Codevelopment of Healthy and Unhealthy Dietary Behaviors: A Dyadic Examination of Parenting Practices and Adolescent Characteristics

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ABSTRACT

Objective: To identify the pathways through which external, parental, and adolescent factors influence adolescents' motivation to adopt healthy dietary behaviors.

Methods: A total of 28 ethnically and socioeconomically diverse (25% White) families were interviewed in which adolescents (mean age = 12.7 years; 50% girls) and parents (mean age = 43.3 years; 68% mothers) were interviewed separately. Data were first analyzed thematically, and family summaries, supplemented with diagrams, were then used to identify the processes through which factors influenced adolescents' dietary behaviors.

Results: The analyses identified 3 main motivational pathways (intrinsic motivation, extrinsic motivation, and amotivation), wherein variability and inconsistencies were observed across and within pathways. The unique combination of external factors, parenting profiles, as well as adolescents' willingness to be socialized by family members, differentiated these pathways from each other.

Conclusions and Implications: Health interventions need to target the overall approaches that parents use to socialize their adolescent to make healthy food choices instead of targeting specific parenting practices.

Key Words: parenting practices, dietary behaviors, health promotion, adolescent obesity, obesity prevention (*J Nutr Educ Behav.* 2021;53:254–260.)

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INTRODUCTION

Adolescence (13–17 years) is a critical time period to develop and establish healthy dietary behaviors. Within Canada, dietary behaviors begin to deteriorate as children enter

adolescence during which skipping meals and consuming fast food and sugary drinks, become more prevalent.^{1,2} Thus, it is critical to ascertain factors that influence an adolescent's decision to adopt and maintain healthy dietary behaviors. The

household environment is a key target of lifestyle behavior interventions, as parents can structure the physical and social environments necessary to support healthy behavior development.^{3,4} Even during adolescence, when peer influence becomes more prominent, parents play an influential role in shaping adolescents' dietary behaviors through food-related parenting practices.⁵ Parents can influence adolescents' diet through the availability of healthy food (eg, fruits and vegetables), modeling of healthy eating behaviors, and active guidance.⁶ By contrast, pressuring strategies were found to be associated negatively with healthy eating.⁶ Thus, parents have the potential to promote and prime their adolescents to adopt and maintain healthy behaviors.

Major gaps still exist within the parenting literature as currently studies (1) examine how parenting practices directly affect adolescents' dietary behaviors, without taking into

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account how the familial context or adolescent factors (eg, knowledge, food preferences, and motivation) can modify these associations; (2) investigate how individual parenting practices influence adolescents' behaviors instead of examining the overall approaches parents use to socialize their adolescent to healthy dietary behaviors; and (3) have not elucidated how sociodemographic factors interact with food parenting practices.^{6,7} Consequently, there is a need to examine how various determinants of healthy eating (eg, health knowledge, goals, motivation, parenting practices, household food availability) interact with one another and whether these interactions significantly affect adolescents' dietary behaviors. Therefore, this study aimed to (1) develop a conceptual framework outlining the factors that influence adolescents' dietary behaviors and (2) identify the pathways through which these factors influence adolescents' motivation to adopt a healthy diet.

METHODS

Study Participants

A total of 28 ethnically and socioeconomically diverse families (ie, 1 adolescent and 1 parent) were recruited from 7 public schools in Surrey, British Columbia, Canada (28 parents: 68% female; 25% White, 32% South Asian, 14% Southeast Asian, 11% East Asian, 7% Middle Eastern, and 11% others; 79% married; 68% employed; and 54% income less than CAD \$60,000 (~USD \$46,000). Adolescents: 50% female and all in grade 7 elementary school). The inclusion criteria were (1) the parent was the primary caregiver of the adolescent participant; (2) the adolescent was a grade 7 student; (3) both parent and adolescent were proficient in English; the adolescent had no health condition or disability that limited participation in physical activity, consumption of a normal diet, or required learning assistance; and (4) both parent and adolescent had no history of psychiatric problems or substance abuse.

Data Collection

The Children's and Women's Research Ethics Board at The University of British Columbia approved the study protocol (H15-01876). The principal investigator and 2 research staffs conducted the semistructured interviews with the adolescent and the parent separately. Interviews were completed from March–May, 2016. The adolescents and the parents were first asked to provide an overview of the adolescent's health behaviors (ie, physical activity, sedentary behavior/screen time, and dietary intake). The participants were then probed to assess whether various aspects of the home and school environments promoted or prevented the adolescent from adopting healthy behaviors. Finally, the influence of parents, peers, and friends was also discussed. The interviews lasted 45–60 minutes and audio-recordings were transcribed verbatim. Each participant received CAD \$35 (~USD \$27).

