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Assessing The Impact Of An Intervention To Build Food Agency During Emerging Adulthood

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ASSESSING THE IMPACT OF AN INTERVENTION TO BUILD FOOD AGENCY DURING EMERGING ADULTHOOD

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ABSTRACT

Agriculture is an ancient human activity that has always changed the Earth. But the scale and scope of modern, industrialized agriculture is producing emergent problems in the food system, like unprecedented environmental degradation and high-calorie nutrient-poor diets that are driving poor health outcomes. Increasing cooking skills and the frequency of home cooking have been proposed as solutions to escalating rates of nutrition-related public health problems and may also be important to meeting diet-related sustainability goals like reducing meat consumption. Subsequently, the overarching aim of this thesis is to situate the importance of cooking as a strategy for food systems transformation, then make the case for immersive, qualitative, and longitudinal research to study the impact of food agency in emerging adulthood, a liminal lifestage (ages 18-29) characterized by identity exploration and growing autonomy that may increase receptivity to behavior modification. Food agency describes why some individuals are able to set and achieve food-related goals while others struggle to do so. Those with more food agency may be more capable and empowered to enact the types of sustainable plant-forward diets proposed to improve the food system's emergent problems.

The objective of the mixed-methods study described in this thesis was to assess the impact of an intervention to build food agency during emerging adulthood, given that the malleability and liminality of emerging adulthood may present an optimal window for intervention. Semi-structured interviews were conducted with University of Vermont students who had previously completed a 1-credit cooking course based on a pedagogy to build food agency. Food agency was measured via the 5-point Cooking and Food Provisioning Action Scale (CAFPAS). Qualitative data was analyzed using a grounded theory approach, triangulated with extensive participant observation conducted prior to the study, and interpreted through the lens of emerging adulthood.

This thesis contends that cooking is a solution to the dilemmas of the modern food system, and argues that emerging adulthood is a crucial moment for food agency interventions that build confidence and capability and create positive attitudes and feelings of self-efficacy toward cooking and the cooking process.

DEDICATION

To Lizzy Q,
Grandma Dorris,
my mother, Kate Dibos,
& my aunt, Rosemary Brogan.

Thank you for your inspiration.

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CHAPTER 1: INTRODUCTION

1.1. Mise en Place

Lizzy Q, my great grandmother, was rooted in the rural south, running a gas-station café in northern Louisiana, feeding family and customers alike dishes cooked from garden-fresh ingredients and the ducks and rabbits my great-grandfather shot. Lizzy's daughter, though, my Grandma Dorris, cooked her way *out* of the South, earning the bachelor's degree in Home Economics from Northwestern State University that eventually paved her path her to San Diego, California. The home-cooked meals I most remember were cooked by Grandma: Irish soda bread and roast chicken, her famous porkchops with fried potatoes, green salads with blue cheese dressing, orange juice popsicles. I have a wooden box of recipes recorded in her spidery handwriting. To be honest, though, I don't know if either Lizzy Q or Grandma *liked* cooking, because at the time—in their time—no one thought to ask. Probably, they cooked out of a mix of obligation, expectation, necessity, *and* pleasure. I hope so, anyway.

My mother, however, hated cooking. And yet, irony of ironies, in the late 1960s when she completed her bachelor's degree in English and earned her secondary teaching credential, the cutting-edge experimental high school that hired her put her on the Home Ec faculty, where she remained until the department closed in the late 1990s, finally freeing her to teach English. She loved her students, but always talked about "the foods class" in a richly indifferent tone. I feel like I grew up in the back of that kitchen classroom, watching bored teenagers learn to make baked Alaska and spaghetti and meatballs. I never took

mom's class myself: I went to the same school but was busy with student government and AP humanities courses. At home we ordered pizza and ate burritos from the taco shop for dinner. When the food budget got tight, we subsisted on Bisquick biscuits and microwaved baked potatoes. No one ever taught me how to cook.

Less than five years after my 1996 graduation from UCLA, however, I began gravitating toward the professional kitchen, much to my mother's surprise. I had a Political Science degree and an unfounded, uninformed, and totally unearned suspicion that I might be good at cooking. Before I donned my whites and picked up a knife in my Parisian culinary school classroom in 2000, I had only prepared a handful of meals. The experience radically changed my life, which probably explains why afterwards, anointed with my *grand diplôme*, I became something of a cooking disciple and embarked on a twenty-year quest to get people back into the kitchen.

I am still on that quest. But it's more complicated now.

Simplistically, I once thought that if people just *understood* that cooking was *better* than not cooking—if they just paid attention to what smart people like Michael Pollan and Mark Bittman (and even me, when I cooked on Food Network from 2007-2008) were telling them, if they just *tried* it, just went into their kitchens and *got on with it already*—they'd have an epiphany. I thought that new cooks would soon be buying whole ingredients and cooking all the time, transforming their individual lives and even our collective society, making it better and more enriching in immeasurable ways. I was impatient with people who didn't cook, like they were deliberately opting out of the virtuous cycle wherein

cooking begets more cooking. Every non-cook was a speedbump on the road toward a land of from-scratch dinners, where the virtuous forswore frozen foods, delivery services, and restaurant meals, all things I accepted uncritically as bad. This is what I believed. Indeed, I was drawn to the Food Systems graduate program at UVM by the theory of food agency and the theory's lead author and then-chair of the Food Systems program, Amy Trubek. I was motivated by my interpretation of her assertion that food agency was "not directly concerned with food consumption, but with a more nuanced and complete understanding of all that goes into making a person able to produce a meal, rather than consume a meal prepared (in some manner) by others" [152, p. 297] I fixated on the words "able" and "rather"—they augured a switch I thought I could flip and turn cooking "back on."

That was before I spent two years teaching more than 100 students how to cook in the UVM Foods Lab.

This thesis is situated within a vexing problem. On the one hand, the modern food system has thrived as the cooking imperative and the practice of home cooking has changed. We are no longer living in Lizzy's or Grandma's or even my mother's cooking reality, a transition that represents both progress and loss. In the U.S. today, cooking is an optional activity for most individuals—there are multiple alternatives available for sustenance, from convenience foods like premade heat-and-eat meals and ingredients to a wide and growing array of options for meals away from home. An industrialized food system now provides the global population with the bulk of their calories in the form of processed foods and animal products [42, 100], and the empirical evidence suggests that

associated outcomes for individual and planetary health have been dire. These emergent problems of the food system are addressed in the first section of this thesis' literature review.

On the other hand, is the question of cooking as a response to such dilemmas, made complicated by the web of social relations within which cooking is embedded and the moral overtones that saturate discussions of diet and health. In *Pressure Cooker*, for example, American sociologists Sarah Bowen, Joslyn Brenton, and Sinikka Elliott use thick ethnography to personalize, contextualize, and attack "the foodie ideal of a home-cooked dinner" in the United States [21]. They assert —contrary to Trubek's contention that cooking is "no longer essentialized to any particular category of person or any particular place" [151, p. 7]—that the culturally normative foodie ideal of a home-cooked meal still exists, is anchored in class-rooted assumptions and anxieties about health, and disproportionately pressures women, mothers in particular, to cook. Given the context of inequality that differentiates Americans' food lives, they further argue that "…we won't fix the food system by retreating into our kitchens—a solution that just makes inequality worse, because those with more resources have more options" [21, p. 12], and categorically reject the framing of cooking as "a meaningful act… undertaken by those who want to demonstrate care for their families and the environment" [21, p. 219]. This is an important critique, but condemning home cooking is a scorched-earth approach, and in another ethnographic work, *How the Other Half Eats*, sociologist Priya Fielding-Singh rejects it. Instead, while likewise calling the pressure on mothers, regardless of their economic

means, to provide the "right" kind of meals an "impossible standard" [46], she calls for *more* cooking through a more equitable distribution of food work, encompassing fathers, partners, schools, and workplaces. Like Fielding-Singh, I believe more cooking by more people is a solution to the myriad dilemmas of the modern food system.

Subsequently, at its heart, this thesis and the research study it describes are about the theory of food agency—defined as being "empowered to act throughout the course of planning and preparing meals within a particular food context" [152, p. 298]—and the food agency pedagogy deployed in the UVM Foods Lab to *develop* food agency. It is about empowering more people to cook. In their proposal of the food agency theory, Trubek et al (2017) acknowledged how the same foodie ideal critiqued by Bowen, Brenton & Elliot gave rise to a zeitgeist zeal to improve the nation's cooking skills [152]. But they also argued that before we could "fix" cooking, we needed to understand it in all its complexity. Mechanical skill—e.g., ability; the thing commentators like Pollan and Bittman (and me) were clamoring for more of, thinking it represented that switch we all longed to flip—was but a single aspect of cooking. To cook required a robust mix of cognitive, sensorial, navigational, *and* mechanical skills operating in concert to negotiate a morass of attitudes and beliefs and structural barriers. In other words, there is no *single* switch. Bandura (1991) writes of skill that it is, "not a fixed property that one does or does not have within one's behavioral repertoire. Rather, skill involves a generative capability in which cognitive, social, and behavioral skills must be organized and effectively orchestrated to serve a host of purposes" [10]. Trubek et al (2017) argued that those who possessed this robust mix of

skills were empowered to cook and possessed food agency [152], increasing their capability to set and achieve food-related goals—perhaps including goals like eating more healthfully or sustainably. To say that an individual has more or less or high or low food agency describes the interplay between the four dimensions captured by the theory's conceptual framework, including attitudes about cooking, self-efficacy beliefs, self-perceptions of skill, and individual experiences with structural barriers [79]. Further, the food-agency pedagogy posits that food agency can be *developed* by increasing a cook's culinary capability and confidence and thus their self-efficacy beliefs [136]. It aims to do this by improving their mechanical, cognitive, and sensorial skills through the promotion of professional epistemes associated with culinary education programs [35]. The food agency pedagogy is deployed in the UVM Foods Lab. However, little is known about how and whether food agency skills continue to be deployed in the aftermath of such interventions, the interactive effect they have on the remaining dimensions of agency, or whether and how personal attributes like the age or life stage of the cook impact the efficacy of the intervention. In the study described in this thesis, I therefore set out to investigate the impact of a food-agency intervention involving undergraduates at UVM to see what could be learned.

The conceptual framing of this study, which focuses on the specific impact of emerging adulthood on the development of food agency, was deeply informed by the ideas, experiences, and impressions that emerged before, during, and after the research project itself, while I was immersed in the classroom teaching those 100+ undergraduates how to

cook. Over the course of the 2021-2022 school year I taught four sections of NFS 095: Cooking for Health, a one-credit 8-week undergraduate cooking course. Then, in Fall 2022, while teaching a third semester of Cooking for Health, I also began teaching NFS 053: Basic Concepts of Food, a more rigorous 16-week three-credit undergraduate culinary course for nutrition and dietetics majors that I continued to teach throughout Spring and Fall 2023. Ongoing participant observation across all these classes has been a critical, indeed indispensable, even determinative part of this study. Being immersed with students helped me to broaden and deepen my own understanding of food agency and prompted my exploration of emerging adulthood, a developmental theory describing features of the life phase between ages 18-29 [4-6]. Emerging adulthood explains many of the behaviors and attitudes I witnessed in my students and remembered from my own youth, which herald and coincide with an ongoing process of identity formation that positions emerging adulthood as critical moment for habit-building interventions, like developing food agency.

None of my Foods Lab students were unfamiliar with cooking, but few had any skills or had been actively taught how to cook at home. Like me watching my mother in her foods class, for the most part, they had simply observed adults cooking and picked up a few things, including a sense that they liked and might be good at cooking themselves. I remembered that unearned confidence—a feature of emerging adulthood related to the life phase's optimism and future focus [4-6]. I also recalled the tumult of the college years, which the theory considers both disruptive and formative [4-6, 132]—how discombobulating it felt to suddenly not know *how* to feed myself, lacking structure,

knowledge, and guidance. I had subsisted on "buck-fifty subs" and cheap take-out Chinese food and didn't start trying to cook until I had an apartment my senior year. Then I began, occasionally, to cook easy things that approximated meals Grandma Dorris had made (lots of green salads with blue cheese dressing). Teaching at UVM, everything my students were experiencing, I remembered—but with the advantage of hindsight; knowing that the chaos ultimately quiets, and on the other side, I had emerged with a sense of self and my role in the world, the ultimate outcome of a successfully resolved emerging adulthood [4-6]. I hadn't anticipated that graduate school would occasion such introspection or a deep dive into my college memories, but the recollections helped me realize that what had felt so singular and personal at the time was, instead, quite typical. Emerging adulthood is an important framework for understanding the lives of undergraduates and how the life phase impacts the experience of building food agency.

This thesis contends that cooking is a solution to the dilemmas of the modern food system and argues that emerging adulthood is a crucial moment for food agency interventions that build confidence and capability and create positive attitudes and feelings of self-efficacy toward cooking and the cooking process. In this thesis as a whole, three conceptual strands are twined together: emergence in the food system and the importance of cooking; the case or emerging adulthood as the critical moment for food agency interventions; and the reasons for immersive, qualitative, and longitudinal research methods in order to study the impact of food agency in emerging adulthood. The thesis includes (1) a comprehensive literature review in two distinct parts, the first contextualizing

cooking as a food-systems issue, the second providing context for cooking interventions and exploring the theories of food agency and emerging adulthood; (2) a detailed presentation of this thesis' research study, which assessed the impact of an intervention to build food agency during emerging adulthood, prepared as a first step toward writing up this research for journal publication; and (3) a comprehensive bibliography. I hope the scholarship contained herein contributes to the body of knowledge around cooking, its role in food systems transformation, and the development of food agency, particularly during emerging adulthood. I respectfully submit it for your consideration.

CHAPTER 2: COMPREHENSIVE LITERATURE REVIEW

2.1. What Food Systems Problems May be Addressed by Cooking?

2.1.1. Grasping the scope of the problem

Agriculture is an ancient human activity that has always changed the Earth [160]. But the scale and scope of modern, industrialized agriculture—characterized by intensification, the increasingly concentrated control of agricultural inputs, larger farm sizes, and growing fragmentation among marginalized small farmers [42]—is producing unprecedented environmental degradation [26, 34, 157]. Anthropogenic climate change is caused mainly by greenhouse gas emissions (GHGE), including carbon dioxide, methane, and nitrous oxide: the primary source of both methane and nitrous oxide is agriculture [26]. Analyzing data contained in the EDGAR-FOOD database that tracks GHGEs from the global food system, Crippa et al (2021) reported in *Nature Food* that in 2015, food-system emissions accounted for 34% of the world's total emissions [34]. Seventy-one percent of that total derived from agricultural production and land use or land-change activities, while the rest stemmed from activities associated with the food supply chain, like transport, fuel production, waste management, retail, industrial processes, and packaging [34].

