

Cooking at Home: Correlates of Frequency and Intention in Fifth Graders

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Abstract

Cooking at home is associated with health benefits, and 10- and 11-year-old children are capable of participating in meal preparation. However, opportunities for children to cook at home have declined. This study aimed to identify determinants of the frequency and the intention to cook at home in fifth graders using the Theory of Planned Behavior as a framework with quantitative methodology. A total of 241 participants across five elementary schools of the Chaudière-Appalaches region (Quebec, Canada) took part in this correlational study. Data were collected via a self-administered questionnaire based on the Theory of Planned Behavior. Regression analyses led to the identification of determinants of frequency and intention to cook at home. More than two-thirds of participants (69%) declared having cooked at home in the past 7 days. Intention was the only significant variable explaining 18% of the variance for frequency. Intention was determined by perceived behavioral control, attitude, descriptive norms, subjective norms, perceived barriers, being a girl, and normative beliefs, which explain 74% of the variance. Whereas other studies aiming at better understanding children's involvement in meal preparation at home focused on self-efficacy for cooking, this study highlights other behavioral determinants. For example, support from parents appears to be crucial to promote this behavior in this age group. Future research and interventions should be oriented toward determinants such as subjective norms and normative beliefs, and focus on children's autonomy.

Keywords

cooking, children, Theory of Planned Behavior, intention, behavior assessment, public health

Canadians are encouraged to cook at home more often because of the many health benefits of healthy eating (Health Canada, 2019). Indeed, according to recent studies and reviews, cooking at home is strongly associated with better quality of foods consumed by adults, teens, and children (Mills et al., 2017; Ng et al., 2022; Quelly, 2019; Wolfson et al., 2020). It has also been reported that cooking at home reduces the consumption of highly processed foods, fats, sugar, and salt, thus helping in maintaining a healthy weight (Lam & Adams, 2017; Martins et al., 2021). Unfortunately, Canadians reporting having few culinary skills are more prone to rely on ready-to-eat meals (Wiggers et al., 2018). The loss of culinary skills in families, the extensive availability of ready-to-eat meals, and their daily consumption have been identified as barriers to cooking at home. Other barriers include the lack of time to prepare meals from scratch, and fewer meals shared as a family (Health Canada, 2010; Hersch et al., 2014). Some families resort to meal kits (e.g., HelloFresh) rather than processed convenience meals. Meal kits are costly, and meals do not always meet recommended nutritional guidelines (Fraser et al., 2022). However, they may be an incentive for family members to

participate in meal preparation. For instance, children enjoy opening the boxes and looking at the pictures accompanying recipes, making them keener to take part in cooking meals (Fraser et al., 2022).

Studies have shown that when children cook at home a few times a week, this behavior transfers into adulthood (Laska et al., 2012) and that parents who encourage children to take part in cooking do so because they believe youths are learning an essential skill for when they leave home (Fraser et al., 2022). It has been found that when 9- to 12-year-olds get involved with cooking at home, they eat more fruits and vegetables (Chu et al., 2014; Quelly, 2019), and have a higher personal self-efficacy for cooking and using cooking techniques (Chu et al., 2013; Olfert et al., 2019; Woodruff & Kirby, 2013). Yet,

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as discussed previously, children's opportunities to cook at home have decreased for decades, contributing to unhealthy eating (Berge et al., 2016; Health Canada, 2010). A better understanding of the determinants underlying this behavior is imperative to intervene effectively in getting children to cook at home more often. So far, we know that the child's cooking self-efficacy is a significant factor (Quelly, 2019), but there is still too little information on other influential determinants of this behavior. The objective of this study is to identify correlates of the frequency and the intention to cook at home in Quebec fifth graders. To our knowledge, this is the first study with this aim for 10- and 11-year-old children in Quebec.

Method

Design and Participants

A correlational design was used to identify determinants of the frequency and of the intention of cooking at home. Participants were recruited in five French elementary schools in the Chaudière-Appalaches region in Quebec (Canada). These schools were targeted by a committee (Lévis en Forme) that aims at developing and maintaining healthy lifestyles for children in disadvantaged neighborhoods and localities of the Chaudière-Appalaches region (Ministry of Education and Higher Education, 2017). A collaboration between this committee and the research team facilitated the contact with these schools. Hence, all schools had similar profiles regarding social and material disadvantages.

