = .23, p < .01) toward consuming vegetables. Uninvolved parenting style was significantly and negatively related to attitude (b = -.35, p < .001), perceived norms (b = -.38, p < .001), and perceived behavioral control (b = -.34, p < .001) toward consuming vegetables when compared with authoritative parenting. Additionally, authoritarian parenting style was significantly related to attitude toward consuming vegetables (b = -.20, p < .01) when compared with authoritative parenting.

⁵Significant main effects were found between active parental guidance and attitude (b = -.24, p < .01), perceived norms toward consuming SSB (b = -.20, p < .01). Indulgent parenting style positively and significantly predicted perceived behavioral control toward consuming SSB (b = .30, p < .01). For the covariates, girls tended to have lower attitude (b = -.20, p < .001) and perceived norms (b = -.18, p < .01) toward consuming SSB. Age was also significantly related to perceived norms (b = .02, p < .05) and perceived behavioral control (b = .02, p < .05) toward consuming SSB.

consuming SSB (F(9, 1103) = 7.09, p < .001), 3.47% of the variance in perceived norms toward consuming SSB (F(9, 1103) = 4.40, p < .001), and 5.42% of the variance in perceived behavioral control toward consuming SSB (F(9, 1103) = 7.03, p < .001).⁶

For the interaction effects, prevention-focused restrictive guidance by uninvolved parenting style versus authoritative parenting style was significant for attitude (b = .14, p < .05), perceived norms (b = .18, p < .05), and perceived behavioral control (b = .28, p < .001) toward consuming SSB. Simple slopes analysis revealed that prevention-focused restrictive guidance was significantly related to attitude, perceived norms, and perceived behavioral control toward consuming SSB for children under an authoritative parenting style (b = -.18, p < .001; b = -.11, p < .05; b = -.25, p < .001) and authoritarian style (b = -.15, p < .001) p < .01; b = -.17, p < .01; b = -.18, p < .01), but not for those under an uninvolved parenting style (b = -.05, p = .23; b = .00, p = .94; b = -.04, p = .48). These were mixed for indulgent parenting, with restrictive guidance showing a significant relationship with children's attitude toward consuming SSB (b = -.17, p < .01), but not perceived norms and behavioral control (b = -.03, p = .68; b = -.16, p = .05), As we can see from Figure 2, restrictive guidance had a stronger association with perceived behavioral control toward SSB consumption among children with authoritative parents but not for those with uninvolved parents. These findings offer some support for H6.

Discussion

The objective of this study was to better understand if a child's perceived emotional climate would moderate the influence of parental guidance on a child's beliefs different kinds of food. The results offer some support for the theoretical proposition that certain parenting practices are more effective in achieving socialization goals when they are expressed in a developmentally healthy emotional climate, as postulated by the *parenting style-as-context model* (Darling & Steinberg, 1993). Table 4 summarizes the results of this study.

First, the results suggest that active guidance could be more effective in shaping normative and control beliefs toward fruit consumption when it is practiced among authoritative parents. Active guidance under an authoritative parenting style was also more strongly associated with children's attitudinal, normative, and control beliefs toward consuming vegetables, compared to children under uninvolved and indulgent parenting styles. Likewise, active guidance was found to be significantly and negatively related to attitude and perceived norms toward consuming SSB for children under an authoritative parenting style A. Z. H. Yee

compared to those under an uninvolved style. These findings suggest that parents' attempts at persuading children to eat healthier through the active communication is more likely to be accepted by children when parents are not only generally supportive, warm, responsive, but also when they show a high demand for maturity.

One interesting finding was that active guidance under an uninvolved parenting style was *positively* correlated with perceived behavioral control toward consuming SSB compared to authoritative and other parenting styles (see Figure 3). In other words, active guidance under an uninvolved parenting style was associated with greater control beliefs. This corresponds with previous research, which have suggested that persuasion attempts in close relationships can lead to negative or positive emotions depending on the nature of the relationship between the persuader and their target (Lessard et al., 2010; Lewis, Butterfield, Darbes, & Johnston-Brooks, 2004). Lessard et al. (2010) argued that persuasion attempts might generate positive emotions when a target individual feels that the persuader sincerely cares about their health but could generate negative emotions if the quality of relationship is not high. These negative emotions arising from persuasion attempts could then manifest in reactance among individuals, which might result in greater motivation to resist such attempts (Brehm & Brehm, 1981; Dillard & Shen, 2005). It is possible that children with uninvolved parents react negatively to active guidance and attempts at persuasion and education strengthens rather than weakens the belief that they could consume SSB if they wanted to.