Driven by the impact of modern agriculture, we have already entered uncharted high-risk territory with regards to the diminishing biosphere—a result of land clearing for crops—and anthropogenic nitrogen flows from agricultural inputs that pollute air, soil, and waters and watersheds, leading some scientists to argue that we are rapidly passing out of humanity's "safe operating space" [128, 130, 143] with no clear understanding of—or plan

for—the consequences. Other planetary boundaries including climate change, stratospheric ozone depletion, and ocean acidification are approaching projected tipping points, and agriculture plays a significant role [26].

Meanwhile, despite advances in the food system that have overall created less hunger and improved nutrition globally [42], more than 820 million people worldwide remain food insecure [171]. What we eat is changing. High-calorie nutrient-poor diets are increasingly the norm, leading to what the nutrition epidemiologist Barry Popkin has termed the "double burden of malnutrition," defined as the simultaneous manifestation of both undernutrition and overweight and obesity [123]. Popkin et al (2020) have faulted the food system, particularly the availability of cheap ultra-processed food and beverages, and note that 28 billion or more children and adults worldwide are considered overweight while more than 150 million children are stunted [123]. The double burden of malnutrition affects most low-income and middle-income countries, and is prevalent in the global South, where climate modeling also indicates food systems will be most impacted by global heating and less capable of adapting, given inequities in socioeconomic conditions [157]. The health impacts arising from food systems have led the UN Global Panel on Agriculture and Food Systems for Nutrition to declare that unhealthy diets are responsible for the largest share of the global burden of disease, posing greater risk to morbidity and mortality than unsafe sex, alcohol, drug, and tobacco use combined [171]. However, the problems of poor diet and nutrition are not constrained to developing regions. In the U.S, health disparities between blacks, whites, and Hispanics; between women and men; and between older,

younger, and middle-aged adults are related to differences in diet quality [67], with poor diet quality driving high incidences of cardiovascular disease, hypertension, type 2 diabetes, osteoporosis, and some types of cancer [164].

2.1.2. Making sense of complexity, providing tools for transformation

Applying systems thinking [101, 102], these examples of environmental degradation, poor nutrition, and food insecurity can all be defined as "emergent properties" of the food system [88]. The Dutch social scientist Cees Leeuwis, writing in *Food Security*, explains that the emergent properties exhibited by complex systems help us evaluate a given system's functionality. For example, we say the food system is "broken," because instead of exhibiting emergent properties like health or environmental stability, "we see that our food systems still generate malnutrition, food insecurity, poverty, and environmental degradation" [88, p. 762].

In addition to exhibiting emergent properties, complex, interactive systems like the food system are also characterized by competing perspectives on outcomes and processes between human actors; diversity, as in there is no one single food system; a wide range of views on a system's purpose or interests that makes it hard to create synergy or designate a direction for change; self-organizing dynamics, with change largely attributed to unintended outcomes; and resiliency and stability of emergent properties, making it hard to transform the system. [88] If complex systems respond at all to attempts at change, the response is generally slow [101, 102].

Nonetheless, given the gravity of the food system's emergent properties and the quickening pace at which we are breaching planetary boundaries [26, 34, 130, 143], systems thinking or a systems approach has emerged in the literature as a favored means for grappling with the food system's complexity and plotting paths forward, an idea that has come to be termed "food systems transformation" [13, 38, 42, 115, 142]. Notably, in this use, "transformation" is infused with normativity [13], implying a moral or ethical imperative [167] that warrants urgency and innovation on behalf of researchers and policymakers alike [13, 65, 88]. An agenda of food systems transformation includes initiatives, policy, and projects that participate in slowing or halting environmental damage, transcending the aims of adaptation research as a climate change response [1, 116]. Writing in the second of three research progress reports published in *Progress in Human Geography*, O'Brien (2012) argued that as a research agenda, "adaptation" seemed resigned, "as if the future had already been decided and the challenge for humans is to adapt" [115, p. 668].

Under the construct of food systems transformation, systems thinking is seen as a tool. Indeed, the Scientific Group for the 2021 UN Food Systems Summit, charged with smoothing implementation of the UN's Sustainable Development Goals, noted that the Summit's overarching goal was transformation, and advocated for a systems-thinking approach to define, analyze, and create consensus regarding the actors, actions, and boundaries of the global food system [160, 161]. As Leeuwis et al (2012) has noted, systems thinking provides analytical tools, and "it is assumed that such analysis can

increase our understanding of the way in which components of the system interact and provide insight in trade-offs and synergies between development objectives associated with alternative interventions in the system" [88, p. 761].

For example, in a 2008 paper in *Global Environmental Change*, the food systems scientist Polly Ericksen (who was recently named the inaugural director of the UVM Food Systems Research Center), used systems thinking to design a conceptual framework for analyzing the relationship between interactions and outcomes in the food system [42]. Based on the principle of vulnerability analysis [43], the framework is intended to help institutional managers design strategies to thwart or weaken the impact of undesirable food system outcomes, by providing a systematic means for working backwards from a possible outcome to deduce its determinants [42]. A strength of Ericksen's framework is its holistic nature: it draws on data from both the natural and social sciences, acknowledging the impact of drivers like culture that produce preferences, norms, and traditions, that in turn impact practices like cooking that influence food purchasing, diets, and even, in the case of biomass cook stoves, energy use and pollution [18, 42, 124].

2.1.3. Going beyond analysis, finding a place for cooking

However, Leeuwis et al (2012) contends that "generating detailed knowledge and understanding about food system dynamics and the likely positive or negative consequences of alternative courses of intervention does not in itself bring about food system transformation" [88, p. 761]. Subsequently, some scholars see systems thinking as *a* piece of the puzzle, to be used in tandem with other theory and approaches, rather than

as a solution in and of itself. Leeuwis et al (2012), for example, integrates system thinking with the multi-level perspective model (MLP) that is derived from a historical analysis of the processes of innovation [48, 49], and contends that food systems transformation will occur only with change to the socio-technical regimes in which the food system is embedded [88].

For the purposes of this paper, the MLP framing is compelling because it provides a lens through which to see how cooking practices are manipulated by but could also influence the food system. The components of an MLP model are: *niches*, where potentially disruptive innovations are nurtured; *socio-technical regimes*, that buttress the status quo; and the *socio-technical landscape*, beyond the influence of niche and regime actors, where developments pressure regimes and create opportunities for change or transformation [87]. MLP theorizes that socio-technical regimes are the "deep structure" that protect the status quo and are comprised of everything from policy to industry to markets to culture [48, 49]. Thus, applying an MLP lens we can see how deskilling—the systemized reshaping of socio-cultural practices like cooking to move individuals from self-sufficiency (which Howard (2016) contends is a deliberate goal of the corporate food industry)—could be seen as upholding the current socio-technical regime blocking food system transformation [70, 73]. We can also envision how reskilling—in this case, a resurgence in cooking practice—might be cultivated within protected *niches* like the UVM Foods Lab and participate in reshaping the socio-technical landscape [88].

2.1.4. Systems thinking and pedagogical questions

While multiple perspectives on the food system and food system transformation exist, in the literature, an emphasis on applying systems thinking has emerged as has been previously noted. In fact, the thrust for a university-level pedagogy to teach food systems could be considered one form of evidence supporting this contention. Let us briefly consider two recent papers dealing with food systems pedagogy. As Brekken et al (2018) observe, "undergraduate and graduate students are poised to engage the wicked problems of the food system, putting university education to the task of supplying the tools and knowledge that they need through interdisciplinary food systems or sustainable agriculture programs at universities" [25, p.1]. Is cooking given a role in the curriculum?

First, in a highly cited paper in *Renewable Agriculture and Food Systems*, an interdisciplinary team of North American researchers with backgrounds in education, sociology, agroecology, ethnobotany, and geography, proposed a Signature Pedagogy (SP) [138] for sustainable food systems education (SFSE) [156]. The team grounded the SP in their analysis of SFSE courses and curriculum at their home institutions of the University of British Columbia, Montana State University, the University of Minnesota, and UC Davis [156]. An SP is a conceptual model describing "the types of teaching that organize the fundamental ways in which future practitioners are educated for their new profession" [138, p. 54], and according to the educational psychologist Schulman, they play a vital role "implicitly [defining] what counts as knowledge in a field and how things become known. They define how knowledge is analyzed, criticized, accepted, or discarded…the function

of expertise in the field, the locus of authority, and the privileges of rank and standing" [138, p. 54].

In their paper, Valley et al (2018) do not specify course content or disciplines that should or might be included in an SP for SFSE. Instead, they outline three framework structures—Surface, Deep, and Implicit—that together facilitate the SP's overarching pedagogical objectives and communicate its epistemological and ontological values [156]. The Surface structure describes the types of learning settings and activities that promote Deep and Implicit goals and outcomes. The Deep structure is about knowledge and know-how: though Valley et al (2018) do not prescribe curricula, herein they do stipulate that SFSE coursework should emphasize systems thinking, experiential learning, interdisciplinarity, and collective action. Finally, the Implicit structure, also called the "hidden curriculum," transmits the pedagogy's values and dispositions [138, 156]. Illustrating how an SP is intended to transmit useful skills and deeper values and beliefs simultaneously, the authors write that, in the SP, systems thinking represents "an ontological commitment to a relational, interdependent view of reality and an epistemological shift towards knowledge as socially constructed, residing in and evaluated from, different perspectives and approaches" [156, p. 474].

For the purposes of this paper, we might pause here to consider how cooking courses constitute a form of experiential learning and demonstrate the "learning by doing" principle expounded by the educator, philosopher, and social critic John Dewey, among others [32, 125]. Valley et al consider "field trips, laboratory activities, community

placements, and internships that embed learning in activity" as settings for experiential learning [32, 156]. Might we include the UVM Foods Lab on this list of learning sites? Meanwhile, Valley et al (2018) emphasize experiential learning in the SP because knowledge-in-use activities concretize and complement abstract ideas learned in the classroom while validating "non-academic ways of knowing as legitimate and valuable sources of knowledge" [156, p. 477], a shared goal of the food-agency pedagogy [174].

A second paper on food systems pedagogy makes more explicit curriculum prescriptions than Valley et al (2018) propose under their SFSE SP. Writing in *Sustainability*, a team of researchers from Oregon State University, the University of Minnesota, and the University of Vermont—all with disciplinary backgrounds in applied economics—respond to Valley et al's (2018) proposed SP framework [25]. They propose a course outline, mining classes in their respective food systems programs to explicitly describe "what to teach" and "how to teach it" [25, p. 2]. Brekken et al (2018) contend, "systems thinking must be taught explicitly in a food systems class" [25, p. 4]. Then, to teach core concepts in systems thinking—namely, how to break down complex systems and reveal the interconnections that drive outcomes [101, 102]—they outline a set of learning activities, including deductive and inductive case studies, experiential learning, reflective narrative learning, and simulations and scenarios [25]. Recalling Leeuwis et al's (2018) critique of food systems analysis—that "generating detailed knowledge and understanding about food system dynamics and the likely positive or negative consequences of alternative courses of intervention does not in itself bring about food

system transformation" [88, p. 761]—we might hope that Brekken et al (2018) envision a broader food systems education for the university students being trained to tackle the system's intractable "wicked problems" [129]. Reflecting on Shulman's (2005) contention—that pedagogy defines what counts as knowledge in a field and how things become known—we might also ask, what is conveyed when cooking, the culturally contentious process through which the products of the food system are transformed into palatable and nutritious meals, is *not* part of food systems pedagogy? [134, 138, 151] Consider the case of a "foodprint seminar," a one-unit academic course on connections between food systems and environmental sustainability, launched at at UCLA, Stanford, and UC Davis as part of the Menus of Change University Research Collaborative [95]. As reported in *Nutrients*, the seminar objective was to shift students' dietary intake and reduce their carbon footprint, and indeed, students enrolled in the 1-unit seminar reported significant changes in their consumption of vegetables (increased by 4.7 weekly servings), ruminant meat (decreased) and sugar-sweetened beverages (decreased), resulting in an estimated 14% reduction in the students' dietary carbon footprint [95]. Seminar content included academic readings, written reading reflections, group discussions, and skills-based active learning exercises like calculating the carbon, water, and land-foodprints of an individual meal—and no cooking or discussion of cooking of any sort [95]. The missed opportunity to investigate the barriers between sustainable-diet objectives and sustainable dietary change is glaring. The transformation of food-systems products into meals is

rendered invisible, and along with it, the labor, choices, decision-making processes, time, money, and skills necessary to complete that transformation.

2.1.5. Unpacking dietary change as a root of food systems problems

We have seen that environmental degradation and poor health and nutrition are two significant food systems problems. Both are driven by a form of dietary change that has come to be called the "nutrition transition" [119-122], after the theory of the same name proposed by Popkin.

Using data collected during a five-year study in China between 1989-1993, Popkin noted the increasing income elasticity of food items like pork and edible oils, which he deemed cheap, fatty calories, and theorized that due to urbanization, economic development, and technological advancement, a shift away from traditional diets toward meat-centric and high-fat diets was underway [119]. In the years since, in a series of highly cited papers in nutrition journals like *Nutrition Review* and *Public Health & Nutrition*, he developed the theory, which identifies five stages of nutrition transition that accompany a country or region's economic development: 1) hunter gatherer; 2) early labor-intensive agriculture with periods of famine; 3) receding famine as agriculture becomes industrialized and incomes rise; 4) the adoption of Western-style diets high in sugar, fat, and processed foods, accompanied by a sedentary lifestyle; and 5) intentional dietary and lifestyle changes to increase physical activity, reduce calorie and fat intake, and increase fruit, vegetable, and unrefined carbohydrate consumption [119-122]. While some have argued that global research on the impact of the nutrition transition in low- and middle-

income countries is hampered by an inability to adequately assess the differential dietary impact of ultra-processed versus processed foods [163], there is wide consensus that what Popkin deemed an inexorable shift to the higher-fat Western diet includes a marked increase in animal products. Indeed, a team of European researchers who performed a cross-country regression analysis with data from 137 countries, reported in *Appetite* that demand for meat increased with income, urbanization, female participation in the labor market, relative influence of Western culture, social globalization, and having a domestic meat production sector [104]. Popkin noted that most countries in Asia, Latin America, Northern Africa, the Middle East, and the urban areas of sub-Saharan Africa have all experienced a shift in the overall structure of their dietary pattern over the last few decades [121].