With the collaboration of teachers and school administrators, fifth-grade students from all five participating schools were invited by a research professional to take part in the study. Written parental consent was previously obtained. Volunteer students were assigned to semi-structured interviews for questionnaire development ($n = 30$) or chosen to test-retest this questionnaire ($n = 46$). The next year, in the same schools, a research professional recruited a convenience sample of 241 students to take part in the correlational study. All of them had previously obtained parental consent to participate, and none of the students engaged in the questionnaire development and its testing were among the 241 participants for the correlational study.

Theoretical Framework

Ajzen's (1991) Theory of Planned Behavior (TPB) is known to effectively predict the intention and the adoption of health-related behaviors (McEachan et al., 2011). According to this theory, behavior is determined by intention and perceived behavioral control. Intention refers to factors influencing motivation and is explained by (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control. Attitude is the favorable or unfavorable evaluation regarding engaging in the behavior. Subjective norms relate to significant people, and if they will approve or disapprove of said behavior. Perceived behavioral control is the perception of

how easy or difficult it would be to engage in said behavior (Ajzen, 1991). Each of these three constructs is influenced by beliefs: (a) behavioral beliefs underlying attitude, (b) normative beliefs influencing subjective norms, and (c) control beliefs subjacent to perceived behavioral control. Behavioral beliefs are the perceived advantages and inconveniences in engaging in the behavior. Normative beliefs refer to the perceived expectations of significant people regarding the behavior. Control beliefs are perceptions about how important barriers and facilitating factors are in engaging (or not) in the behavior. Godin et al. (2004) have demonstrated that these beliefs can be direct determinants of behavioral intention. As descriptive norms contributed to the prediction of the intention to engage in behavior in youths in past studies (Beaulieu & Godin, 2011), we added descriptive norms to the theoretical framework used in this study (Figure 1). Descriptive norms refer to one's perception that other people engage in the behavior of interest (Rivis & Sheeran, 2003).

Measures and Questionnaire Development

According to Fishbein and Ajzen (2010), to accurately predict behavior, it must be defined with regard to action (to cook), its target (at least once), context (at home), and a time frame (in the upcoming week). A self-administered questionnaire in electronic form comprising 25 questions was developed and validated in four steps according to methods recommended by Fishbein and Ajzen (2010) and Gagné and Godin (2012). The first step was qualitative to identify the three types of salient beliefs (behavioral, normative, and control) in participants about cooking at home so that they could be included in the questionnaire. These data were collected during the individual interview of 30 participants (57% of girls; mean age: 10.6 years). There were seven open-ended questions, the first one being about what it meant to cook at home. The number of spontaneously expressed beliefs by the participants for each type of salient belief was compiled, and 75% of them were kept and integrated into the questionnaire (Step 2).

The second step consisted in elaborating the questionnaire for the correlational study. The questionnaire began with the definition of "cooking at home" as expressed by participants in Step 1. For them, cooking at home meant preparing a meal or following a recipe (alone or with a parent), measuring and mixing ingredients, chopping and handling ingredients, tasting ingredients or new foods, cooking prepared ingredients, and checking up on cooking. This behavior was measured by two items in the questionnaire: "In the past seven days, did you cook at home?" (Yes or No), and "In the past seven days, how many times did you cook at home?" (open-ended question). Table 1 shows measured psychosocial variables from the theoretical framework, the number of items for them, and the choices to answer. Past participation in school cooking workshops (three items) and sociodemographic data (age, sex, school) were also collected with the questionnaire.