Data Analysis

Data analyses in NVivo (version 11, QSR International, Melbourne, Australia, 2015) were guided by grounded theory⁸ and integrated Knafl and Ayres⁹ processes to preserve the family unit. First, a thematic analysis was conducted on the whole dataset to extract the factors that were identified to have potential influence on adolescents' dietary behaviors (focusing on the consumption of fruits, vegetables, processed snacks, processed meals, and sugar-sweetened beverages [SSBs], as these were predominantly highlighted in the interviews). After this, Knafl and Ayres⁹ methodologies guided the creation of structured family summaries, using the thematic codes initially identified. The family summaries identified the mechanisms through which external, parental, and adolescent factors interacted with each other. These summaries were supplemented with diagrams to visualize the mechanisms. Finally, the summaries and the diagrams within and across families were compared by constant comparisons to develop a conceptual framework and

identify familial subgroups. Two research staff (C.P. and S.K.) and the principal investigator (L.C.M.) developed the thematic codes, the case summaries, and the diagrams. Three family summaries (6 transcripts) were analyzed independently and resulted in further refinement to the analysis. Ten family summaries were coded, summarized, and diagrammed by C.P. and S.K., and the remaining were processed by C.P. and triangulated by S.K. and L.C.M.

RESULTS

Factors Associated with Adolescents' Dietary Behaviors

Table 1 summarizes the external, parental, and adolescent factors identified in the thematic analyses as having a potential role in shaping adolescents' dietary behaviors. The dyadic analyses of this data, which focused on examining influences within the family units, uncovered how external, parental, and adolescent factors interact to influence adolescents' dietary behaviors, and these processes are summarized in the Figure 1.

Pathways Toward Healthy and Unhealthy Dietary Behaviors

Figure 2 summarizes the cross-case analyses and highlights the factors that led adolescents to be motivated intrinsically, motivated extrinsically, or unmotivated to carry out healthy dietary behaviors, respectively. Supplementary Tables 1–3 provide the interim summaries.

Intrinsically motivated adolescents (n=9) generally consumed more fruits and vegetables and limited the intake of processed food, but the consumption of SSBs varied (Figure 2). The parents mentioned the importance of their family living a healthy and active lifestyle, had high levels of health literacy, and had support from other family members (eg, aunts, grandparents). The parents mostly used autonomy supportive and structure practices that were complementary (eg, the adolescent was provided with the opportunity to prepare his/her own lunch; however, parents monitored and redirected as needed). In general,

Table 1. External, Parental, and Adolescent Factors Identified as Having Potential Influence on Adolescents' Dietary Behaviors

Variables		Sample Quotes or Definitions
External factors		
Media		"[My son] likes his Vector [cereal], and it's funny because you know why he gets it? Because there's a hockey player on the front and he thinks it's healthy."
Influential people		"My aunt is always exercising and she's always eating healthy, so she influences me to eat healthy too."
Social norms		"She will not bring traditional Indian food [to school] because she'll feel too embarrassed. . .she would prefer a sandwich or a roll."
Adolescent factors		
Adolescents' characteristics	Willingness to be socialized	"I can thank my parents for [my healthy diet]."
	Food preferences	Some children naturally liked certain food (eg, fruits and vegetables), and others did not.
	Food literacy/knowledge	"Somebody will bring chocolate to school and I usually share with them, but I noticed that isn't healthy and I just stop sharing and I start eating my fruits instead."
	Aspirational identity	"[My parents are] very important. . .because without them I would just be eating junk food all day."
Adolescents' motivation	Weight status/concerns	Conscious about own weight or body image
	Psychosocial vulnerabilities	Severe financial limitations and psychological issues (eg, mental health disorder)
	Intrinsic motivation	"I know that I need to eat healthy for track [practices]."
	Extrinsic motivation	"She is the only one who eats [everything] and then she will come to me and say, 'Mom, I'm your healthiest kid, right?'"
	Amotivation/indifference	"My mom says, 'You should be eating healthy food instead of like junk food' and then I'm just like, 'Whatever.'"
Parental factors		
Parental characteristics	Health literacy	Parental knowledge of what constitutes a healthy diet
	Values	Modeling a healthy lifestyle and concern about the family's dietary habits
	Socioeconomic status	"[My daughter has been asking for] healthier breakfast food but that's more expensive [so] we can't always get that for her."
Parenting practices	Contextual factors	Marital status, family size, and psychosocial vulnerabilities
	Coercive control	"[During] dinner time, we will force him to eat vegetables, meat, or rice."
	Permissiveness	"There's no set limit when [and] what I can eat or how much I can eat."
	Structure	"My mom cuts a lot of fruits and veggies for me to eat."
	Autonomy support	"My mom is teaching me how to cook. So if I'm at home with my sister, I could make something for us to eat, until my parents get home."

