



Reprint of “The relationship between culinary skills and eating behaviors: Challenges and opportunities for parents and families”[☆]



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ABSTRACT

Unhealthy dietary intake among American children and adults is of great concern to public health practitioners, nutritional scientists, and child development experts. Cooking skills are related to healthier dietary intake among Americans of all ages, but remain a substantial barrier for many parents who want to serve healthy meals for their families at home. Culinary education interventions are effective solutions for many parents who do not know how to cook, but issues with participation bias mean that these programs are not effective solutions for all individuals. The food industry should develop solutions to help those parents for whom learning cooking skills is not an option – specifically through the development of healthier pre-assembled or prepared foods that do not require cooking skills to make. In the future, the research community should also strive to collect comprehensive population-based data on the state of cooking skills in the United States.

1. Introduction

The majority of children and adults in the United States fail to meet national dietary recommendations for daily servings of fruits, vegetables, or whole grains, and exceed recommendations for fat and sugar intake [25]. This trend toward increasingly unhealthy American diets is of great concern to public health practitioners, nutritional scientists, and child development experts, as unhealthy eating habits are associated with a variety of negative health and developmental consequences.

Unhealthy dietary intake is associated with increased risk for a number of negative health outcomes, including risk for the development of obesity, cancer, type 2 diabetes, and other chronic diseases [14]. Poor diets can be especially harmful for children, as inadequate nutrition hinders normal development and creates unhealthy growth trajectories that set the stage for a number of potential growth and metabolic issues later in life [3,58]. Children's dietary habits are also particularly consequential because dietary patterns set in childhood often develop into lifelong eating habits [26,46,47]. Due to the pervasive negative impact of unhealthy dietary intake on health and well-being, efforts should be made to make healthy eating easier for children and families.

Unlike adults who do not have children, parents and caregivers have

the potential to influence the dietary intake of several other family members when they make changes to the foods that they buy and prepare for their families. Researchers often refer to parents as “nutritional gatekeepers” who have a large degree of influence on the foods their children eat and have access to [61]. These factors make parents and families a key population of interest in research on eating habits, since any positive changes made by parents to the foods served at home will have a trickle-down effect on the dietary intake of children and other family members. Parents encounter a number of challenges in their attempts to prepare healthy meals for their families, and issues related to executing cooking skills are common.

1.1. The relationship between cooking and dietary intake

Cooking behaviors and skills are key factors that have been associated with eating behaviors in recent research. For the purposes of this article, cooking skills are defined as the set of abilities that allow individuals to prepare meals from scratch. Cooking skills are comprised of a wide variety of capacities across several domains including mechanical, planning, and perceptual skills, as well as knowledge about nutrition, chemistry, and food safety [51]. In American adults, frequent cooking behaviors and self-reported cooking skills are related to increased consumption of fruits and vegetables and improved diet quality

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[30,31,41]. Cooking behaviors in adolescents are associated with greater likelihood of meeting Healthy People 2010 dietary objectives and lower intake of fat, and higher intake of fruits, vegetables, fiber, folate, and vitamin A [30,31]. In school aged children, participation in food preparation is related to greater self-efficacy for selecting healthy foods, stronger preferences for fruits and vegetables, and better overall diet quality [7,8]. Even among preschoolers, involvement in food preparation, grocery shopping, and meal planning is predictive of healthier dietary intake [42]. These findings cumulatively suggest that participation in cooking is associated with healthier eating behaviors for individuals of all ages.

The association between cooking behaviors and healthier dietary intake can largely be explained by the fact that home cooked foods tend to be healthier than foods prepared away from home [57]. Compared to foods prepared at home, away-from-home foods tend to have more sodium, calories, and calories from fat, and less iron, fiber, and calcium [10,20,48]. Recent trends indicate that Americans' spending on and consumption of prepared convenience foods and away-from-home foods (such as those available at restaurants and fast food outlets) has increased steadily in recent years [20,55,59]. These trends have coincided with increasingly unhealthy diets and decreased participation in cooking among Americans [48,54].