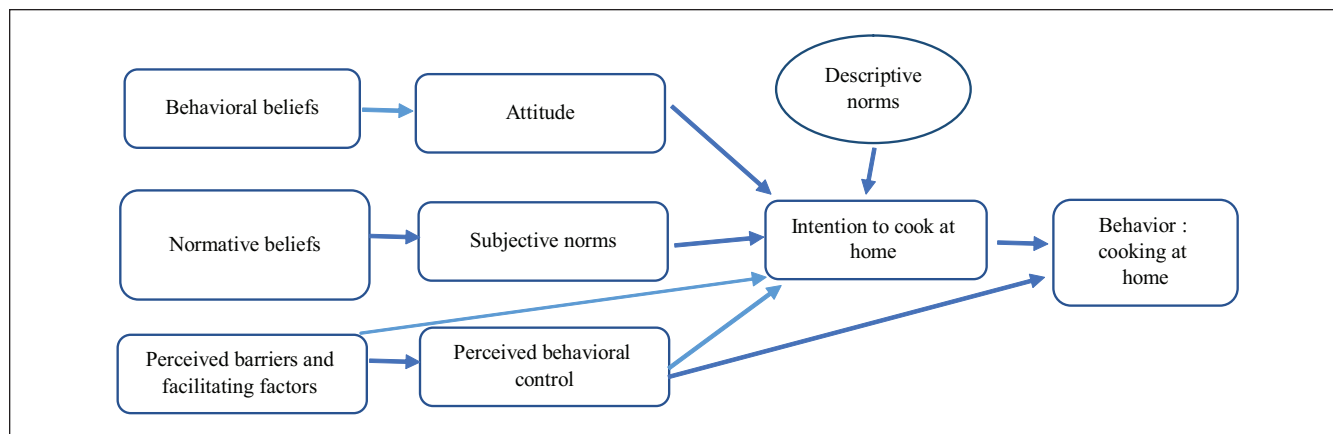


Figure 1. Theoretical Framework Inspired by the TPB.

Source. Adapted from Ajzen (1991).

Note. TPB = Theory of Planned Behavior.

Third, an interview with three participants respecting Willis' procedure (Willis, 2005) was conducted, hence enabling a pre-experimentation of the questionnaire to ensure clarity of instructions, questions, and choices to answer. Adjustments were made where needed. Finally, to test the psychometric properties of the questionnaire (Step 4), it underwent a test-retest reliability examination at a 2-week interval with 43 participants (49% of girls). Results showed the temporal stability to be adequate to excellent with intraclass correlations (ICC) ranging from .56 to .84 (Landis & Koch, 1977). The internal consistency was satisfactory (Bartee et al., 2004), with Cronbach alphas ranging from .54 to .85 for psychosocial variables (Table 1).

Data Collection Procedure

With the collaboration of teachers and school administrators, fifth-grade students from all five participating schools were invited by a research professional to take part in the study in computer-equipped classrooms. The duration of questionnaire completion was about 30 to 45 min. Written parental consent was previously obtained, and this research project received approbation from school administrations and Université du Québec à Rimouski's research ethics committee (No. CÉR-84-570).

Statistical Analyses

An overview of the sample's characteristics was obtained with descriptive statistics. Point-biserial correlation tests (r_{pb}) were conducted between the binary variable of having cooked at home and the following variables: intention, perceived behavioral control, attitude, subjective norms, descriptive norms, behavioral beliefs, normative beliefs, perceived barriers, facilitating factors, previous participation in school cooking workshops, and sex. Stepwise

regression was conducted to identify the strength of the relationship between the frequency of the behavior, based on past behavior (cooking at home at least once weekly) with intention and perceived behavioral control as independent variables. Afterward, a hierarchical regression model was designed to identify determinants of intention (dependent variable) by introducing TPB psychosocial variables (independent variables) that were correlated with intention. The variable of sex was added at the model's second step because it is a determinant of cooking at home (Mills et al., 2017). A Mann-Whitney nonparametric test was then used to compare low versus high intenders (based on median score of intention) for each belief category. Finally, we did a White test to check for homogeneity of variance, and a Shapiro-Wilk test to ensure normal distribution of residuals.

Results

Sample Description

The sample comprised 241 fifth graders (57% of girls), with a mean age of 10.3 years ($SD = 0.47$). Forty-eight percent had taken part in four cooking workshops in their school in the previous year. More than half of the sample ($n = 164$) said they cooked at home at least once in the past week, and 69% of them reported having done so 3.6 times in the past 7 days.

TPB Variables

We used a 4-point Likert-type scale to assess TPB variables. A limited number of option choices are warranted for children because they may have difficulty understanding nuances between options when there are too many of them (Gagné & Godin, 2012). Means for answers on TPB variables have moderate value as can be seen in Table 2. Results for intention

Table 1. Psychosocial Variables.

Variables	Number of items	Item examples	Answer examples	Cronbach alpha ^a
Intention	3	Will you try to cook at home at least once next week?	Not at all Not really Maybe For sure	.85
Attitude	4	For you, cooking at home at least once next week would be . . .	Very boring Mostly boring Mostly fun Very much fun	.81
Subjective norms	2	Would most people important to you approve of you cooking at home next week?	Not at all Not really Maybe For sure	.54
Perceived behavioral control	3	If you wanted to, could you cook at home at least once next week?	Not at all Not really Maybe For sure	.72
Descriptive norms	2	According to you, how many of the 3 classmates you know the best cook at home at least once a week?	None Just one 2 classmates 3 classmates	.69
Behavioral beliefs	7	If you cooked at home at least once next week, would that make you feel proud of yourself?	Not at all Not really Maybe For sure	.66
Normative beliefs	2	Would your mother encourage you to cook at home at least once next week?	Not at all Not really Maybe For sure	.65
Perceived barriers	4	Would you feel capable of cooking at home at least once next week, even if you're afraid of getting hurt or cutting yourself?	Not at all Not really Maybe For sure	.75
Facilitating factors	3	Would it be easier for you to cook at home at least once next week if you learned more recipes?	Not at all Not really Maybe For sure	.77

Note. Possible theoretical values: 1 to 4.