The summary report of the EAT-Lancet Commission report notes that worldwide, nearly 650% more red meat, 250% more chicken, and 250% more eggs are consumed than is recommended [171]. According to a 2016 UN FAO report, between 1961-2011, a 128% increase in global population coincided with a *quadrupling* in global meat consumption and production [104], in part driven by technological advances that have made raising livestock less costly, if no less destructive to the environment. Between 1690 and 1990, there has been a six-fold increase in global pastureland and a five-fold increase in global cropland, including lands cleared to grow soybeans and corns for animal feed—nearly half of the globe's natural grasslands and a third of the natural forests were cleared in the same

period [63]. Meanwhile, nearly 14.5% of the anthropogenic greenhouse gases emitted annually originate in the livestock sector [51].

Measures of increased meat consumption account for beef, lamb, goat, pork, chicken, and other meat sources like rabbit and game, but a U.S. FAO report notes that ruminants—grass-eating animals including cattle, sheep, and goats, which use enteric fermentation to digest plant-material in their fore-stomachs—have a much higher carbon footprint thanks to the high levels of methane their unique digestion process produces [51, 74]. A single cow produces between 154 to 264 pounds of methane gas per year, and according to the EPA, methane is 28-times more powerful than carbon dioxide on a 100-year timescale and 80-times more powerful over 20 years. By some estimates, given current trends in meat consumption, the number of cattle worldwide may grow by more than a billion animals [71, 92].

Given the growing evidence of harm caused by meat eating, scholars have argued in favor of interventions to reduce meat-eating behavior [61, 96, 127, 171]. Of these, the Planetary Health Diet (PHD), a global reference diet proposed in 2019 by the EAT-Lancet Commission, is perhaps the best-known science-based intervention crafted to date to tackle the twin food systems problems of environmental degradation and poor health and nutrition [171]. The commission has called for a global shift, doubling consumption of fruits, vegetables, nuts, and legumes, and reducing foods like red meat and sugar by more than half [171]. The proposed PHD nutritional guidelines specify that in place of the quantities of meat currently consumed, protein is to be primarily from plants, including soy, legumes,

and nuts; with fish or alternate sources of omega-3 fatty acids consumed several times a week; only modest consumption of poultry and eggs; and low intakes of red meat, if any [171]. Fats are to be sourced from unsaturated plant sources, severely reducing or eliminating the intake of animal fats like lard and butter, and carbohydrates are to emphasize whole grains, minimizing refined grains and reducing sugar consumption to less than 5% of total energy intakes [171]. The PHD has been widely criticized as being too idealized, inaccessible, and onerous, particularly for the rural poor. Facing criticism, the Lancet itself conducted further research on the affordability of the PHD and found that while the global median cost of the diet—U.S. $2.84 per day—was within reach in high-income countries, it exceeded the household per capita income of at least 1.58 billion people [66]. Nonetheless, research has suggested that plant-forward diets like the PHD that dramatically reduce meat consumption are indeed associated with lower GHGEs [27, 131, 178].

2.1.6. Influencing meat consumption, according to the literature

As such, there is a growing body of literature devoted to meat reduction, much of it related to individual behavior change [e.g., 37, 82, 86, 87]. In fact, one highly cited article by two researchers on the Faculty of Sustainability Science and Applied Geography at Germany's University of Greifswald, reporting the results of a meta-analysis of 155 papers on factors influencing meat consumption, found that internal and personal factors were analyzed most frequently in the literature [144]. Among these internal and personal factors, values and attitudes that influence meat eating were cited the most frequently in research,

closely followed by habits and taste, and the influence of knowledge and skills. Taken together with two separate findings by Kwasny et al (2022) and Graça et al (2019)—who each performed systematic literature reviews of meat-reduction interventions and found that the majority assessed internal factors that drove or impeded change [56, 78]—a picture emerges of how meat reduction intervention is most often viewed in both the literature and policy. It is characterized as a personal choice largely driven by what Stoll-Kleeman & Schmidt call "guiding principles" [144] and strongly influenced by habit and routine [36, 55, 86, 87] Socio-economic and demographic factors also play a role, including gender (women eat the least meat, are most concerned about the environment, and are the most willing to change) [77]; age (young people have the highest number of vegetarians and flexitarians) [39]; and income (lower-income people highly esteem meat and allocate the largest portion of their budget toward its purchase) [170].

However, two additional findings in the work of Kwasny et al (2022) and Graça et al (2019) broaden this interpretation of the factors driving meat consumption, or at least influencing meat-eating behavior. As reported in *Appetite*, the Austrian team led by Kwasny—composed of researchers in the fields of economics, sustainability, marketing, and innovation—investigated the effectiveness of different meat-reduction interventions in a review of 67 articles covering 99 empirical studies conducted between 2001-2019. As previously noted, 60% of the studies focused on personal factors like knowledge and skills, habits, and values and attitudes. Among the studies that focused on skills, three focused on cooking plant-based meals, and Kwasny et al (2022) found that all three were effective at

changing attitudes and intentions toward meat reduction [78]. It must be noted, however, that two of the three studies involved participants with a pre-existing illness and interventions that framed meat reduction and plant-based diets as a means of preventing worsening of that illness [78]. In their 2016 study, Stoll-Kleeman & Schmidt (2017) found that health was the most powerful motivator influencing meat-reduction [144], a finding echoed by Hoek et al 2017 [68]. Considering those findings, it is plausible that in the studies referenced by Kwasny et al (2022), pressing health concerns had more bearing on the participants' intent to change behavior than any feelings of empowerment, increased culinary confidence, or capability to cook plant-based meals acquired during the cooking intervention.

But in part, the larger point is that we don't know. The impact of cooking was assessed in only three of 99 studies reviewed by Kwasny et al (2022), a statistic that mimics a significant finding of Graça et al (2019). Graça's team of Portuguese psychologists conducted a systematic review of 110 articles related to meat reduction published between 1998-2018 and mapped them to the COM-B behavior-change framework developed by another team of British and Dutch psychologists [56, 103]. The COM-B framework posits that for sustained change of practice and behavior (B) to take place, capability (C), opportunity (O), and motivation (M) to engage in the behavior must be aligned [103]. Graça et al (2019) used the studies included in their review to compile and map a list of barriers and enablers to meat reduction. The team found that 93.6% of the included studies described barriers and enablers related to "motivation," while 20% described barriers and

enablers that mapped to "opportunity" (barriers and enablers could map to more than one aspect of the framework) [56]. However, only 6% of the studies described barriers and enablers related to "capability," defined by Michie et al (2014) as having both the knowledge and dexterity to perform the targeted behavior, in this case, meat reduction [56, 103]. This led Graça et al (2019) to argue that the impact of forms of capability, including cooking skills, on meat-eating behavior change was significantly under-studied and warranted further investigation [56]. Given the aims of this paper, it is worth noting that one study included in the Graça et al (2019) review was a qualitative study reported in *Appetite* involving 29 Australian food shoppers who self-identified as regularly consuming meat, who said that lack of information and lack of cooking skills were barriers that kept them from eating a more plant-based diet [68].

Because there is a paucity of literature investigating the relationship between cooking skills and meat reduction [56, 78] and some suggestion that lack of cooking skills is a barrier to transitioning to a plant-forward diet like that envisioned in the PHD [68, 86, 87], it is tempting to infer that increased cooking skills, along with increased cooking frequency, might enable meat-reduction in service of the goal of food systems transformation. Indeed, in a 2022 study, a team led by the John Hopkins public health researcher Wolfson tested a version of this hypothesis [178]. Given that increased cooking frequency is associated with higher HEI scores [147, 148, 172, 176] and higher HEI scores are associated with lower GHGEs [62, 131], they sought to learn whether, transitively, increased cooking frequency was associated with lower GHGEs. Using a database of

GHGE factors, Wolson et al (2022) tallied emission totals representing the 24-hour dietary recall data for 11,469 participants who had participated in the 2007-2010 National Health and Nutrition Examination Survey (NHANES). They then performed a regression analysis comparing participants' tallied GHGE score with information about their household's cooking frequency, also captured in the NHANES survey.

Contrary to expectations, the team found that cooking at home more frequently was associated with *more* GHGEs and thus a higher carbon footprint [178]. Individuals in households who cooked the most frequently (7 times/week) consumed significantly more meat, poultry, and fish (148.3g per 2000kcals) than households who only cooked 0-2/week (135.5g per 2000kcals), driving up their tally of GHGEs [159, 178]. Another interesting result was that lower education and lower income were both associated with both cooking more frequently and consuming more meat; the opposite was true for higher education and higher income [159, 178]. This echoes the finding previously cited in this literature review that meat-eating was associated with socioeconomic demographics, and that those with less education and income esteemed meat the highest while those with higher incomes were the most likely to eat a vegetarian diet [170]. Given their team's findings, Wolfson et al (2022) concluded that "while cooking at home more frequently may, indeed, be a strategy for consumption of an overall healthier diet, particularly for high-income individuals, cooking at home does not necessarily translate into a lower environmental impact unless additional changes, particularly meat consumption, are also made" [178, p. 11].

2.1.7. Conclusions

In this section of the literature review, I have shown that reducing meat consumption could have a profound impact on our imperiled planet, but that cooking is understudied as a means of driving this strategy for food systems transformation, even though evidence suggests that lack of cooking knowledge may pose a barrier to embracing a plant-forward diet [56, 68, 78, 86, 87]. Moreover, cooking is marginalized within the academic literature of food systems transformation, even while the *implication* of cooking or not cooking *is* present in many of the studies I have discussed. For example, Ericksen (2008) uses global trend data from Maxwell & Slater (2003) to document a shift toward consuming "processed food with a brand name; more animal products" [42, 100] in place of basic staples. Ericksen presents this data point to illustrate how a conceptual model could help connect the dots between action (diet change) and outcome (an agricultural practices shift) in the global food system. But in the shift itself—toward processed foods and away from whole and/or raw ingredients which must be cooked—we can infer that globally, less domestic cooking, or at least new types of domestic cooking, are being done. Similarly, Popkin's theory of nutrition transition hinges in part on changes in food preparation: diet quality has decreased concurrent with a trend toward less time and energy being spent on cooking and food preparation, driven by new technology like packaging, microwave ovens, and refrigeration and freezing [119-122]. Finally, regarding their study, Wolfson et al (2022) note that "to our knowledge *this is the first study* to examine the relationship between frequency of cooking at home … and diet-related environmental impacts in the U.S." (emphasis mine) [178, p. 10]. As Wolfson et al (2022) observes, in the U.S. in

particular, cooking is not commonly part of the scholarly conversation around behavior change and food systems transformation: notably, all the meat-reduction studies included in this literature review that have touched on cooking have been led by researchers outside the U.S.

The marginalization of cooking within food systems scholarship seems poised to continue. Systems thinking has given us tools for grasping the complexity of food systems problems, but emerging pedagogies to prepare the next generation to creatively tackle food systems problems generally overlook the *entanglement* of agricultural practices and cooking. In the papers and studies reviewed, cooking is not part of the curriculum [25, 95, 156]. And this is a missed opportunity to convey cooking's empirical relevancy to food systems transformation and express an ontological and epistemological commitment to the practice of cooking that should exist in the field precisely because of that relevancy.

2.2. What Is Known About Young People and Cooking?

2.1.1. Modes for the transmission of cooking skills may be changing

If cooking has not yet found its way into the academic literature tackling food systems transformation, over the last few decades, anxiety about the societal impact of cooking's perceived "decline" has been growing [136, 150, 151].

Social anxiety about Americans' cooking skills is not new. Nor are fears about the impact of sweeping economic changes on American diets, which, in part, the meat-reduction debate represents. In fact, as Laura Shapiro describes in *Perfection Salad*, the two are often coupled [134]. In the early and mid-19th century, the spread of

industrialization displaced the home as a center of economic activity, where everything from clothing, textiles, and soap, to hams and baked goods had been produced in-house, usually by the women of the house. In response, domesticity took on moral dimensions. "As woman's traditional responsibilities became less and less relevant to a burgeoning industrial economy, the sentimental value of home expanded proportionately," Shapiro observes [134, p. 13]. The stage was set for the emergence of domestic science, which merged moralism, the logical processes associated with industrialization, and the emerging fixation on scientific rationalism, to carve out a small sphere of influence for "bright, but listless housewives" and educated female social crusaders alike. In the process, for a certain segment of female society, cooking—and the teaching of cooking—was transformed. Through programs, pamphlets, and new culinary schools like the Boston Cooking School founded in 1879, "newly educated cooks pursued the science of food, not the sensuality, and worked to establish a cuisine that would be nobler, somehow, than the act of eating" [134, p. 45]. An aim of the new noble cuisine was the cultural assimilation of newly arrived immigrants and a reformation of the diets of the poor, as typified in the writings of one domestic scientist/reformer, who wrote, "'Food easily procured, sufficiently palatable to ensure no dissatisfaction and demanding no ingenuity of preparation, would seem the ideal diet of the poor, if they could be made to adopt it'" [134, p. 127]. The era of the domestic scientists ushered in scientific cookery—establishing the dietary dominance of protein, carbohydrates, and fat, all new concepts in the early 20th century—and opened the door to industrialization, heralded by domestic scientists as a force for finally "demolishing the

rule of sentiment and establishing in its place the values manifest in American business and industry" [134, p. 180]. It also provided a template for the kind of reformist zeal that present-day sociologists Bowen, Brenton & Elliott (in their book, *Pressure Cooker*), and Fielding-Singh (in *How the Other Half Eats*) argue still disproportionately scrutinizes and critiques the nutritional soundness of the diets of poor and marginalized people [21, 46]. Similarly, all three works describe the responsibility of cooking as entrenched within the female sphere, though as Trubek describes in *Making Modern Meals*—and as was prefigured in the emergent food industry described by Shapiro—*what* is produced, and how and from what it is made, has changed [134, 151].