Figure 1. Conceptual model of how external, adolescent, and parental factors influence adolescents' dietary behaviors.

parents were not permissive, and controlling practices were seldom used. Consistency between parents was observed in many families; that is, both parents employed and reinforced the same parenting practices. For adolescent-specific variables, the adolescents expressed their desire to eat a healthy diet or acknowledged household rules related to healthy eating and highlighted the influence of external factors (eg, grandparent or coach) in shaping their values and their willingness to be socialized.

A total of 8 adolescents were motivated extrinsically (eg, pressured or coerced) and demonstrated both healthy (eg, moderate-high intake of fruits and vegetables) and unhealthy dietary behaviors (eg, moderate intake of processed snacks and meals and SSBs) (Figure 2). Parental values regarding healthy living were not mentioned. Rather, parents were

concerned that their adolescent consume a healthy/balanced diet, whereas others were more concerned about certain aspects of the adolescent's diet (eg, SSBs intake or daily caloric intake) or wanted their adolescent to learn how to self-regulate their diet without receiving parental support. These parents demonstrated a low-to-moderate level of food literacy, used a variety of practices to control their adolescent's diet (or certain aspects of the diet), many had rules/limits or expectations to limit SSBs intake or increase fruit and vegetable intake, and had parenting practices that were not consistent between mothers and fathers. Control practices were used by a handful of parents (eg, finishing meals and/or consuming enough vegetables). Autonomy supportive practices were seldom used. Finally, structured and situational permissiveness was

present within households that facilitated adolescents' exposures to processed meals and snack. When examining the adolescent-specific variables, most were obedient toward their parents. Adolescents felt pressured to practice healthy dietary behaviors as a result of external factors (eg, parental pressures or weight concerns).

Seven adolescents ($n = 7$) were unmotivated or were indifferent to practicing healthy dietary behaviors (Figure 2). Rather, they took part in healthy behaviors only if they were pressured by their parents. All of the adolescents consumed high levels of processed snacks and meals, whereas SSBs and fruit and vegetable intake varied. Parents' intentions (rather than values) were emphasized and reported low health literacy. Most parents were concerned that their adolescent consumed enough

Figure 2. Overview of how external, adolescent, and parental factors, as well as parenting practices support adolescents to be motivated or unmotivated to adopt healthy dietary behaviors. The shading in each cell represents the percentage of family with each code. The color code for each family was based on evaluating the full transcript for the family and the code assigned to each family was triangulated.

vegetables and/or calories and downplayed the health risk associated with permissive feeding (ie, parents believed that moderate levels of physical activity would compensate for an unhealthy diet). Permissive feeding, along with complementary and negative/unsupportive structure practices (eg, high accessibility to processed food and lack of follow-up action or monitoring from parents) were used by parents. There was limited use of autonomy supportive practices; when employed, they did not result in healthy eating behaviors (eg, allowing the adolescent to prepare his/her own lunches without monitoring or restrictions). Control practices were also used by a few parents. Among the adolescent-specific variables, many preferred processed food over healthier alternatives because of taste preferences. They demonstrated low levels of food literacy. In addition, when presented with the opportunity, adolescents reported overindulging on their preferred food rather than self-regulate their processed food intake.

Four families did not fall under the larger groupings discussed in earlier text. In the transcripts, parents discussed that economic realities and psychological issues disrupted the processes they would like to use to support their adolescent's dietary habits. In addition, the parent-adolescent dynamic can revert, and the adolescent can take on the parent's role with respect to food decisions. Specifically, 1 adolescent was found to predominantly drive the system, as the adolescent highly valued a healthy diet and had a high level of food literacy.

DISCUSSION

This study uniquely used a dyadic analytical approach to uncover the factors that distinguished whether adolescents were motivated intrinsically, motivated extrinsically, or unmotivated to make healthy food choices. Overall, this study uncovered phenotypes within the family unit that shaped adolescents' self-regulatory processes but (1)

variability and inconsistencies existed within each motivational pathway; (2) the profiles of parenting practices, not the use of specific parenting practices, helped differentiate among the different types of motivation; (3) willingness to be socialized or the processes that parents used to influence their adolescent's food identity, as well as external factors, was the most consistent factor associated with each motivational pathway; and (4) for some families, other factors, such as food insecurity or psychological concerns, explained the adolescents' dietary behaviors.