^aCronbach alphas measure constructs internal consistency.

show that participants may have the intention to cook at home at least once for the upcoming week ($M = 3.19$; $SD = 0.70$). Participants also report having a favorable attitude toward cooking at home ($M = 3.38$; $SD = 0.56$) for some perceived advantages (behavioral beliefs) such as spending more time with their family, feeling proud of themselves, having fun while cooking, feeling more autonomous, and tasting ingredients while cooking ($M = 3.44$; $SD = 0.56$). However, the perceived inconvenience is washing dishes. As for normative beliefs, participants perceive that a parent would encourage them to cook at home in the upcoming week ($M = 3.20$; $SD = 0.43$). Participants also think that one of their three best friends (classmates) also cooks at home (descriptive norm) ($M = 2.00$; $SD = 0.75$).

Regarding perceived behavioral control ($M = 3.42$; $SD = 0.57$), participants feel that it would be rather easy to cook

at home even if their perceived ability to overcome barriers is mitigated. Such barriers are having little time to cook, the risk of getting injured, doing more difficult tasks (calculate, peel, chop finely), and their parents' lack of confidence in letting them cook ($M = 3.10$; $SD = 0.69$). For participants, the context that would (from "maybe" to "for sure") facilitate the behavior of cooking at home in the upcoming week is learning more recipes, having more opportunities to cook, and cooking meals they love ($M = 3.58$; $SD = 0.62$). TPB constructs directly linked to behavior were significantly correlated with having cooked at home in the past 7 days: intention ($r_{pb} = 0.47$, $p = .0001$), perceived behavioral control ($r_{pb} = 0.33$, $p = .0001$), and being a girl ($r_{pb} = 0.19$, $p = .0001$). However, past participation in school cooking workshops was not correlated with having cooked at home in the past week ($r_{pb} = 0.05$, $p = .44$).

Table 2. Sample Overview ($n = 241$).

Variables	Mean (\pm SD)	n	%
Girls	—	137	57
Boys	—	104	43
Age	10.3 years (\pm 0.47)	—	—
Previous participation in cooking workshops			
Yes	—	115	48
No	—	108	45
I don't remember	—	18	7
Youths having cooked in the past 7 days			
Yes	—	166	69
No	—	75	31
Frequency in the past 7 days	3.6 times (\pm 2.53)	—	—
Intention	3.19 (\pm 0.70)	—	—
Attitude	3.38 (\pm 0.56)	—	—
Subjective norms	3.39 (\pm 0.63)	—	—
Perceived behavioral control	3.42 (\pm 0.57)	—	—
Descriptive norms	2.00 (\pm 0.75)	—	—
Behavioral beliefs	3.44 (\pm 0.56)	—	—
Normative beliefs	3.20 (\pm 0.43)	—	—
Perceived barriers	3.10 (\pm 0.69)	—	—
Facilitating factors	3.58 (\pm 0.62)	—	—

Low Intenders and High Intenders

The strength of intention was obtained by dividing the 241 participants in two groups based on the median score of intention. Low intenders had an intention scores 3 or lower ($n = 121$), and high intenders had higher scores ($n = 120$). The Mann–Whitney tests reveal that high intenders had higher means for behavioral beliefs, normative beliefs, perceived barriers, and facilitating factors.

Correlates of Behavior and Intention for Cooking at Home

We conducted a multiple regression analysis to identify potential correlates according to TPB's main constructs (intention and perceived behavioral control) for the frequency of cooking at home. Results showed that only intention was significantly associated ($\beta = .55, p < .0001$) with the frequency of cooking at home ($R^2 = 18\%$). Regarding the hierarchical regression analysis, the first step was to introduce TPB variables sequentially, and sex was entered at the second step. It revealed a model that explained 74% of the variance for the intention to cook at home in participants. TPB variables that explained intention were attitude, subjective norms, descriptive norms, perception of behavioral control, and normative beliefs. In addition, being a girl increased the percentage explained for the intention to cook at home as can be seen in Table 3.