2.2.1.1 Linking cooking at home and health

Perfection Salad, *Pressure Cooker*, and *How the Other Half Eats* demonstrate that concerns about cooking and diets have been and remain entwined, and indeed, the impact of cooking on health outcomes *has* been widely explored in the public health literature. This flows from a premise about the "healthiness" of cooking, established in part through correlation. As described in section 2.1.1 of this literature review, there is consensus in the literature that a global trend toward high-calorie nutrient-poor diets—including meat eating and cheap ultra-processed food—is driving worldwide increases in poor health outcomes like diabetes and cardiovascular disease. In the U.S., evidence suggests that nearly half of the health burden stems from chronic disability related to dietary factors, equal to more than 650,000 deaths a year and 14% of all disability-adjusted life-years lost [110]. According to the most recent nutrition-related health data from the U.S. Department of

Agriculture (USDA) and the U.S. Department of Health and Human Services (HHS), 60% of adult Americans live with one or more diet-related chronic diseases (DGA 2020-2025). Empirical evidence strongly suggests that what we are eating is negatively affecting our health..

Since the 1960s, the National Center for Health Statistics within the Center for Disease Control has been conducting the National Health and Nutrition Examination Survey (NHANES), which combines two 24-hour dietary recall interviews—one conducted in person, plus a follow-up over the phone—with a physical examination. Measures including the Healthy Eating Index (HEI) and the Alternative Healthy Eating Index (AHEI) have been developed to assess such data, describe the healthfulness of various eating patterns, and frame expert recommendations for dietary change, including the USDA's Dietary Guidelines for Americans (DGA). The assumptions embedded in this approach—and its non-neutral metrics, like weight and body mass index (BMI)—have been critiqued within the nutrition discipline for establishing a paradigm of weight-normativity that, it is argued, worsens diet culture and is damaging to overall health [7, 153]. Critiques from sociologists and policy experts meanwhile have focused on the attainability of diet recommendations that emphasize fresh foods, which are frequently costlier and may be inaccessible in certain food environments [66]. Indeed, Bowen, Brenton & Elliott argue that a paradigm they dub the "foodie ideal"—home-cooked meals made with fresh ingredients—"just makes inequality worse, because those with more resources have more options" [21, p. 12].

Such an assertion may arise from the types of statistical trends that were noted by Wang et al (2014), who translated NHANES data collected between 1999 and 2010 to create an equivalent AHEI score and found wide discrepancies in diet quality based on socioeconomic status and race [164]. The authors reported that, "dietary quality was lowest and improved slowly in participants who had completed no more than 12 years of education, whereas dietary quality in participants who had completed college was consistently high and improved exponentially" [164, p. 1593]. Likewise, Rehm et al (2016) translated NHANES data collected between 1999 and 2012 to create an equivalent set of American Heart Association (AHA) scores [126]. Writing in the *Journal of the American Medical Association*, the team reported that, "the estimated percentage of non-Hispanic white adults with a poor diet significantly declined (53.9% to 42.8%), whereas similar improvements were not observed for non-Hispanic black or Mexican American adults. There was little evidence of reductions in these disparities and some evidence of worsening by income level" [126, p. 2542]. The literature provides ample evidence supporting a claim that sociocultural disparities in health outcomes related to diet are rooted in long-standing racial inequities: more education, higher income, and whiteness are strongly correlated with diet quality and predictive of better health [22, 67, 126, 164, 165].

It is beyond the scope of this thesis to analyze such findings or their sociological ramifications—though it is nearly impossible to get beyond them, as we will see. Instead, given this thesis' purpose, the possible link between diet outcomes and cooking that NHANES data and assessment metrics have helped establish is more pertinent. For

example, other studies that have interpreted NHANES data provide evidence that food prepared away from home—including fast food, restaurant meals, and fast-casual dining—is more caloric and contains more sugar and sodium and fewer nutrient-dense foods than the DGA recommendation [149]. Meanwhile, a 2010 USDA Economic Research Service report found that in 2010, for the first time, more than half the money spent on food in the U.S. was spent on meals away from home [137]. These twin data points have led some to posit that cooking at home more frequently might be a more healthful behavior. Indeed, the 2015-2020 DGA recommend cooking at home to achieve a healthy diet.

Evidence providing some support for this recommendation was reported in two studies by Wolfson et al (2015, 2020) in *Public Health Nutrition*, for which qualified NHANES data from 2007-2010 (N=8,668) was analyzed [172, 176]. Because the healthfulness of home-cooking frequency may really capture the effect of consuming less fast food and other away-from-home meals, the studies controlled for such an effect. In the first study, Wolfson et al (2015) found that home-cooking frequency was associated with diets characterized by lower overall calorie intake and lower consumption of carbohydrates, fat, and sugar [172]. In the second study, they found that higher frequency of cooking dinner was associated with better overall diet quality as expressed in higher HEI-2015 scores—though the gains associated with frequency were modest and the baseline American diet contains fewer total fruits and vegetables, and more processed meat, saturated fat, and sodium than the medical community consider to be healthful [164, 176].

Critically, the two Wolfson et al (2015, 2020) studies also confirmed a set of intriguing findings from Virudachalam et al (2014): first, despite a zeitgeist consensus that cooking is declining in the U.S.—and the data indicating that more of American's total food spending is spent on food away from home—Americans cooked dinner at home five nights a week on average; and second, adults with lower incomes were more likely to cook at home "always" or "not at all" [149, 150, 159, 172, 176]. Digging deeper, the 2019 study found that the positive association between high frequency of cooking and higher diet quality was weaker for lower-income individuals than for those with higher-incomes. Specifically, lower-income individuals' *overall* higher frequency of home cooking was not associated with higher overall scores for vegetables, whole grains, refined grains, and sodium; meanwhile those lower-income individuals who "only" cooked 3-4 nights/week, rather than always, had the highest HEI-2015 scores among lower-income individuals [176]. Wolfson et al (2019) contended that these specific findings suggested that lower-income individuals who "always" cooked were making a "forced choice," reflecting limited food budgets that also precluded buying costlier fresh ingredients, a suggestion that had been articulated by Virudachalam et al (2014) [159, 176]. They also concluded that meals cooked at home are not *inherently* healthy: the choice of ingredients (and possibly cooking techniques) used in meal preparation matters [176]. In a later study, Wolfson et al (2022) reached a similar conclusion regarding the environmental impact of meals cooked at home: in that instance, while frequently cooking plant-based meals produced a lower carbon footprint, frequently cooking meals with meat was environmentally detrimental

[178]. Both findings resonate with earlier findings by Short (2003), who cautioned scholars and policymakers alike from supposing that cooking abilities "straightforwardly and directly" determine food choices: that "what they can cook influences what they do cook" [136, p. 184]. Instead, Short noted that many "domestic cooks see the use of preprepared' food as entirely normal, and totally acceptable'" [136, p. 184].

2.2.1.2 What's happening in home kitchens?

Likewise, in *Making Modern Meals,* Trubek makes the point that in contemporary American culture, conceptualizations of cooking are broad and fluid, producing a reality wherein "we cook with ingredients that come from the ground, from boxes, from warehouses, or from farmers markets" [151, p. 25]. Fielding-Singh and Bowen, Brenton & Elliott connect the vilification of the diets of poor and marginalized people to this reality: the "foodie ideal" with its costlier fresh ingredients, they posit, is in part a class-informed reaction to what is derisively labeled "cheap" food [21, 46]. Fielding-Singh describes how this creates a bind for *all* mothers, regardless of means: lower-income mothers are criticized for taking advantage of the *options* represented by convenience foods, e.g., saving money and time while making children happy; while higher-income mothers are stressed by the demands of their foodie-ideal expectations, which dictate foregoing such conveniences in favor of items that are fresh, organic, local, seasonal, sustainable…[46]. Socioculturally, the question of ingredients is fraught, to say the least.

In the public health literature, it is rendered more black-and-white, given the association of "energy dense food products, 'fast foods,' 'convenience foods,' soft

drinks, sugary drinks, various refined starchy foods, processed meat, and salt-preserved foods" with "obesity and various chronic non-communicable diseases" [107]. A qualitative study by Wolfson et al (2016) published in *Appetite* aimed to assess the effect of processed foods' ubiquity on the perceptions of what it means "to cook" held by a group of adults (N=53; 39 female; 35 Black, 16 white, 2 Asian, mean age = 51) in Baltimore City, Maryland [173]. Participants for seven focus groups were recruited from one higher-median-income neighborhood with more access to healthy food, and one lower-median-income neighborhood with less healthy food access. The study confirmed a general finding in the academic literature that no universal understanding of what it means "to cook" exists [136]; a finding that, in the public health literature (where Wolfson frequently publishes), is commonly concluded to be a barrier to the study of cooking skills, behavior, and behavior modification [140, 159]. Participants in the Wolfson et al (2016) study perceived "homemade" cooking to include everything from making a meal "from scratch"—which the group defined as using whole ingredients—to any food *at all* made in the home [173]. Definitions of cooking were also highly socially tolerant: participants expressed that no single standard could *or should* be applied to everyone. Instead, a hierarchy in perception emerged, with scratch-cooking considered "the best," even among participants who described rarely meeting that standard [136]. The least flexible perceptions of cooking were held by older participants and those who identified as healthy eaters, for whom using convenience foods in a preparation disqualified the act as cooking [173]. This is in keeping both with public messaging

around healthy food choices, and with the findings of an earlier study, reported in the *Journal of Consumer Culture* [106]. That study found that older cooks emphasized cooking from scratch, fresh ingredients, and tradition in their definitions of homemade, while their younger counterparts were more open to considering dishes made with convenience foods to be homemade [106], a finding that may reflect generational differences in mental models of both the food environment and cooking. In the Wolfson et al (2016) study, individuals with strongly positive attitudes toward cooking who self-identified as good cooks were also unlikely to consider the use of convenience foods "cooking," since they attached significance to the amount of time, effort, and skill they expended making meals from scratch [173]. Further findings of the study included that, regardless of income level, participants felt constrained by time limitations, but that those who prioritized cooking at home found strategies for doing so, including planning and organizing [173]. The most significant differences between participants of different income levels were the types of tradeoffs they reported making to balance budget, cost, and health: lower-income participants were deciding *between* costlier fresh ingredients and cheaper processed alternatives, while higher-income participants weighed whether to buy the more- or less-expensive costly fresh option (e.g., organic vs. conventional) and the long-term impacts of their choices [173].

This study makes a significant contribution toward our understanding of the modern food environment, replete with alternatives to whole ingredients, and how it has impacted perceptions of "cooking" itself. It can also be interpreted in many ways, depending on

the scholar's discipline and accepted premises. For example, Wolfson et al (2016) noted that the study's findings could/should guide public health practitioners toward promoting/embracing healthy convenience food ingredients rather than meals cooked exclusively from scratch (e.g., suggest bagged pre-washed pre-cut salad tossed with a homemade vinaigrette). In other words, so as not to alienate an audience that was quite tolerant of convenience foods, show how these favored products could be used healthfully in home-cooked meals. When described from that perspective, substituting processed for whole ingredients appears neutral or innocuous in meaning, like the difference between bicycles and cars: both are modes of transportation and require knowledge and skill, but one requires more effort and the other is more convenient. Continuing the analogy from a systems perspective, however, if one cared about environmental impact and compared the carbon footprints of each choice, a decision to substitute cars for bicycles would be revealed as harmful. Similarly, from a food-systems perspective, the conceptual fluidity of "cooking" that embraces all types of ingredients may be more portentous, offering evidence of the deskilling that food systems scholars contend is a goal of the industrialized food system [70]. While some have argued that deskilling as a theoretical proposition does not well fit the complex realities of cooking [12, 24, 136, 139], from a food-systems perspective, convenience is a seductive universal selling point, capable of creating lucrative and entirely new markets for giant agribusiness firms [70, 105]. Indeed, the fluidity of cooking perceptions may encourage firms to develop and market convenient culinary products which participates in creating

our current food system, characterized by concentration and consolidation that makes food-systems transformation arduous and complex. Thwarting concentration and consolidation in the food system shouldn't be the responsibility of the individual consumer [137], but conversations about cooking and ingredients shouldn't treat these effects as nonexistent, either [88].

Participants in Wolfson et al's (2016) Baltimore City focus groups [173] were also questioned about how they learned to cook. This data informed a subsequent national online survey that was then completed by more than 1000 participants (N=1,112) in a mixed-methods study published in *Appetite* [175]. Participants[1] could respond yes/no to each of 14 sources of cooking skills and knowledge. Some interesting statistics from the study include that 72% women vs. 61% men learned from parents, particularly their mothers (64% vs 19% from fathers); 67% of adults, with no difference between genders, taught *themselves* to cook via trial and error; and adults with a college degree were more likely to teach themselves to cook than those with a high school diploma (74% vs. 64%) [175]. Considering this data through the lens of cooking's fluidity and the ubiquity of

[1] For this thesis, the relatively high mean age of the focus group and survey participants (51 and 47 years) in this study is a limiting factor. Little is known about skills transmission from the perspective of adolescents and young adults, although one study—reported in *Family & Consumer Sciences Research Journal*—that convened focus groups with 71 students from midwestern high schools, both with and without home economics classes, found that students who had taken cooking classes displayed cooking confidence, valued the courses, believed cooking was a life skill, and thought cooking classes should be offered to, but not required for, all high school students [57].

convenience foods in American kitchens, we might ask, *what* is being learned and conveyed? And what meanings are being perpetuated?

Focus group participants and respondents to the web-based survey also overwhelmingly agreed (90%) that cooking was a family affair and that parents and other family members bore primary responsibility for teaching children to cook, rather than schools (42%) or the government (15%) [175]. Nonetheless, their support for home economics classes to teach students shopping and cooking skills for making healthy food was high, supported by 64% in the survey. At the same time, a minority (12%) in both groups attributed learning to cook to taking a home economics or health class themselves, which is consistent with trends showing the steady decline in funding, enrollment, and qualified teachers for home economics classes at the secondary level [168, 169]. Wolfson et al (2017b) concluded that, given all the data about home cooking, there was reason to invest in public culinary education: doing so might be protective of health outcomes, they reasoned [175].

In *Making Modern Meals*, Trubek writes:

> "Acting on what you know to engage in everyday meal preparation is a learned practice, and much like riding a bicycle or playing an instrument, you can stop and start again. But you cannot start if you were never taught in the first place" [151, p. 21].

At this point in this lit review, we can say that the learning environment for today's young cooks differs in many ways from those of earlier generations. In higher- and lower-SES

homes, dinners may be cooked at home on most nights, but may well make use of meat and processed ingredients, particularly as households struggle to balance time demands. Young people, particularly daughters, may learn to cook from mothers, but how and what skills are taught is not well studied, nor have the sources and content of their parents' knowledge been well described. Subsequently, it is difficult to characterize the attitudes or cooking-knowledge level of undergraduates before they arrive at college, which, as we will see, is a disruptive life-course event that confronts these young people with a challenging food environment.