Similar to others,^{10–13} this study found that, in general, positive external role models, adolescents' food preferences, adolescents' willingness to be socialized and adoption of familial values, adolescents' food literacy, healthy familial values, and healthy and cohesive parenting practices (ie, using more autonomy supportive and structuring practices) support adolescents' self-regulatory processes. However, the identified family profiles were not always

consistent with what others found⁶ nor did they always align with self-regulation theory.¹⁴ Controlling parenting practices has often been associated with poor self-regulatory processes, such as undermining intrinsic motivation and increasing the intake of unhealthy food and decreasing the intake of fruits and vegetables.^{6,15} However, some families that were intrinsically motivated also used coercive approaches. These approaches were seldom used, but when they were, intrinsically motivated adolescents had adopted the healthy food values of their family. These findings raise the question whether it is possible to support healthy regulatory food processes when coercive food parenting practices are used in small doses within an otherwise supportive family unit.

Contrary to expectations,¹⁶ this study also found that parents used healthy parenting practices (ie, structure and autonomy supportive practice) with unmotivated adolescents. However, a key distinguishing feature was that the parents reported using both healthy and unhealthy parenting practices (ie, structure, autonomy supportive, coercive, and permissive parenting practices). It was unclear whether parents used multiple parenting practices because they were experimenting with them or whether they lacked good parenting skills. In addition, these findings suggest that conflicting parenting practices undermine adolescents' self-regulatory processes, and it appears to lead to amotivation.

This study found that willingness to be socialized distinguished adolescents who were intrinsically motivated, extrinsically motivated, or unmotivated to make healthy food choices. Specifically, adolescents who discussed having food and health values that aligned with their families were more likely to be intrinsically motivated. By contrast, adolescents in the unmotivated group seemed unaware of whether their parents had any values with regard to food. Socializing children to familial values is a process that occurs over time, and it appears that adolescents who were taught the importance of healthy eating when they were young adopt their parents' food

intentions. This is consistent with other research¹⁷ that found familial norms were positively associated with adolescents' fruit and vegetable intake. By establishing certain dietary expectations early on, parents in this study were more likely to teach their adolescent self-regulating skills. Future research might examine feeding practices through a developmental lens to determine factors that support development of lifelong healthy dietary habits.

In addition, cohesive parenting practices supported adolescents' development of healthy food identity and supported their intrinsic motivation to make healthy food choices. By contrast, the adolescents grouped in the extrinsic and unmotivated pathways were more likely to be in a discordant family in which mothers typically reinforced healthy behavior practices, but fathers undermined the mothers' expectations or values. As mothers and fathers have been found to use different child-rearing feeding practices,^{15,18} this study highlights the need to align parents' parenting practices to support adolescents' healthy eating.

This study had several limitations. First, poor recall and social desirability bias may have influenced the participants' responses. This bias was partially mitigated by cross-referencing the adolescent and parent transcripts. Second, for many parents English was not their primary language, and language proficiency may have affected how parents conveyed and communicated their experiences, which may have resulted in a loss of details. In addition, immigrant status may have influenced parenting practices and familial perceptions surrounding healthy eating; however, this variable was not collected and could not be analyzed. Third, as volunteers, the families may not be representative of the general population. Fourth, because of its cross-sectional design, this study was unable to capture changes that may have occurred or would have occurred over time. Fifth, the authors acknowledge that external factors (eg, peer influence) increase in adolescence and amplify as adolescents get older, but this aspect was beyond the scope of this article. Finally,

owing to the qualitative nature of this study and small sample size, the results cannot be generalized across populations.

This study also had a number of strengths. First, the perspectives of both parent and adolescent were examined and thus, provided a more in-depth evaluation of influences associated with adolescents' diets. Previous studies for the most part relied exclusively on parents' self-reported data. Second, the ethnic and economic diversity of the study participants was well distributed and closely followed Surrey's population in British Columbia; with the exception of White families being underrepresented.¹⁹ Finally, this is the first study that employed a dyadic perspective to examine the factors that regulate adolescents' motivation to make healthy food choices in a somewhat large qualitative study.

IMPLICATIONS FOR RESEARCH AND PRACTICE

These findings highlight the need to take a more holistic approach, instead of focusing on specific household factors, to improve the effectiveness of health behavior interventions (eg, consider the profile of parenting practices used in the household by all caregivers). Although parenting practices play a central role in socializing adolescents into adopting healthy eating behaviors, interventions need to tailor their strategies to account for economic realities, psychological issues, and adolescent intrapersonal factors.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jneb.2020.10.013>.

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