Discussion

The aim of this study was to identify the correlates of frequency and intention to cook at home in fifth graders aged

Table 3. Determinants of the Intention to Cook at Home.

Independent variables	B	SE	β
Step 1			
Attitude	0.31	0.06	.25*
Subjective norms	0.17	0.06	.15*
Descriptive norms	0.15	0.03	.16*
Perceived behavioral control	0.40	0.07	.32*
Perceived barriers	0.14	0.04	.14*
Normative beliefs	0.08	0.04	.09*
Step 2			
Attitude	0.29	0.06	.23*
Subjective norms	0.15	0.06	.13*
Descriptive norms	0.14	0.03	.15*
Perceived behavioral control	0.40	0.07	.33*
Perceived barriers	0.13	0.04	.13*
Normative beliefs	0.09	0.04	.10*
Being a girl	0.15	0.05	.11*

Note. R^2 adjusted: Step 1 = 72%, Step 2 = 74%. Final model: $F(6, 240) = 105.85, p < .0001$. B = unstandardized beta coefficient; β = standardized regression coefficient.

* $p < .05$.

10 and 11. More than two thirds of our sample (69%) were already engaged in meal preparation at home at least once a week. This percentage is slightly higher than what was reported in Alberta (63%) for the same age group (Chu et al., 2014). In our study, intention was related to the frequency of the behavior, and we were able to identify factors associated with intention. In fact, 74% of the variance of participants' intention to cook at home was explained by TPB variables. This result is higher than what was reported in a meta-analysis (McEachan et al., 2011) regarding TPB's predictive power to explain the variance ($R^2 = 40\%–49\%$) for the intention to engage in health-related behaviors. Counter to what was expected, having participated in cooking workshops in school (48% of our sample) was not associated with cooking at home.

As shown in this study and others, motivation to cook is associated with cooking at home in youths. Studies rooted in Social Cognitive Theory have linked cooking self-efficacy to youths' frequent participation in meal preparation (Chu et al., 2013; Woodruff & Kirby, 2013) and to the quality of their diet (Quelly, 2019). However, in focusing solely on self-efficacy to explain behavior, factors influencing behavior's frequency and underlying motivation might be ignored. That can be remedied by using Ajzen's (1991) TPB, in which perceived behavioral control is a construct similar to self-efficacy. We designed a framework inspired by the TPB and the Reasoned Action Approach that included capacity as a dimension of perceived behavioral control, in accordance with postulates proposed by Fishbein and Ajzen (2010). In the present study, a favorable attitude regarding cooking at home and perceived behavioral control revealed themselves to be the most important predictors of intention. These results echo another meta-analysis (McEachan et al., 2016) indicating that experiential attitude and capacity are the best predictors of intention.

Perceived barriers, subjective and descriptive norms, normative beliefs, and sex are other determinants of the intention to cook at home in our study, but to a lesser degree. However, contrary to TPB postulates, perceived behavioral control was not significant in explaining the frequency of cooking at home. Perceived behavioral control for cooking with youths of this age might be linked to their autonomy acting as a moderator between intention and behavior. Even if autonomy was not initially at the forefront in the interpretation we made of our results, it became a factor of interest. We will discuss this at length later.

Our results showed that past participation in cooking workshops did not significantly foster cooking at home on a regular basis. Learning culinary skills and recipes might not be enough to motivate 10- and 11-year-olds to cook at home, even if learning more recipes was identified by participants of the present study as a facilitating factor in getting involved in cooking at home. We were able to identify factors suggesting that cooking at home is a behavior learned at home. In fact, parental influence as measured by normative beliefs and subjective norms explained a part of the variance of the intention to cook at home. Parents' encouragement influences not only intention but could also support children already motivated to cook at home, hence reducing the consumption of fast food of ready-to-serve meals. It is imperative to continue studying the determinants and the intention related to cooking at home. More studies are required so that we can better understand effective school intervention models and how parents come into play in the long-term continuation of healthy behaviors in youths (Hersch et al., 2014).