2.2.2 Emerging adulthood and the college transition

As a theory of human development, emerging adulthood was proposed in response to similar sociodemographic trends cited as possible catalysts to declines in home cooking, including the technology revolution, the sexual revolution, the women's movement, and the youth movement [5, 151]. From the vantage of the mid-1990s, Arnett, a developmental psychologist, observed a schism between earlier developmental theories [40, 41, 76, 89] and demographic data defining life-course attributes since the mid-20th century. Notably, Ericksen's highly influential theory of the eight stages of psychosocial development postulated that a healthy sense of self was predicated upon successful resolution of a series of psychosocial crises, each identified with a specific developmental stage [40, 41]. Ericksen theorized that during adolescence, between the ages of 12-18, healthy individuals resolved their identity confusion and settled on the role they would play in society; while during young adulthood, between the ages of 19-29, they formed stable intimate

relationships with others. But Arnett observed that in the time that had passed since Erickson was theorizing, the median age of both marriage and first childbirth had trended upward significantly, and 60% of young Americans were obtaining higher education after graduating high school rather than entering employment (the number has since climbed to 70%) [4, 141].

Meanwhile, Arnett's own research—based upon more than 300 in-depth structured interviews with young people ages 18-25—provided evidence for a set of distinctive psychosocial characteristics he associated with that age bracket [4]. In industrialized societies, Arnett postulated, the traditional markers of transition to adulthood were being postponed as young people indulged in a prolonged and unpredictable period of self-exploration before settling down into adult responsibilities [4]. He dubbed this new, distinct life phase that extended from 18-29 "emerging adulthood," and noted that it is "not a universal part of human development but a life stage that exists under certain conditions that have occurred only quite recently and only in some cultures" [5, p. 24] Even within affluent countries, Arnett conceded, the experience of emerging adulthood varies for different young people based on variations in socioeconomic status and life circumstances [5, 6]. Further, class plays a significant role in the opportunities for exploration and identity building afforded to young people, like college attendance, and thereby shapes their experience of emerging adulthood distinctly [5, 6]. A remaining critique of the theory, unaddressed in the emerging adult literature, is its supposition of college attendance. Schwartz et al (2005) writes that, "at this point, it is not clear how the experiences of non-

college emerging adults compare with those of college-attending emerging adults in terms of key elements in identity formation," acknowledges that "concerns have been raised about the 'forgotten half' of emerging adults who do not attend college," and concludes, "it is possible that other forms of identity exploration takes place" [132, p. 205]. Though tertiary education *has* become increasingly normative in the U.S. [141], research and theory on emerging adulthood has largely focused on the experiences of individuals at 4-year residential institutions, as is the case with much scholarship on the impact of higher education.

Since first proposing the theory in a widely cited article in *American Psychologist* in 2000, Arnett has refined and described the theory in numerous articles, books, and textbooks, and founded the Society for the Study of Emerging Adulthood that hosts conferences and publishes the interdisciplinary journal *Emerging Adulthood*. The original *American Psychologist* article [4] has been cited more than 8,000 times per Web of Science, while a keyword Web of Science search for "emerging adulthood" yielded more than 5,000 unique results, demonstrating that the theory has achieved paradigm status as a theoretical framework for research in a variety of disciplines across the social and behavioral sciences.

The theory's key insight are the five evidence-driven features by which emerging adulthood is characterized: (1) identity exploration and trying out various possibilities for defining a stable "self" that can guide and sustain one's eventual life commitments; (2) instability, both internally and externally (e.g., place of residence); (3) self-focus, both in

terms of time spent alone and in not being or feeling obligated to others; (4) feeling in-between and in transition; and (5) general optimism about the ability to change direction and transform one's life [4-6, 132]. College attendance is central to the theory, providing what Schwartz et al (2005) call the "psychosocial moratorium"—liminal space combined with opportunities for exploration—within which the developmental work of emerging adulthood happens [132]. Moving out of the house and separating from parents while attending college—often a first encounter with emerging adulthood's external instability—is conceptualized as a distinct, disruptive event that provides physical, social, and emotional space from caregivers. That space becomes formative for new behaviors and beliefs as individuals develop the individual autonomy that is both associated with and normatively expected in postindustrial societies like the U.S. [132, 135, 162].

Given that in the U.S. today, life-course events like marriage, gender roles, and religious beliefs are now less normatively structured while tolerance for alternative paths has, to an extent, increased, Arnett argues that identity exploration is the most pressing psychological task of emerging adulthood and the "most distinctive" of the new life phase's attributes [5, 33, 132]. Meanwhile, Schwartz et al (2005) contend that, given waning collective support and external guidance in the U.S. for emerging adults transitioning to adulthood[2], developmental individualization is an act of agency—emerging adults must

[2] Replaced by a "bootstrap" mentality and platitudes like "you'll figure it out" and "follow your passion."

deliberately explore and make choices from among alternatives and opportunities, rather than accepting the default options presented by mass culture and a consumer-corporate society[3] [132]. According to Arnett, while exploring identity a wide range of values and personal belief systems are tried and tested, evaluated for their relevancy to one's evolving sense of "who am I?", "what is important to me?", and "what do I want out of life?" [5].

2.2.2.1 Exploring behaviors for "fit"

Behavioral psychologists have proposed that emerging adulthood's restless, liminal character and emphasis on identity exploration/development may make it an ideal time for beneficial behavior modification, and even that the disruptive transition to college *prompts* the reconsideration of old habits and aids in the development of volitional behavior that is better aligned with one's intentions and attitudes [158]. In the behavioral psychology literature, two recent studies have investigated forms of behavior-aligned identity that may coalesce during emerging adulthood. These studies help establish a premise in this thesis: that identity and behavior are entwined, and that holding an identity involves holding attitudes and having skills that are expressed and reinforced through behavior.

Shim et al. (2013) proposed the concept of a *financial identity* to explain variances in how emerging adults approach financial issues, manage their finances, and handle

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[3] There may be an intriguing conceptual parallel here between the theory of food agency and the theory of emerging adulthood: as with cooks navigating the gap between aspiration and action, negotiating the passage to an individualized adulthood calls on a mix of skills, capabilities, and attitudes, and may be inhibited by structural barriers like SES, life circumstances, and class.

financial responsibilities [135]. Since financial independence from parental support has been described as a key marker of adulthood [4, 5], they argue that emerging adults must develop a functional financial identity through the acquisition and deployment of knowledge, attitudes, and behaviors required to effectively manage their personal finances [135]. They characterize doing so as a process of exploration and trial and error as emerging adults try out different options and approaches to financial knowledge, attitudes, and behaviors [162].

Similarly, in the *Journal of Environmental Psychology*, Mah et al (2020) consider the extent to which holding an environmental identity in adulthood (as evidenced by environmental behavior) may be explained by political belief systems developed in emerging adulthood [93]. The study used longitudinal survey data collected in Ontario, Canada, between 1997, when participants were 17 years (N=936) and 2012, when participants were 32 years (N=94). Participants were surveyed at three different moments in emerging adulthood (ages 17, 19, and 23) and once in adulthood (age 32), and the authors explored the relationship between the strengths of participants' political ideology and environmental beliefs during emerging adulthood (17, 19, 23), and the strength of their environmental beliefs, environmental identity, and frequency of pro-environmental behavior in adulthood [93]. The study found that participants who became more politically liberal during emerging adulthood held a stronger environmental identity and engaged in more pro-environmental behavior as adults. The study also confirmed that a relationship existed between environmental beliefs and an environmental identity, and that it influenced

pro-environmental behavior, but could not determine the direction of influence [93]. The longitudinal aspect of this study is intriguing, demonstrating a relationship between beliefs and attitudes developed in one phase of life and expression in another.

2.2.2.2 The college food environment[4] and cooking interventions

Financial responsibility and environmentalism are generally not contentious goals for behavior modification. Developing "healthy" eating habits is far more factious—but has been pursued, as in the case of a study published in *Obesity* that proposed emerging adulthood as an optimal window for food-choice interventions to ingrain lifelong notions of foods as "healthy" or "unhealthy" [112]. Given that obesity and being overweight are treated as detrimental within the public health discipline, and the college cohort has high and rising rates of what is defined as obesity and being overweight [3, 146], the impact of the university food environment on the diets of college students has been highly studied [e.g., 8, 80, 94, 97, 113]. For example, a systematic literature review of 51 studies investigated how and why eating habits changed during the transition to college. Reporting in the *Journal of American College Health*, the authors concluded that, for students living

[4] My goal herein is to explore what is known about cooking skills and cooking in emerging adulthood; given the paucity of interest in this subject in other disciplines, doing so is nigh impossible without considering the public health and nutrition literature, where normative concerns about body weight (e.g., obesity and being overweight) and food choice provide the premise for cooking interventions. I categorically reject non-neutral metrics like weight and BMI for the diagnosis of health, applaud UVM's leadership to change this approach to nutrition scholarship, and consider myself an ally in this important work.

on campus, "a lack of healthy food options, an array of tempting unhealthy foods, the ease of [cheap] convenience foods, and the absence of adequate cooking facilities all make it difficult for new students to eat healthy" [94, p. 12].

Many young people experience true independence for the first time when they leave home for school. While disconnected from the influence, guidance, and sometimes direct intervention of caregivers, they encounter an extremely challenging environment, notable for its mental, physical, emotional, and financial stresses [166]. The literature suggests that each of these impact food choices [166]. Subsequently, a theme in the scholarship is to investigate and define the attributes of "healthy" college eaters, often for use in the design of subsequent food-choice interventions. Some of this data indicate that culinary interventions *specifically* might be beneficial, especially given empirically driven characterizations of college students as infrequent and unskilled cooks [75, 80, 166]. Having cooking skills as a college student has been reported to improve fruit and vegetable consumption [15]; and to help with meeting dietary goals for consumption of fat, calcium, fruit, vegetables, and whole grains [80]. Meanwhile, learning cooking skills as a child or teen is correlated with better diet quality in adulthood [15, 81, 84].

In that vein, two studies are frequently cited in support of college culinary interventions. Project Eating and Activity in Teens and Young Adults (Project EAT) is a rare longitudinal study investigating young people's eating habits [81]. Reporting on a population of male and female EAT participants first surveyed in 1998-1999 when they were adolescents (age 15-18) and then again in 2003-2004 when they were emerging adults

(age 19-23), Laska et al (2012) found that while using one's cooking skills in adolescence was associated with liking to cook 10 years later (2008-2009), using one's cooking skills in emerging adulthood *significantly predicted* more frequently cooking meals with vegetables *and* liking to cook in one's mid-to-late twenties [81]. In a follow-on Project EAT study with a cohort first surveyed as emerging adults (age 18-23) in 2002-2003, Utter et al (2018) similarly found that self-reported "very adequate" cooking skills in emerging adulthood predicted multiple nutrition-related outcomes 10 years later, including frequently cooking meals with vegetables and being the primary cook in the household [155]. These studies offer some evidence that behaviors like cooking, acquired or reinforced during emerging adulthood, could or might catalyze a cooking identity that is expressed through cooking frequency. Culinary interventions are costly and difficult to execute however, particularly when a hands-on component is included, which studies indicate improves intervention outcomes [2, 60, 90, 99, 118]. Cooking interventions for college students are consequently rare [11, 30, 98, 146].

2.2.3 Benefits of a food agency framework

In a paper published in the *British Food* Journal, Wolfson et al (2017a) also argues that the effectiveness of culinary interventions generally is hampered by assumptions and preconceptions about cooking that do not reflect the complexity of everyday meal preparation. "When assumptions about cooking skills are not grounded in theory, they unintentionally shape the development and evaluation of interventions designed with the intent to shift or enhance the practices of participants" [174, p. 1148]. Without basis in a

comprehensive culinary paradigm, Wolfson et al (2017a) contend, most culinary interventions overfocus on manual skills without a clear justification for which skills they self-select; use a kitchen-sink approach to curriculum design that renders assessment of the impact of various skills difficult; do not clearly define or validate their outcome measures; and may use a wide range of such measures in assessment, including self-reporting, metrics flowing from the researcher's own perspective and/or prejudices, and/or psychosocial measures (e.g., those associated with behavioral change theories like Social Cognitive Theory [45, 54, 69] or the Theory of Planned Behavior [16] that make comparison between interventions difficult [174].

Wolfson et al (2017a) propose "food agency" as a comprehensive framework for understanding cooking behavior and designing effective interventions that successfully transfer the range of cognitive, mechanical, sensorial, and navigational skills required for everyday meal preparation [174]. Discrepancies and variance in levels of food agency are conceptualized to explain why some individuals are able to set and achieve their cooking and food-related goals while others remain ambivalent and more likely to exploit the abundant alternatives to home meal preparation. Having food agency means being *empowered* to cook: in possession of the full range of skills and capabilities from which daily meal preparation flows [79, 152, 174].

2.2.3.1 Conceptual precedents

The theory of food agency grew out of five years of ethnographic interviewing, observation, and videotaping conducted by Trubek in the kitchens of American cooks in

the northeast, responding to the concerns over declines in American cooking described at the onset of this section of the literature review (see 2.1.1) [150, 151]. It is in conversation and shares premises with an earlier study by Short (2003), a sociologist in the department of health management and food policy at City University London, who in the early 2000s investigated whether, as was claimed, deskilling was diminishing British cooking [136]. Discovering that such an appraisal was constrained *semantically* (there were no consistent definitions for "cook," "cooking," "preprepared," "cooking skills," etc.), *practically* (few empirical data sets had been derived from domestic cooks themselves), and *theoretically* (no framework yet existed), Short convened a two-stage qualitative study intended to provide a new 'way of thinking' about cooking and cooking skills [136]. The conclusions reached by Short and Trubek reverberate throughout the premises of the theory of food agency, its pedagogy, and interventions based on a food-agency approach.