Next, the effect of promotion-focused restrictive guidance was not significantly different across all the measured contexts. One potential reason for this unexpected finding could be due to the median split method in which we separated the sample into the four different categories of parenting style. The median split method meant that every participant was assigned a parenting style, even those with middling responsiveness and demandingness scores. Instead of a median split, some researchers have used a tertile placement method to assign participants to the four different parenting types (Jackson et al., 1998; Rothrauff, Cooney, & An, 2009; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). This involved trichotomizing respondents' responsiveness and demandingness scores, and then assigning participants to the parenting style types based on their tertile placements on those dimensions. This would result in half the sample being excluded but provide a "purer" representation of the four parenting styles, as the participants included in the analyses would be distinctly characterized by high or low responsiveness and demandingness scores. Indeed, when we ran the analyses using the tertile split method (n = 520), promotion-focused restrictive guidance had a significantly higher correlation with attitude toward consuming vegetables under an authoritative compared to an authoritarian style (interaction effect: b = -.23, p < .05). Similarly, promotion-

⁶Significant main effects were found between prevention-focused restrictive guidance and attitude (b = -.19, p < .001), perceived norms (b = -.16, p < .01), and perceived behavioral control (b = -.30, p < .001) toward consuming SSB. Uninvolved and authoritarian parenting styles were significantly associated with attitude (b = .19, p < .05; b = .16, p < .05) and perceived norms (b = .19, p < .05; b = .16, p < .05) and perceived norms (b = .19, p < .05; b = .16, p < .05) and perceived norms (b = .19, p < .05; b = .10, p < .05), toward consuming SSB when compared with authoritative parenting. Indulgent parenting style was significantly associated with perceived behavioral control toward consuming SSB when compared with authoritative parenting (b = .24, p < .05).



Figure 2. Interaction effect between restrictive guidance and parenting style on perceived behavioral control toward consuming SSB.

focused restrictive guidance also had a significantly higher correlation with perceived norms toward consuming fruits under an authoritative compared to an authoritarian style (interaction effect: b = -.23, p < .05).⁷ This supports the proposition that the nature and use of rules could reflect a greater level of behavioral control under an authoritative parenting style, as opposed to a greater level of psychological control under an authoritarian parenting style. However, these occur only among children who perceive *distinctively* authoritative versus authoritarian parenting styles.

These patterns were different in the context of SSB consumption, where prevention-focused restrictive guidance was related to lower attitudinal, normative, and control beliefs surrounding SSB consumption for children under an authoritative parenting style as opposed to those under an uninvolved parenting style. These findings corroborate existing research which found that when parents are warm and responsive, parental guidance can lead to lower unhealthy and greater healthy food consumption (Papaioannou et al., 2013; Ray et al., 2013).

Overall, the findings offer some suggestion that parental efforts to guide children to a healthier diet is more effective when children perceive an authoritative parenting style. According to Darling and Steinberg (1993), parenting style reflects parents' overarching attitude toward their child, and authoritativeness nurtures children to be more open and receptive to parents' socialization goals and attempts. This contrasts with uninvolved parenting, which seem to be the most detrimental emotional climate in which parental guidance regarding nutrition can manifest in. Specifically, a perceived uninvolved parenting style may lead children to react negatively to parental persuasion attempts. Parental rules surrounding unhealthy eating also tend to have the weakest effect among children of uninvolved parents. Furthermore, children with uninvolved parenting tended to have less desirable beliefs surrounding both fruit, vegetable, and SSB consumption. This is in line with previous research, which found that children with uninvolved parents tended to exhibit unhealthier behaviors, such as drinking and smoking, compared to children with authoritative parents (Luyckx et al., 2011). Overall, the findings suggests that a healthy emotional climate is important for parental guidance to be effective in achieving socialization goals.

This study helps clarify how parenting practices can differentially influence child food consumption outcomes depending on child-perceived parenting style. Most importantly, it highlights the notion that researchers looking to examine the influence of parenting practices on food consumption (and other socialization outcomes) must consider perceived parenting style as a moderating variable. Doing so offers a richer understanding on the effects of parenting practices on health behavior.

⁷We used both a median and tertile split approach but reported the median split results as it provided a more complete sample and greater statistical power. The results were somewhat similar using both approaches, with the most notable differences being discussed in this section.

Table 4. Summary of interaction effects

IV	DV	Interaction	Effects
AG	Attitude (Fruits)	N.S.	-
	P Norms (Fruits)	Significant	Authoritative > All other styles (AOS)
	PBC (Fruits)	Significant	Authoritative > Indulgent
RG (Pro)	Attitude (Fruits)	N.S.	-
	P Norms (Fruits)	N.S.	-
	PBC (Fruits)	N.S.	-
AG	Attitude (Veg)	Significant	Authoritative >
			Uninvolved/Indulgent
	P Norms (Veg)	Significant	Authoritative >
			Uninvolved/Indulgent
	PBC (Veg)	Significant	Authoritative >
			Indulgent
RG (Pro)	Attitude (Veg)	N.S.	-
	P Norms (Veg)	N.S.	-
	PBC (Veg)	N.S.	-
AG	Attitude (SSB)	Significant	Authoritative >
			Uninvolved
	P Norms (SSB)	Significant	Authoritative >
			Uninvolved
	PBC (SSB)	Significant	AG had a <i>significant</i> and
			positive relationship
			with PBC toward
			consuming SSB
			among children under
			uninvolved parenting
			versus those under
5.0		a	authoritative parenting
RG	Attitude (SSB)	Significant	Authoritative >
(Prev)		G: : C	Uninvolved
	P Norms (SSB)	Significant	Authoritative >
		GC.	Uninvolved
	PBC (88B)	Significant	Authoritative >
			Uninvolved