Addition to Existing Knowledge

As was previously mentioned, most studies on factors influencing youth's participation in meal preparation are rooted in Social Cognitive Theory with a focus on self-efficacy. We chose the TPB, which is known to be effective in explaining behavior and in predicting both intention and adoption of healthy behaviors. Our study, therefore, sheds a different light on factors related to cooking at home in pre-teens. Namely, measured variables explained a higher percentage of the variance for intention than what was reported in previous studies. Also, numerous criticisms about the definition of cooking at home have been issued in previous studies (Mills et al., 2017; Ng et al., 2022; Raber & Wolfson, 2021). We feel that one strength in the present study lies in the definition of the studied behavior. The definition we used was elaborated in integrating the conceptions of 76 fifth graders of what it meant to "cook at home." The definition we used was precise and could be operationalized with observable behaviors corresponding to usual culinary skills for children of this age (Dean et al., 2021). Furthermore, we followed Fishbein's and Ajzen's (2010) recommendations about predicting behavior, and the TPB was at the core of every aspect relating to the development of measures and the analysis of our results. This

was referred to as "theory-driven data-informed analysis" by Haardörfer (2019) and described as essential for sound and meaningful scientific knowledge.

Implications for Public Health

The present study revealed that a high percentage of the sample participate in meal preparation at home at least once weekly, as other studies have also shown (Chu et al., 2014). This suggests that 10- and 11-year-olds are willing and able to help with cooking. Our study showed that their attitude regarding cooking at home is positive, and we were able to identify several facilitating factors (e.g., learning more recipes, being given more opportunities to cook) and perceived barriers (the risk of getting hurt, more difficult tasks like chopping finely, and the lack of trust from parents). Interpreting results from the present study and past studies, we believe that autonomy should be at the core of future interventions for youths of this age. Indeed, when asked in qualitative studies what makes it easier (or more difficult) for them to cook at home, 9- to 12-year-olds consistently mention autonomy (Amin et al., 2018; McKernan et al., 2019). As an example, the child's lack of autonomy in using a knife properly and safely is often given as a barrier to the child's participation in preparing meals or snacks. This was also the case in our study. Parents are worried the child will get hurt, and the child is also scared. But when interventions with fourth and fifth graders focus on safe knife handling, there is an increase in the intention to cook at home, and parents also notice a safer usage of knives which has the potential to increase autonomy and encouragement from parents (Zahr & Sibeko, 2017). If parents restrain the child's opportunities to cook because they are afraid the child will get hurt or make a mess, interventions might not create desired change. Is this why past participation in cooking workshops did not significantly increase the frequency and intention to cook at home in our study? Our results showed that children would welcome more opportunities to cook and that it could be a way of spending more time with their parents. However, participants in our study also reported that parents' lack of confidence is a barrier to their involvement in the kitchen. In future interventions, it could be interesting to engage with parents regarding their perception of their child's autonomy in the kitchen when said child is participating in cooking workshops to gain culinary knowledge and skills. In so doing, changes could be better supported in the family.

Limitations

By relying on participants' memory to report how many times they cooked at home in the past 7 days, omissions are possible and might have influenced the results (Thompson & Subar, 2013). Even if we included a definition of "cooking at home" to facilitate recall, the absence of omission cannot be guaranteed. Moreover, this study was conducted on a convenience sample of participants in one region in Quebec, hence limiting the generalization of results to the rest of Quebec and

Canada. In addition, there are concerns and lack of consensus regarding the adequateness of stepwise regression in public health research (Haardörfer, 2019). Although stepwise regression was an appropriate choice with regard to the objective of this study, other methods could be considered more closely in future research. Also, with only one time of measurement in this cross-sectional study, there is no information regarding the predictors of frequency and intention to cook at home in these youths during the passage to secondary school, when autonomy is greater. Such information could have been available with a longitudinal study. Finally, a relatively high percentage of the variance could not be explained by TPB variables. This suggests that certain factors or influences cannot be captured with this model. For example, behavior might be influenced by family socioeconomic status, the easy access to grocery stores, and the availability of healthy food at home. However, the TPB does not take these factors into account. It would be important, in the future, to measure such factors to better understand their impact (alongside TPB variables) on cooking at home.

Conclusion

The present study identified intention as one determinant for cooking at home in youths 10 and 11 years old. This determinant is predicted by attitude (cooking is fun), subjective norms (parents would approve the behavior), normative beliefs (parents would encourage the behavior), perceived behavioral control (being able to cook if so desired), and descriptive norms (having friends who cook at home). Therefore, this study supports the theoretical postulate that behavior is related to intention and that intention to act is predicted by favorable attitudes and beliefs, including descriptive norms. Integrating these results in the development of cooking interventions aimed at pre-teens could be advisable.

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Supplemental Material

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