First, both found that no universal definition of cooking existed. Instead, meanings of cooking were almost entirely contextual, and cooking could flexibly accommodate many different types of meal preparation and many different types of ingredients [136, 151]. Short specifically reported that British cooks enjoyed the convenience of preprepared foods and found their use totally acceptable: indeed, certain homemade dishes were viewed negatively in comparison to the aesthetics of their processed counterparts[5] [136]. At the same time, she found that an intricate "domestic cooking culture" that these cooks all

[5] See my previous arguments about deskilling in 2.1.3 and 2.2.1.2.

understood dictated the types of circumstances under which it was appropriate or reasonable to use preprepared versus scratch ingredients[6] [136]. Similarly, Trubek observed that effort and technique were often reserved by American cooks for nicer, more formal, or more social occasions, like cooking for a dinner party; seldom was much effort expended on cooking for oneself [151]. Short and Trubek also found that domestic cooking was individualized and highly fluid: cooking could mean different things at different times, and cooking could mean different things to the same person on different occasions, from a chore to a challenge [136, 151]. Different cooks had very different approaches to cooking, influenced by factors like personality, life-stage, gender, abilities, and knowledge [136, 151].

When Lahne et al (2017) turned to create the Cooking and Food Provisioning Action Scale (CAFPAS), a validated 28-item 7-point Likert scale assessment tool developed to measure an individual's perceived food agency, the ramifications of these types of findings informed its "attitude" subscale, which reflects the extent to which a person likes to cook and derives satisfaction and positive feelings from cooking. Such attitudes are hallmarks of high food agency [79]. The CAFPAS scale includes 10 statements to gauge attitude, including: "I find cooking a very fulfilling activity," "I am inspired to cook for other people, like my family and friends," and "For me, cooking is just something to get through as quickly as possible" [79].

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[6] Wolfson et al's (2016) finding that the Baltimore City cooks believed "scratch was best" echoes this observation [173].

The two other CAFPAS subscales are "self-efficacy," how confident one is in their cooking abilities and ability to navigate barriers to food-related goals; and "structures," the extent that one experiences structural barriers related to time and responsibilities [79]. Thirteen statements assess self-efficacy, including, "I am confident creating meals from the ingredients I have on hand," "When preparing food, it is easy for me to accomplish my desired results," and "Before I start cooking I usually have a mental plan of all the steps I need to complete" [79]. Five statements assess structures, including, "My family responsibilities prevent me from having enough time to prepare meals," "I wish that I had more time to prepare meals," and "I have a hard time finding enough time to prepare the food I'd like to eat" [79]. Morgan (2020) noted that of the three subscales, the fewest items assess structural barriers, and that the five structures statements all focus on the barrier of time [108]. She argued that low-income people may experience structural barriers to food agency more acutely than their higher-income counterparts[7], but rather than time, may be deterred from cooking by geographical and economic constraints that are not addressed by the scale [108]. She further contended that, to make the scale and theory more representational of diverse lived experiences, it should reflect the types of adaptations deployed by low-income cooks to work through barriers and obstacles [29, 108, 170].

[7] It is interesting to consider this argument in light of the findings of Virudachalam et al (2140) and Wolfson (2015, 2020) [159, 176] regarding the "forced choice" that may drive cooking frequency among low-income individuals.

The self-efficacy and structures CAFPAS subscales reflect Trubek and Short's pivotal findings about skill and skillfulness. Both observed that cooking required more than mechanical skills [139]. Instead, cooking called on a dynamic mix of tacit perceptual and conceptual skills; academic knowledge; organizational strategies; creativity; social awareness and interconnectedness; and planning capacity; among others [136, 151, 152, 174]. Short wrote of these skills that:

> "Tacit skill (skills of judgement, timing, planning, and so on), for example, are the 'cooking skills' that appear to increase the cook's confidence, decrease the effort they associate with 'cooking,' and in doing so can encourage them to 'cook' more frequently and use more 'raw' foods" [136, p. 184].

Short further contended that everyday cooks' skillfulness was underappreciated in a culture where professional chefs and food media were gaining ascendency, contributing to a perception of cooking's "decline" that was, perhaps, a self-fulfilling prophecy. She proposed the idea of a "creative ideal standard"—a new "myth" that was diminishing people's perceptions that they were *able* to cook. She traced its origins to:

> …a cooking culture in which recipes and dishes, novelty, variety, 'professionalism,' technical ability and achievement are valued and appreciated far more highly than the mundane, everyday preparation and provision of nourishing food and the tacit creative, perceptual, and organizational skills involved in those tasks" [136, p. 183].

Expectations for cooking had been ratcheted too high, Short posited, and these were overwhelming and demoralizing domestic cooks and the expert class endorsing narratives of "decline" alike. Everyday cooking was skilled, multifaceted, and developed over time, she argued.

Reflecting the findings of Short and Trubek, the theory of food agency attributes skillfulness and ultimately empowerment to repetition: one *develops* food agency with more knowledge and experience [152, 174], a premise articulated in practice theory [72, 83] and Bandura's reciprocal model [9] that echoes Short's contention that "each cook acquired cooking skills and knowledge from their cooking practices and experiences… In turn, their practices influenced their acquisition of cooking skills and knowledge, and so on." [136, p. 182].

To operationalize these findings in pedagogy, Wolfson et al (2017a), with Trubek as a co-author, turned to epistemes from professional kitchens and culinary training programs [35]. In a chapter of *Making Modern Meals*, Trubek explores the role internalized standards play in cooks who approach cooking as a creative act, a fluid category populated by professional chefs and amateur aesthetes alike [151]. She argues that although these internalized standards "are not necessarily uniform, creative cooks all have some type of aspiration that spurs them to contrive meals that are beyond the ordinary" [151, p. 114]. She examines three distinct types of internalized standard—the trained practice, familial cultural traditions, and individual expression—and through thick ethnographic descriptions makes clear that each deploys unique forms of tacit and academic knowledge, though to

differing degrees. Significantly, both trained practice and familial cultural traditions operate within larger culinary paradigms: at each moment of cooking, what is being produced can be measured against an internalized set of codified external examples, and tacit and academic knowledge help guide the cook's actions and reactions forward [151]. As Wolfson (2017a) describes, "a person cooking a meal develops and practices food agency by acting to combine manual and cognitive skills while responding to their sensorial perceptions" [174, p. 1148]. This is as true when a seasoned home cook stretches a fragile sheet of homemade phyllo dough paper thin—an excellent example of embodied skill—as it is when a chef caramelizes onions.

A cook operating from an internal standard of individual expression, however, may be "unconstrained by normative assumptions or even technical competencies" [151, p. 121]. More important to this cook is their individual artistic inspiration, the burst of creative energy [151]. Trubek contends that such a standard may be resistant to instruction or prescription, and therefore, lacking systematic standards for evaluating its products, may/must lean on external validation to assess its merits (e.g., "taste and tell me, is this good?") [151]. It may also be less durable, since at its core, it is motivated by creative whim [151]. In *Making Modern Meals*, Trubek seems to associate this untethered type of standard with more episodic cooking [151]. By contrast, cooks operating from both trained-practice and cultural-tradition standards were indoctrinated into a validating culinary paradigm while learning to cook, and see themselves as on an ongoing journey toward mastery [151].

Informed by these observations, the food-agency pedagogy is grounded in a culinary paradigm associated with professional cooking and exploits evidence-based professional epistemes, including mechanical skills (e.g., knife skills, product and tools knowledge), sensorial skills (e.g., taste, flavor, texture, and aesthetics), and cognitive skills (e.g. organizational strategies like mise en place and sequencing, knowledge of culinary concepts) [35, 152, 174]. Wolfson et al (2017a) further observes that interventions based on a food-agency approach: a) emphasize hands-on learning to promote the embodiment of skills; b) promote organization before action; c) employ collaborative learning; d) build toward mastery (and thus are several weeks long); and e) engage students in structured commensality, sharing, and sensory reflection at the close of each session [174]. Wolfson et al (2017a) contend that these attributes promote the formation of a durable, self-reinforcing, and practical cooking practice that could increase the frequency of home cooking by making it easier, more efficient, less stressful, and more pleasurable [174].

> The entire pedagogy allows students to enact the very actions, reactions, cognitions and adjustments that happen in real time, in real homes, in many different settings. The cooking skills and food agency developed through this pedagogy build resilience and the ability to adapt to the challenges of food preparation people encounter each and everyday [174, p. 1153].

2.2.2.3 Food agency in interventions

Food agency has been used as the basis for three courses/interventions at the University of Vermont: Basic Concepts of Food, Cooking for Health, and Sustainable

Cooking. Increasing food agency is the shared objective of the three courses; Cooking for Health and Sustainable Cooking have also promoted nutrition knowledge and environmental cooking practices, respectively. To date, there has not been a systematic assessment of these interventions: this thesis represents a first step toward learning more about their impact.

Food agency has also been used in three studies in the northeast U.S. In one, food agency was characterized among diabetes prevention program (DPP) participants to gather data to be used to design a new DPP program based on the food-agency pedagogy [177]. That study found that its participants—who were older (mean age = 55), female, frequent cooks—had high food agency (mean = 24.6) that manifested in complex, varied, and evolving ways [177]. A second study found that in-person cooking classes based on the food-agency pedagogy were more effective at increasing food agency than cooking demonstrations were, suggesting that hands-on experiential learning promotes the embodiment of skill that has been theorized to manifest in more frequent, fluent cooking [2].

In the third study, published in *Nutrition*, the food agency pedagogy was used to build food agency, improve diet quality, and increase cooking frequency among a group of college upperclassmen living off campus at UVM who self-identified as infrequent cooks [118]. Elements of the two-part intervention included a 6-week cooking class followed by 6-weeks of meal-kit-box deliveries, with an interval of 8 weeks in between. Weekly classes were taught in the UVM Foods Lab by a chef educator trained in the food agency pedagogy.

A format that combined lecture with hands-on cooking classes covered basic culinary concepts for producing flavorful, healthy meals while reinforing sensorial (aesthetics, flavor balancing, tasting), mechanical (knife skills) and cognitive (mise en place, organization) skills through repetition [118]. Eligible participants were randomly assigned to either (a) cooking class followed by meal-kit delivery; (b) cooking class with no meal-kit follow-up; (c) no cooking class, but enrollment in the meal-kit delivery; or (d) control, no cooking class or meal-kit delivery [118]. The CAFPAS survey was used to assess food agency at baseline and after each phase of the intervention [79]. The Cooking Perceptions and Behaviors questionnaire was used to assess average frequency of home cooking on a weekly basis and the Automated Self-Administered 24-Hour Dietary Assessment Tool was used to gather dietary data used to calculate an HEI score and assess dietary quality [118]. The study found that all study participants, including those who only received the meal kit, had significant improvements to food agency, but that these were more pronounced in students who took the cooking class. The mean baseline CAFPAS scores for all conditions were between 11.64 and 12.66 and increased by 2 points on average to a post-intervention mean of 14. However, neither intervention improved diet quality nor routinely improved cooking frequency outside of the interval when meal kits were delivering ingredients to students' homes. The authors concluded that the food agency pedagogy had empowered learners to plan, prepare, and execute meal planning activities—their higher CAFPAS scores post-intervention indicated that they were better able to navigate the types of material, physical, and cognitive barriers faced by cooking novices [118]. But increased

food agency among the students in this study did not translate into more cooking, except when ingredients were made readily available.

2.2.4 Conclusion

In this section of the literature review, I have continued to explore changes in the American diet, and empirical evidence in the public health and nutrition literature that suggests cooking is a healthier behavior than consuming meals away from home—*if* those homemade meals are made from healthful ingredients. This conclusion echoes the finding that closed the first section of this literature review (2.1.6)—that cooking frequency only decreased a household's carbon footprint *if* a plant-forward menu was cooked [178]. In conversation, these aligned conclusions affirm a premise animating this thesis: that ingredients matter.

As do cooking skills. In this section of the literature review, I have also shown that skills transmission may be changing, both in terms of who is or is not taught to cook, and what information—and values and beliefs—are conveyed. Processed and premade ingredients are a ubiquitous and convenient part of Americans' diets, easing the burden of meal preparation, and perceptions of what it means "to cook" have fluidly accommodated such changes. Subsequently, though the data suggests that Americans are frequent cooks, there is reason to wonder (and, from a food-systems perspective, perhaps to be concerned about) *what* we are cooking, and whether collectively we possess the panoply of skills required to make dietary changes like reducing meat consumption.

These questions and considerations set the stage for this section of the literature review to consider whether emerging adulthood might be an optimal window for culinary interventions—both because of the suggested receptivity of emerging adults generally to behavioral modification, and because such courses might be beneficial counterweights to what has, or has not, been learned at home. The data suggests that most college students don't cook. But if cooking isn't happening on college campuses, indifference may not be the root cause. The college transition is tumultuous, disorienting, and hard work, as students are faced with the opportunity and the challenge to explore opportunities and develop a strong sense of self. The instability they experience extends to the campus food environment itself, where options are limited, fluctuating, and constrained. Nonetheless, the college years, when autonomy grows and feeding oneself becomes a challenging new daily responsibility, may open a window to develop beneficial cooking skills and food agency. As this literature review explored, the food agency pedagogy establishes a new paradigm for culinary intervention that may be highly effective at helping to establish a stable cooking identity in emerging adults.

CHAPTER 3: Assessing the Impact of an Intervention to Build Food Agency During Emerging Adulthood

Abstract

Previous empirical research has suggested that acquiring cooking skills early in life is associated with higher rates of cooking in adulthood. However, little is known about psychosocial factors that may contribute to the link between learning to cook and everyday cooking practice, or whether an optimal window of opportunity exists for allied interventions. Emerging adulthood, a liminal life stage (ages 18-29) characterized by growing autonomy, may be such a window. During this time, processes of identity exploration increase receptivity to behavior modification interventions like building food agency, which increases empowerment to achieve one's food related goals. This mixed-methods study's objective was to assess the impact of an intervention to build food agency during emerging adulthood. Semi-structured interviews were conducted with University of Vermont students who had previously completed a 1-credit cooking course based on a pedagogy to build food agency (N=18; 15 female; 3 male). Food agency was measured via the 5-point CAFPAS scale (mean = 22.04; median = 21.95). Qualitative data was analyzed using a grounded theory approach, triangulated with the survey data and extensive participant observation conducted prior to the study, and interpreted through the lens of emerging adulthood. This study found that emerging adulthood is a crucial moment for food agency interventions that build confidence and capability and create positive attitudes and feelings of self-efficacy toward cooking and the cooking process.