1.2. Societal trends in cooking behaviors and skills

Though there is a strong relationship between dietary intake and cooking skills and behaviors, recent years have seen a societal decline in the time Americans spend cooking. Overwhelmingly, women tend to bear the burden of food preparation and have throughout history [16,50]. Even women however, as the main meal preparers, have drastically decreased the amount of time they spend cooking in the last several decades. This is in large part due to women's ever-increasing involvement in the workforce, a societal trend that began in World War II and was furthered by the women's liberation movement of the 1960s [27]. According to data from the American Time Use Survey, the amount of time that women spend cooking has decreased by approximately 70% since the 1960's [5,50]. Technological advancements in kitchen appliances – including the invention of microwaves, crockpots, food processors, and automatic dishwashers have also contributed to the reduction in the amount of time individuals spend preparing food [12]. A final factor that likely influenced decreases in cooking behaviors in America is the removal of mandatory home economics and culinary education classes from public school curricula [12,33].

It is important to note that recent declines in cooking skills and behaviors have been even more impactful among low-income populations. The average amount of time individuals of low socioeconomic class spend cooking has decreased more rapidly than in any other economic group in recent decades [54]. Families of lower socioeconomic status experience even greater barriers to engaging in cooking than their wealthier counterparts, as they are more likely to have less flexibility in their work schedules and work multiple jobs, leaving less time for cooking at home [2]. For this reason, it is important to investigate solutions that are feasible for individuals across all economic classes.

The last several decades have seen precipitous declines in the amount of time that Americans of all income levels spend cooking and preparing food [54,65], and as a result, hands-on cooking skills are not being passed from one generation to the next [15]. Individuals who have little cooking experience or skills have limited choices and control when it comes to food selection, and as such, cooking skills can be a barrier to healthy eating for many Americans.

2. Cooking skills as barriers to family meals and healthy eating

Despite decreases in the amount of time Americans spend cooking and the past few decades, parents still overwhelmingly feel that eating

dinner together as a family is important [39]. American parents see family meals as a valuable time for checking in with their children, building strong family relationships, monitoring their children's eating habits, and teaching healthy communication skills [36,39,40].

2.1. The importance of family meals

Family meals have numerous nutritional, emotional, and psychological benefits for children of all ages. Participation in family meals is related to increased self-esteem, engagement and purpose, and decreased depressive symptoms, stress, and suicidal ideation [18]. Furthermore, children and adolescents who eat with their families frequently have better academic outcomes and more sophisticated language skills, and are less likely to demonstrate antisocial or violent behavior, problems at school, delinquency, substance use, run away from home, or join a gang [18,37].

Family meals also have a robust positive effect on nutritional outcomes, as children who participate in family meals frequently have increased consumption of healthy foods (including fruits and vegetables, and foods that contain protein, fiber, calcium, iron, and folate), decreased consumption of unhealthy foods (like soda, fried foods, and fatty foods), and decreased odds of childhood obesity and eating disorders [21,37]. The benefits of participation in family meals during childhood even extends into adulthood, as children who eat with their families frequently tend to have healthier diets as adults [29]. Given the wide-ranging benefits of family meals for children and adolescents, efforts should be made to make it easier for parents to execute family meals at home. The next section will review challenges that parents encounter in attempting to cook meals for their families.

2.2. Challenges in cooking family meals at home

Though most parents view cooking skills as important [28], many adults also see cooking skills as a barrier to making healthy meals at home [32]. Challenges related to cooking family meals include deciding what to cook, not knowing how to cook, lack of enjoyment of cooking, and perceived time constraints [49,62]. Parents with low self-efficacy related to meal management and cooking are more likely to feed their families away-from-home foods and less likely to cook and implement family meals at home [43]. Even if parents have abundant resources to devote to implementing family meals (i.e., time, money), inadequate cooking skills can prevent parents from being able to cook healthy foods for their families.