Practically, this study provides an important insight in the design of parent-focused or family-based communication campaigns and interventions targeted at encouraging young people to develop healthier eating habits. Some scholars have noted that early feeding-related interventions targeted at parents have focused on targeting clinically significant disorders, and more emphasis needs to be given to more common concerns such as in encouraging fruits and vegetables consumption (Mitchell, Farrow, Haycraft, & Meyer, 2013). Since non-clinical feeding issues can develop into larger problems for youths later in life, it is necessary to channel resources to equip parents with the knowledge and skills that can best help them achieve these feeding-related goals for their children. Previous parentfocused interventions have tended to focus on nutrition knowledge and appropriate feeding practices (e.g. Fraser, Wallis, & John, 2004), with less focus on the nature of the relationship between parent and child. This study suggests that the design of future parent-focused interventions aimed at improving child

health outcomes should consider the broader emotional climate. 8

There are some limitations in this study that needs to be highlighted. First, although the hypotheses presume causality, the cross-sectional nature of this study meant that causal claims cannot be made regarding the findings of the study. Even though the hypotheses were founded on theoretical justifications, future research should consider adopting a longitudinal design to test the causal assumptions implicit in this study.

Second, our data analysis was conducted only with selfreported data from youths. Resource limitations meant that we had to prioritize the collection of data from either children or parents. While the use of youth self-reports of parental behaviors might seem limiting, some researchers have suggested that it could potentially show greater associations with child outcomes (Nelson & Coyne, 2009). Indeed, the frequency of parental guidance and the parent-child emotional climate as perceived by the child could be of greater importance than those of the parents in relation to their intended outcomes. Nevertheless, this study has offered support for the parenting style-as-context model only with self-reported data from youths. Future research ought to examine if these findings hold with different sources of data.

Next, the measurement of perceived parenting practices and styles in this study involved asking children about the frequency of various parental behaviors without considering if they were enacted by a specific parent (e.g. one's mother instead of father). In doing so, an inherent assumption taken in the study was that the salient parenting style would be perceived and reported by the participants. While previous research has suggested that child-perceived parenting styles tend to be consistent between mothers and fathers (e.g. authoritative mother and authoritative father) for *most* families, it is also possible that some families are characterized by parents who adopt inconsistent parenting styles, with, for example, an authoritative mother and an indulgent father (Simons & Conger, 2007; Tavassolie, Dudding, Madigan, Thorvardarson, & Winsler, 2016). Mother-father parenting style combinations such as these have been conceptualized as *family parenting* styles and could potentially impact child developmental outcomes. Future research should consider family parenting styles and their potential moderating effects in studies on child health behavior.

Third, this study did not consider the concept of family communication patterns (FCP) and its relation with parenting style, active and restrictive guidance, and food-related beliefs (Koerner & Fitzpatrick, 2006; McLeod & Chaffee, 1972). Previous research suggests that families adopting more open communication patterns may utilize greater levels of discussion-based strategies in their mediation of messages from television programs (Fujioka & Austin, 2002). Future research

⁸While parenting styles are considered by some to be more stable than parenting practices, previous research has suggested that certain parenting behaviors which contribute to broader parenting styles is amenable to change after an intervention (Fujiwara, Kato, & Sanders, 2011; Morawska, Tometzki, & Sanders, 2014; Sumargi, Sofronoff, & Morawska, 2014).



Figure 3. Interaction effect between active guidance and parenting style on perceived behavioral control toward consuming SSB.

should explore the conceptual relationship between FCP and parenting style, as well as their relationships with context-specific parenting practices.

Finally, potential cultural differences in perceived parenting style were not considered in this study. Although some researchers have found support for the generalizability of authoritative parenting's positive effects on socialization outcomes to Asian populations (Chan & Chan, 2007; Kim & Chung, 2003), there have been research highlighting cultural differences in the effects of perceived parenting style on non-white populations.

The biggest issue revolves around the effects of authoritarian parenting style (low warmth, high demandingness) among Asian children. Among White American children, parental authoritativeness clearly has a stronger positive influence on child outcomes compared to children under an authoritarian parenting style. This relationship is less certain for African-American, Asian, and Hispanic children, as some studies have found that authoritarianism is sometimes positively associated with academic achievement within these other cultures (Spera, 2005). In our study, we found that significant differences in the association between parental guidance and child outcomes tended to manifest among children under authoritative parents as compared to uninvolved parents. The differences between authoritative and authoritarian parenting in the relationships between promotion-focused restrictive guidance and child outcomes was also only significant when parenting style was operationalized using a tertile split. This suggests that milder manifestations of authoritarian parenting might not be as harmful among Asian populations when it comes to beliefs about food. Future research should further examine if cultural effects exist in the parenting style-as-context model.

Despite these limitations, this study has added to our understanding of how the broader emotional climate is an important context in which specific parental behaviors can influence health-related beliefs, and that considering parenting styles as a moderating variable can provide greater insight into the effectiveness of different parenting practices.

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