1. Introduction

In the U.S., a decline in cooking frequency, knowledge, and skills have been noted since the 1960s: Americans currently consume more food away from home and consume more convenience food than meals cooked from scratch; time spent cooking at home is low; and inter-generational transfer of cooking skills between parents and children is decreasing [33, 64, 78]. Subsequently, cooking classes have been proposed as an intervention target to increase cooking skills and frequency in service of such goals as increasing diet sustainability, reducing meat consumption, and improving dietary outcomes. [1, 6, 12, 25, 29, 32-34, 39, 40, 46, 62, 67, 73, 78]. However, a critique of cooking interventions generally is their tendency to focus on discrete mechanical tasks and rote training, and to rely on assumptions about cooking behavior over theory, making evaluation of their overall efficacy challenging [25, 40, 77]. Meanwhile, it is not known if an optimal window exists for such interventions, though previous empirical evidence suggests that acquiring cooking skills early in life is associated with higher rates of cooking in adulthood [32, 33, 67].

1.1 Food agency and interventions

The theory of food agency has been proposed as a framework to explain why some individuals are able to set and achieve their cooking and food-related goals while others remain ambivalent and more likely to exploit the abundant alternatives to home meal preparation [65, 77]. Higher food agency describes an abridged gap between *aspiration* and *action* [65]. Previous work by Short (2003) theorized that perceived declines in

cooking skill and practice among Britons might not be solely attributable to the accessibility of premade meals and processed ingredients as widely presumed, but also represent the intrusion of a "creative cooking ideal" arising from the cultural ascendency of chefs and food media [58]. Publicly positioning cooking as simultaneously easy, accessible, *and* aesthetically accomplished might ratchet expectations and aspirations too high, inducing a negative feedback loop when cooking was approached without adequate skill, knowledge, or experience [58, 64]. Choosing not to cook could be less about "laziness" than a new cultural norm that sets inexperienced cooks up for failure, assuring them "anyone can cook"—even a rat, according to the Pixar film *Ratatouille*—while withholding forms of formal instruction that were once a backbone of skills transmission [56, 74, 78].

Likewise, food agency describes cooking as a complex behavior with thick sociocultural influences and dimensions. The theory attributes skillfulness to repetition: the cooking *process* is a learned, embodied, ongoing practice of cognitive, social, and mechanical actions, encompassing the ability to plan and execute the cooking of meals while navigating broad sociostructural barriers to cooking, like time, money, and mobility [64, 65, 77]. One *develops* food agency with more knowledge and experience.

From these premises, a pedagogy to build food agency has been developed, and deployed in interventions (i.e., classes) in the Foods Lab at the University of Vermont and elsewhere in the northeast [1, 46, 79] with participants representing a range of ages and life stages. Previous research by Trubek et al (2017) suggested that multiple routes to food

agency existed, including the internalization of professional standards, as through formal culinary education [64]. Food agency-based interventions thus exploit the principles of hands-on experiential learning [10, 52, 59, 68] and create an environment wherein personal factors (e.g., attitudes, socialization, education, socioeconomics, environmental contexts) may be moderated and mediated by evidence-based professional epistemes including *mechanical* (e.g., knife skills, product and tools knowledge), *sensorial* (e.g., taste, flavor, texture, and aesthetics), and *cognitive* skills (e.g. organizational strategies, knowledge of culinary concepts) [14, 64, 65, 77] Developing food agency includes acquiring cooking skills *and* the organizational and decision-making skills that empower fluent cooking, no matter the obstacles or barriers encountered. The hallmarks of high food agency include liking to cook and deriving satisfaction and positive feelings from cooking; having confidence in one's cooking abilities and ability to navigate barriers to food-related goals; and persevering through structural barriers related to time and responsibilities [64, 65]. These are reflected in the Cooking and Food Provisioning Action Scale (CAFPAS), a 28-item 7-point Likert scale assessment tool developed to measure an individual's perceived food agency across three subscales; attitude, self-efficacy, and structures [31]. The CAFPAS has been used to assess food agency at baseline and immediately post-intervention in quantitative studies [1, 46] and to establish a data-point for triangulation with qualitative data in mixed-methods studies [79]. To date, however, there has not been a longitudinal study to assess food agency after a prolonged post-intervention interval.

1.2 Emerging adulthood and interventions

As a theory of human development, emerging adulthood was proposed in response to similar sociodemographic trends cited as possible catalysts to declines in home cooking, including the technology revolution, the sexual revolution, the women's movement, and the youth movement [2-4, 64]. Erickson's highly influential theory of the eight stages of psychosocial development postulated that identity formation, including settling on a profession to establish one's role in society, was the task of adolescence, defined as between 12-18; and that during young adulthood, ages 19-29, individuals formed stable intimate relationships by marrying and starting a family [15, 16]. Developmental psychologist Arnett observed that in postindustrial societies like the U.S. and in cultures that allow youths a prolonged period for role-identity formation, the above cited social revolutions and movements had antiquated Erickson's developmental timeframes, and proposed emerging adulthood, ages 18-29, as a prolonged and productive transition period *between* adolescence and adulthood [2-4]. Emerging adulthood is characterized by five distinctive features: (1) identity exploration and trying out various possibilities for defining one's "self"; (2) instability, both internally (e.g., beliefs and commitments) and externally (e.g., places of residence); (3) self-focus, putting one's self-development first; (4) feeling in-between and in transition, neither a child nor an adult, similar to concepts of liminality in the anthropology literature; and (5) general optimism about the ability to change direction and transform one's life [2-4]. The theory has been embraced within developmental psychology and allied disciplines as conceptual framework to explain behavior during the life phase. Schwartz et al (2005) further contend that emerging adults

may be uniquely receptive to behavior modification during this life phase, as emerging adulthood is both *disruptive*—spurred by physical, social, and emotional separation from caregivers—and *formative*—reflective of growing autonomy—to beliefs and habits [55]. Others have postulated that the disruptive transition to college in fact *prompts* the reconsideration of old habits and aids in the development of volitional behavior that is better aligned with one's intensions and attitudes, or sense of "self" and identity [70]. Emerging adulthood has been used as a conceptual framework for explaining and investigating forms of behavior-associated identity that may be influenced during this time, like financial identity (characterized by financial responsibility), environmentalism, and eating a nutritionally balanced diet [37, 44, 57, 72].

Previous empirical research suggests that acquiring and using cooking skills during emerging adulthood may likewise help build what could be called a cooking identity, associated with higher food agency [32, 33, 67]. Studies like the longitudinal Project Eating and Activity in Teens and Young Adults (Project EAT) study may have incidentally assessed the impact of participants' food agency when they investigated the link between acquiring and using cooking skills in youth and attitudes toward cooking and cooking practices later in adulthood. The study found that while using one's cooking skills—i.e., having higher food agency—in adolescence (15-18) was associated with liking to cook 10 years later, using one's cooking skills/having food agency during emerging adulthood (19-29) *significantly predicted* both liking to cook and cooking more healthfully a decade later [32]. A follow-up study with a cohort first surveyed as emerging adults found that having

self-reported "very adequate" cooking skills—i.e., high food agency—in emerging adulthood predicted being the primary cook in the household and frequently cooking meals with vegetables 10-years later [67]. Emerging adulthood is an important framework for understanding the lives of young people and how their life phase impacts the experience of developing food agency and a cooking identity.

1.3 Purpose of this study

Because they are grounded in evidence-based theory, cooking interventions based on the theory of food agency create comfort, confidence, and capability with cooking and more capacity to navigate sociostructural barriers to cooking at home [77]. Features of emerging adulthood like identity exploration, the disruptive transition to college, and self- and future-focus may amplify the impact of food agency interventions, creating a critical moment for formation of a cooking identity and long-lasting behavior change. Subsequently, this study's objective is to assess the impact of an intervention to build food agency during emerging adulthood.

2. Methodology

This iterative and mixed-methods study proceeded in three phases: (1) participant observation, which informed the research design; (2) data collection via quantitative survey and in-depth qualitative interviews; and (3) data analysis. Participant observation continued during the second and third phases with different groups of students enrolled in a different UVM Foods Lab course that also used the food-agency pedagogy.

2.1 Participant observation

Before the research question or research design for this study was crafted, I spent two semesters (fall 2021, spring 2022) immersed doing participant observation and teaching in a culinary classroom at the University of Vermont (UVM). Cooking for Health was an 8-week, 1-credit course grounded in the theory of food agency, designed by Drs. Amy Trubek and Lizzy Pope as a part of a UVM Center for Teaching and Learning initiative on the Scholarship of Teaching and Learning before I arrived at UVM. Pope's intention was to investigate cooking classes as a learning strategy for students in a nutrition course. For that initiative, the purpose of the class was to operationalize course content in a small-group format and provide an experiential learning opportunity working with food to students enrolled in Pope's 3-credit introduction to nutrition. I am not a nutritionist and have no background in nutrition, but Cooking for Health was not intended to focus on nutrition.

2.1.1 Participants

Cooking for Health was promoted to students who were simultaneously enrolled in Pope's 3-credit introduction to nutrition course. While between 200-300 students enroll in Pope's introduction to nutrition class each year, co-enrollment in Cooking for Health was capped at 32 students per semester, divided between two sections of maximum 16 students each due to the operating capacity of the 8-kitchen Foods Lab at UVM. In Fall 2021, 23 students enrolled in Cooking for Health, split between Section A with 14 students (3 male, 11 female; 10 first- and second-years living on campus; 4 third- and fourth-years living off campus); and Section B with 9 students (all female; 7 first- and second-years living on

campus; 2 fourth-years living off campus). In Spring 2022, 23 students enrolled, split between a section with 10 students (2 male, 8 female; 9 first- and second-years living on campus; 1 third-year living off campus) and a section with 13 students (all female; 7 first- and second-years living on campus, 6 third- and fourth-years living off campus).

2.1.2 Cooking for health intervention

In format and objective, Cooking for Health was similar to a 6-week 1-credit cooking course designed by Trubek and Pope and used in a prior study by Pope et al (2021) during fall 2019 [46]. The shared objective between that study and Cooking for Health was to improve undergraduates' food agency. Cooking for Health was held every week for 8 consecutive weeks in the fall and spring semesters of the 2021-2022 school year; the first class, which included a video introduction to the theory of food agency, was an online-only module. All subsequent classes were held in person. Each class lasted two hours and included roughly 20-30 minutes of lecture and discussion on the nutrition and culinary theme of the week's module; followed by 45-60 minutes of hands-on active cooking time; then 15-20 minutes of shared dining and sensory analysis; then clean-up.

A premise of the food agency pedagogy is that cooking is an embodied skill and that repetition is a powerful tool for gaining embodied knowledge [64, 65, 77]. Also, that food agency is built by improving students cognitive, mechanical, and sensorial skills [64, 65, 77]. Subsequently, though the module theme changed each week, the structure and format of the class remained the same (Table 1). The flow was designed to emphasize organization over action—to help students "unlearn" the common habit of heading into the kitchen and

starting to cook before having thought the process through. In professional cooking, having such a plan of attack is called the "mise en place"—a French term that comes from the culinary-brigade system codified under 19th century French chef Auguste Escoffier, which means "to put into place." Doing a mise en place is both a mindset (being prepared) and a physical practice (having a tidy, organized workspace) [14]. Before class, students addressed food agency's cognitive elements by reviewing the week's recipe and making a physical drawing of their "mise en place" and a list of all the tools and ingredients they would need. Then they created an actionable timeline of steps for completing the recipe's cooking tasks within an allotted time frame, called making a "sequence." Students were encouraged to think of these steps as analogs for how athletes prepare for a game or to perform a skill. They are pre-visualizations, intended to help move the student's practice from aspiration—what is envisioned—to action—what is performed. Each week, these were reviewed in class collaboratively after the opening lecture/discussion on culinary/nutrition concepts and before active cooking began. When students moved into the kitchen and set up their station before starting to cook, they created a bridge between visualization and embodied skill.

Active cooking time was dedicated to operationalizing culinary concepts and practicing mechanical skills, knife skills foremost among them. Through repetition, students began to embody various cooking capabilities [77]. Each week, they repeated certain tasks, like chopping onions, vegetables, and herbs, and learned to use other kitchen tools properly—for example, how the properties of a whisk or a spoon make them uniquely suited for

distinct tasks. With time and repetition, they began to identify the appropriate tool or piece of equipment to facilitate key culinary concepts like heat transfer. While cooking, they were encouraged to engage all their senses—taste, sight, sound, feeling—and to use this embodied sensorial information to both connect them to the cooking process and to help them make continual adjustments until the dish met their technical and aesthetic standards. In the food agency pedagogy, the entire process of cooking develops self-efficacy and transfers agency to the cook: they learn to think critically about why something is happening and how to adapt and adjust when things go awry. My role was to be a facilitator of that transfer: to coach and guide, but to avoid "didactic instruction," or being an " 'expert' telling others how to cook" [77, p. 1153].

At the end of the allotted cooking time, students brought their dishes back to the shared classroom table. Each class ended with a communal meal during which they discussed the experience, tasted each other's dishes, and talked about what they had done, why they had done what they did, and whether they would change their approach in the next iteration. Eating slowly and mindfully was an important social moment for the class, a way to acknowledge the effort and skill expended, to celebrate small victories, and to get advice and encouragement from peers. Students performed a structured sensory analysis, learning to connect their dish's appearance, flavor, taste, texture, and temperature to the cooking process itself. A burnt dish was not a failure, for example, but evidence that the heat had been too high, or that the cook had become distracted, or that the size of the ingredient being cooked wasn't scaled to the heat and rate of cooking. In this way, the sensory analysis

helped make deep connections between the embodied skills and organizational practices used in cooking. The slow, deliberative process also deepened students' awareness of the characteristics of individual ingredients and expanded their understanding of balance, like how an artist learns to appreciate all the nuances of color. After lab, to reinforce learnings from the experience, students completed a weekly lab reflection to deepen their cognitive connections. They talked about their lab experience and performed a cause-and-effect analysis of the processes, actions, and/or decisions that impacted their final cooked dish, using sensory data to provide evidence of the outcomes they were describing.