3. Potential solutions to address the negative influence of inadequate cooking skills

Experts agree that cooking skills can present a key barrier to implementing a healthy lifestyle, and have proposed potential solutions to address the negative influence of inadequate cooking skills in America [28]. A commonly cited solution is the provision of hands-on culinary education programs for individuals who want to improve their cooking skills [63].

3.1. Culinary education interventions

In response to increasing trends toward unhealthy dietary intake in America, many nutrition experts advocate for increased community programming targeting the development of cooking skills [2,10,45]. In particular, interventions that include opportunities for practicing hands-on culinary skills tend to lead to the strongest outcomes [11]. Hands-on culinary education programs for parents have been effective at teaching participants cooking skills [9], but are not without their limitations.

The main limitation of hands-on culinary education programs is participation bias, a common issue in health-related interventions [38].

Participation bias in interventions occurs when participants are not representative of the broader population because they disproportionately possess certain characteristics that affect program outcomes [22]. In the case of culinary education programs, participants who choose to take cooking classes are likely more interested in learning to cook than the general population. They believe that cooking skills are important, and that taking classes to learn them is a worthwhile use of their time. Randomized controlled trials are not common in culinary education research [44], and the majority of participants voluntarily sign up for these programs on their own initiative. Given that such participants value cooking and learning culinary skills, culinary education programs are more likely to have positive outcomes.

Though these programs seem to work well for those parents who do participate, they do not reach a large proportion of the population who are not interested in learning how to cook (but still have unhealthy diets due to lack of cooking skills). For those individuals who do not want to devote substantial time to learning how to cook (and implementing these cooking skills daily to make meals for their families), solutions that eliminate the need for cooking skills, but still allow parents to serve healthy meals at home should be investigated.

3.2. *Eliminating the requirement for cooking skills through the use of prepared foods*

Though prepared foods tend, on average, to be less healthy than home cooked foods (especially in the case of highly processed and shelf-stable prepared foods), this is not universally the case. Investigating the consumption and production of healthier prepared foods as a means to improved dietary intake represents an understudied opportunity for aiding parents who have minimal cooking skills. Recent interview data revealed that adults who felt that cooking from scratch was challenging had a “desire for effortless meals,” which grew from a general lack of motivation to cook from scratch [32]. Prepared foods shift requirements for preparation time and cooking skills to the food distributor instead of the home cook [6]. One study also found that the use of prepared foods reduced the amount of time required to cook a meal, allowing for more complex meals than would be possible with raw ingredients in the same timeframe [1]. In sum, the use of prepared foods in cooking family dinners can lower the bar for who is able to prepare a meal at home, and loosen the requirement that parents need to possess cooking skills in order to execute family meals.

4. Future directions

In this section, implications of decreased culinary skills in American parents will be explored, and future directions for research, practice, and industry will be outlined. Both the food industry and research community can contribute to a better understanding of cooking skills in America, and generate solutions that make it easier for families to eat healthy meals.

4.1. *Call to the food industry to develop healthier prepared foods*

To fully address the challenges parents face in executing family meals due to lack of cooking skills, the food industry should develop food products that decrease the cooking skills required to make healthy meals at home. Even though prepared foods, on average, tend to be highly processed and less healthy than homemade foods, this does not have to be the case. It is crucial for the food industry to recognize that cooking skills are a significant barrier for parents who want to prepare healthy meals for their families, and respond to consumer needs by creating prepared and pre-assembled foods that are healthy, inexpensive, minimally processed, and don't require cooking skills.

Current trends in efforts to make it easier for Americans to make healthy meals at home have seen great increases in the number of companies that sell meal kits [56]. Meal kits provide raw ingredients

(usually through a subscription service) accompanied with recipes that allow individuals to prepare fresh meals at home without having to shop for groceries. Though they eliminate the need for shopping, meal kits still require significant cooking skills and hands-on preparation time. Since meal kits cannot be prepared without cooking skills, they are not an adequate solution for parents who don't know how to cook. Additional problems with meal kits that make them less suitable for families include significant time burdens of food preparation and general lack of family-friendly recipes. It has been found that preparing foods from meal kits often takes longer than the recipe claims [64]. Meal kit services have also been criticized for having recipes that are not appealing to children – an issue that is especially problematic with young children, whose picky eating behaviors often create challenges for parents who are trying to implement family meals [17,49]. Though meal kits are popular with certain populations, they do not provide solutions for those parents who experience the greatest barrier to home cooking – lack of culinary skills.

