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## Reprint of “The relationship between culinary skills and eating behaviors: Challenges and opportunities for parents and families”<sup>☆</sup>

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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].

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