Potentially because they do not address the barriers that limited cooking skills present, meal kit companies only represent a small proportion of the food market. The meal kit industry is considered to be an approximately \$2.2 billion business, while fully prepared foods represent \$14 billion of the total \$1.3 trillion food market [53]. Today, it is estimated that only about 5% of American households have tried meal kits [53].

Instead of focusing on semi-prepared foods that still require substantial cooking skills, the food industry should address the needs of consumers and families who want simpler options. It is crucial to develop scalable solutions that provide healthy, high quality, affordable, family-friendly prepared or pre-assembled foods that do not require cooking skills to make at home. In addition to the call to the food industry to respond to consumer demands, there is also a need for the research community to conduct more comprehensive research on culinary skills among parents.

4.2. *Call to researchers to comprehensively examine culinary skills*

Though there is abundant evidence that cooking behaviors are related to healthier dietary intake, fewer studies exist that explicitly assess participants' self-reported cooking skills. Those studies that do assess cooking skills have significant limitations, and findings indicate that the outcomes of these studies are strongly influenced by data collection methods. As Short [52] and Lyon et al. [35] point out, most published research on cooking fails to clearly define the term, and rests on the assumption that “cooking skills” will be interpreted the same way by all participants and researchers. Recent studies have also found that adults' definitions of cooking from scratch varied widely, with some participants subscribing to the notion that scratch cooking involved preparing a meal entirely using raw ingredients, while others referenced the use of some “essential” prepared foods [32]. There is robust evidence to indicate that cooking skills are not uniformly defined, and that individuals tend to interpret the meaning of “cooking” very differently [51,52,62].

The ways in which participants are asked about their cooking skills can also have a strong influence on research in this area. In one study, participants' self-reported cooking skills varied based on the specificity of survey questions [28]. When women were asked about their general confidence in their cooking skills, approximately 95% said that they were “very” or “fairly” confident in their cooking skills. When participants were asked about their confidence regarding specific cooking skills however, the percent of respondents who were confident about their abilities to perform particular cooking skills decreased, with the largest decreases occurring with participants' confidence in their ability to stir fry and steam foods (approximately 55% of participants felt confident about these skills). Despite the fact that 95% of women were confident in their general cooking abilities, their confidence wavered when asked about specific cooking tasks. To truly paint a

comprehensive picture of the state of cooking skills in America, it will be vital for researchers to ask probing questions that do not take individual's general cooking confidence at face value.

It is also crucial to conduct more research on cooking skills with diverse and varied populations. There is strong evidence to indicate that demographic factors like race and ethnicity, religion, income, gender, and age influence eating behaviors [24]. Additionally, cooking behaviors vary by demographics like race and ethnicity [60]. Eating behaviors are also impacted by the setting in which an individual lives – as dietary patterns seem to differ between urban and suburban populations [13,19,23,34]. Urban and suburban communities also differ in demographics and other factors that influence food trends [4]. Given the evidence indicating that demographic and geographical factors have a strong influence on eating behaviors (and therefore consumer food needs), large population-based studies should be conducted to allow researchers to differentiate findings about cooking skills between different groups of individuals.

4.3. Conclusion

In conclusion, cooking skills, while associated with healthy diets in those who have them, can also create substantial barriers for some parents who want to serve their families healthy meals at home. Solutions to this problem will vary based on the individual – culinary education may be effective for some, but others require food options that eliminate the need for cooking skills. Future work in both the food industry and research community should investigate a variety of potential solutions to address challenges with cooking skills among American parents and families.

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