Table 1: Cooking for Health course objectives

Module/Week	Nutrition	Culinary	Food Agency
1	None	None	Introduction to the theory of food agency
2	None	Whole cycle cooking Lab and kitchen station set up Recipe: Vegetable stock	Mise en place Knife skills
3	Carbohydrates We all need carbs for energy – carbohydrates are not bad	Gelatinization and retrogradation of starches Recipe: Warm couscous salad with herbs and roasted vegetables	Recipe analysis Mise en place Knife skills Product ID: grains and rice Commensality Sensory analysis Cause and effect reflection
4	Protein There are a variety of protein foods including vegan and vegetarian options. Most people in America get enough protein without	Denaturation and coagulation of proteins Recipe: Scrambled eggs with caramelized onions and chopped herbs; vegan alternative – chickpea fritters with	Recipe analysis Mise en place Knife skills Product ID: herbs Commensality Sensory analysis Cause and effect reflection

Module/Week	Nutrition	Culinary	Food Agency
	stressing about it; by eating a varied diet, you will meet all your amino acid needs	aquafaba mayo dipping sauce	
5	Fats/Lipids Fat is important, helpful, and essential, both in our bodies and in cooking. Various fats have slightly different fat-type profiles, taste profiles, and culinary profiles	Emulsification Recipe: Handmade mayonnaise dipping sauce with vegetable crudites	Recipe analysis Mise en place Knife skills Product ID: cooking and seasoning fats Commensality Sensory analysis Cause and effect reflection
6	Vitamins and minerals Eating a variety of foods will help you meet your vitamin needs. Certain cooking methods might be slightly better for vitamin retention, but don't stress over retaining every bit of vitamin in your diet	Heat transfer – conduction, connection, and radiation Whole cycle cooking Recipe: Three sisters stew (using vegetable stock from module 2)	Recipe analysis Mise en place Knife skills Product ID: beans and legumes Commensality Sensory analysis Cause and effect reflection
7	Building meals for health Combining foods can help maximize nutrition absorption	Smoke points and heat transfer Recipe: Black bean and sweet potato tacos with pico de gallo	Recipe analysis Mise en place Knife skills Product ID: spices Commensality Sensory analysis Cause and effect reflection
8	Combatting diet culture Eat a variety of foods that make you feel good	Improvisation: Cook a recipe of your choice using sweet potatoes and black beans as ingredients	Recipe analysis Mise en place Knife skills Commensality Sensory analysis

2.1.3 Instructor reflexivity

For the prior Pope study using the food agency pedagogy [46], a chef educator was trained in the food agency pedagogy. I was recruited and offered a research assistantship

to teach Cooking for Health based on my previous experience as a professionally trained chef with 20 years' experience cooking in restaurant kitchens and providing culinary education. Along with all of those years of experience, I brought the internalized standards of classic French gastronomy with me into the classroom, complicating my role as a participant observer [64]. Lindlof and Taylor note that, "participant observers draw on their own experience and knowledge to imagine what the motives might be for performing particular actions" [35, p. 136]. But in this setting with this group of young, novice cooks, I had to judiciously monitor my reactions to their cooking, which was—if judged by my internalized professional standards—unskilled and frequently inept. Lindlof and Taylor further note that "the success of observing depends on what observers learn through their participation and the uses to which they put that knowledge" [35, p. 136]. To be an effective participant observant in Cooking for Health, I had to suspend my internalized standard, see the class though the students' eyes, and understand *their* journey through the class. I approach every dish *I* cook trying to further my mastery of technique. But why were *they* there? What did cooking mean to them, and why? How was this meaning represented in the choices they made while cooking? By the end of the first week, I realized I would not be able to learn about the impact Cooking for Health was having on my students if I was distracted or frustrated by how routinely they made basic mistakes. While continuing to document their skill-building, I began to focus my notes on the event of class itself: the students' attitudes and behavior, how engaged or not they were from week to week, the

conversations we had while I wandered the classroom gently correcting the way they held their knife or reminding them to monitor and control the heat on their stovetop [18].

A fellow graduate student, Olivia May, formally served as my Teaching Assistant during Fall 2021, but in truth, May, who had already obtained a BS in nutrition, was the class nutrition expert. This worked to my advantage: my naivete, relative lack of expertise, and standing as a graduate student newly returned to the classroom made me less intimidating as an instructor, despite my professional cooking experience. My field notes from the first few meetings of the fall semester classes remind me that the rapport I built with the students was often grounded in my openness about how little I knew about UVM, Vermont, the pending winter weather, nutrition, and culinary science—especially in comparison to the depth and breadth of my expertise in cooking. As Lindlof and Taylor (2017) observe, "this appearance [of being a naïve visitor and inept novice] can be particularly useful at the beginning of a study, because it induces other members to teach us 'how things work around here'" [35, p. 147]. In casual conversation while we cooked together, students coached *me* on such topics as student life at UVM, where to eat in Burlington, and how to dress for winter. In exchange, they asked questions about cooking and my life as a cook, both on a personal and professional level, and shared anecdotes with me from their struggles and successes cooking outside of the classroom. As I had openly shared the ages of my own children (then 16 and 19) with the class, many students identified with me as a mother figure—I was told frequently that I reminded them of their mothers. Several engaged me in conversation about family food traditions, their own

mothers' (and fathers') cooking practices and attitudes toward cooking, and their hopes about cooking for their own families one day.

Over the spring semester I had two new TAs: one, a nutrition student preparing to graduate with her accelerated masters, and the other an undergraduate who had been a student in the second section of Cooking for Health in the fall, who aspired to work in a cooking-related field, and who wanted to remain connected to the class. During this semester, my role as participant-as-observer was complicated by the fact that I was no longer a bona fide newcomer, and by the presence of a former student in the classroom. Nonetheless, an atmosphere of openness and reciprocity remained, and my field notes remind me that I continued to collect anecdotes from the cooking lives of my students, particularly related to their struggles to find time to cook, their aspirations to cook impressive meals for friends and partners, and the experiences that had shaped their impressions of cooking while growing up.

2.1.4 Research design

In my notes from these two semesters teaching Cooking for Health, a theme that emerged was how fluid and inconsistent I found my students' attitudes and behavior. From week to week, they could seem like different people, and frequently, what they said about how much they enjoyed cooking was contradicted by the meals they reported cooking—or *not* cooking—outside of class. A student might demonstrate focus, aptitude, and skill one week, and then the next, be so chaotic and unorganized their dish was a catastrophe. They often professed eating preferences they then immediately contradicted while tasting and

analyzing the flavors and textures of their dish. And frequently, the disconnect between their claims to skills and experience and their performance in the kitchen was notable.

Given how earnestly they talked about their desire to cook, the excitement and enthusiasm with which they approached some cooking opportunities, and yet how ambivalent they were about many of the actual tasks of cooking (a common rebuttal when I demonstrated a skilled technique, like chopping vegetables in 1-inch dice was, "Do I *have* to do it that way?"), you could say that there was a deep disconnect between many of my students' lived reality and the stories they told about themselves and cooking. I kept wondering, what was going on?

In *Making Modern Meals,* Trubek posits that fluidity defines the lives of most modern American cooks, noting that "depending on the person, the place, and the context, cooking might be a creative act, a craft, a way to a healthy body and society, something other people did, or a pleasure," and that "people's practices and perceptions moved between these categories on given day" [64, p. 18]. At the same time, ambivalence toward the chore of cooking is also a fact of modern life for many if not most Americans: we are a nation of time-stressed episodic home cooks with few compunctions about the convenience factor associated with premade meals and ingredients [63, 64]. We may worry about the latest health headlines warning against such meals, or fret over whether we "should" do "better" and cook from scratch [9], but fewer resources in terms of time and money are spent on cooking at home [63, 64]. And while definitions and perceptions of what it means "to cook" have never been universal [58], many cooks today consider a meal made with jarred,

packaged, frozen, or other premade ingredients to be "homemade" so long as it is made *at* home [76], which may explain the disconnect between data describing decreasing time and money spent on homemade meals and other research indicating we still frequently prepare meals at home [63, 71]. Obviously, given this larger context, one explanation for my students' fluid and inconsistent attitudes and behavior in the kitchen was that they typified this moment in our collective food lives as Americans.

Another possibility was that my internal standards were not as in check as I hoped: that regardless of my commitment to reflexivity, I was relating to them as young cooks, not as young people, and my expectations were too high. A premise of the theory of food agency is that structural barriers like lack of time and resources inhibit cooking [65]. Most of my students [N=36] were living in the dorms with inconsistent access to kitchen facilities, tools, ingredients, and equipment. How relevant were my lessons to a young person whose lived reality included a meal plan for daily sustenance and a home without a kitchen?

Nonetheless, they also seemed to feel that their stories were meaningful and important—they seemed invested in the *idea* of cooking—and they often projected into the future and talked about how the contradictions between their present desire to cook and lack of actual cooking would be solved "one day" when they had more time, money, a better kitchen, a partner, or a family, etc. I found this relatable, remembering how, in my twenties, before I became skilled as a cook through professional training, cooking existed for me as an abstraction, a representation of something else that I wanted in my life, namely stability, a sense of purpose, and control. Prompted by those recollections, I began to

investigate the literature around behavior change from the perspective of developmental psychology. Here I first encountered the theory of emerging adulthood and contentions that the disruptive transition to college prompts the reconsideration of old habits and aids in the development of new behaviors aligned with one's attitudes and intentions [2, 3, 55, 70]. A key premise of emerging adulthood is that young people between ages 18-29 are *in between*—no longer children, but not yet adults. And yet they are keenly aware of the future and are actively trying out paths and making plans for how they will become the people they imagine being. In this phase of transition, identities are fluid as emerging adults explore different values, beliefs, and behaviors to see which *fit* [2-4, 44, 55, 57, 72]. These insights offered another lens through which to explore the fluidity and inconsistency in my students' behavior and attitudes, like on-and-off engagement (instability, both internally and externally); hot-and-cold attitudes toward cooking (instability; identity exploration and trying out various possibilities for defining one's self); future food narratives (optimism about transforming one's life in the future); and a seeming indeterminism or lack of self-awareness regarding their preferences and capabilities (instability; self-focus) [2, 3]. The new lens suggested new questions as I began to think about a study. Did students enroll in Cooking for Health to figure out whether a cooking identity was a "fit" for them? Were they gathering information that would help them decide how much effort to invest in "cooking," which, before leaving home, might have existed for them more as of an abstract notion than as a real behavior or practice? And if so, how had building food agency—

diminishing the gap between aspiration and action by increasing their self-efficacy—impacted their perceptions of cooking and their subsequent cooking behavior?

These questions suggested a longitudinal study, ideally one that would include check-ins at regular intervals over the course of 5-10 years, extending through emerging adulthood into adulthood. It would examine how and whether the initial intervention impacted the trajectory of former students' cooking identities and how their food agency was expressed in adulthood. This would test a premise of the food agency theory, which is that food agency *develops* over time with repetition and the embodiment of skill [64, 65, 77]. The current mixed-methods study, in which students were interviewed 6-12 months post intervention, was proposed as a first step toward such an ambitious longitudinal study. Given that the pedagogical aim of Cooking for Health—and, for that matter, of all the classes taught in the UVM Foods Lab—is to build food agency, and that the audience for these courses are all emerging adults, what could be learned about the food agency and cooking identities of emerging adults after participating in a food agency intervention? Thus, the research question for this study became, what is the impact of an intervention to build food agency during emerging adulthood.

2.2 Data collection

Approval for this study and for all research and communication materials was granted by the UVM Institutional Review Board on September 6, 2022. Shortly thereafter, personalized study recruitment emails were sent by me to all students (N=46,) who had completed Cooking for Health during the previous academic year, including those who had

since graduated from UVM. On the Research Information Sheet attached to the email, the purpose of the study was described thusly:

> This study is being conducted to learn about the impact of an educational experience in food agency during the unique life stage known as "emerging adulthood," defined as between the ages of 18-29. We want to closely examine the skills, insights, and or lessons learned during NFS:095 Cooking for Health you have continued (or not continued) to deploy leaving the lab. We also want to understand the contexts (e.g., time, kitchen access, resources, et.) that shape your cooking practice now, and the relationship between the food agency you built during NFS 095 and how you navigate these contexts. The research results might provide lessons we can learn about the pedagogy we use to build food agency, as well as more about the everyday impact of food agency in general.

Participants were asked to meet with me for an in-person interview of about one hour in length, conducted on campus between the third week of September and the end of October 2022. To increase the size and diversity of the sample, a Zoom or Teams alternative was offered to students who wanted to participate but who no longer lived in proximity to campus or who were otherwise unable to attend in person. In exchange for their participation, students were told they would be invited to a dinner party held at my home at the end of the study. Participants could respond via email or by sending me a text.

In-depth interviews were held on the UVM campus, down the hall from the Foods Lab. Since I had an established relationship with each student, I devoted a few minutes to

small talk and catching up before the interview began; during this interlude, I avoided talking about food or cooking, telling students we would save that conversation for the interview. Then, before questioning began, I asked each participant to take a few quiet moments to fill out the CAFPAS survey measuring food agency, reminding them that they had also filled it out at the beginning and end of Cooking for Health. Most students recalled having taken the survey, if not their results.

When the survey was completed, I asked for consent to audio record the interview and began recording using my iPhone. The interview protocol was developed to reflect the insights of my participant observation, themes in the emerging adulthood literature, and my study's overarching interest in the impact of the intervention on participants' behavior and attitudes toward cooking (Table 2). Students were asked to think back to the previous academic year when they were in the Cooking for Health class. So situated, the series of open-ended questions then traveled through time, eliciting a narrative reflection [35] on the students' cooking lives (e.g., skills and techniques used, comfort, frequency, feelings about cooking, meals made, etc.) *before* the intervention, going as far back as when they were living at home; *during* the time that they were taking Cooking for Health; and in the time that had passed *since* the intervention. Two final questions asked the student to imagine the immediate ("this school year") and distant ("10 years from now") future and describe the role they thought cooking would play in their life at those moments. Rather than follow the protocol like a checklist, I asked follow-up questions to elicit deeper insights when students made points or told stories that resonated with themes from the literature.

Table 2: Interview Protocol

Question	Theme explored
Think back to when you heard about the NFS 95: Cooking for Health course. Besides meeting people or picking up an extra 1-credit, what was your main reason for wanting to take this class? What kind of food-related goals did you have that you hoped you would get out of it?	Attitude toward cooking
What is your favorite story about you and cooking from before you took Cooking for Health?	College transition Attitude toward cooking Identity Self-perceived food agency
The activities and assessments in NFS 95 are organized around the concept of food agency, or being empowered to act. Before the class even started you completed an online food agency assessment and then wrote a discussion board post regarding what you learned about your start-up level of food agency. What did you learn? What stood out? Follow up: Were you surprised by anything you learned?	Self-perceived food agency Skills Attitude toward cooking
Thinking back, what are three things that you learned while you were building food agency that you still find yourself using or thinking about now?	Skills Structural barriers Impact of food agency building
Can you tell me a story about a time recently when you were cooking or getting ready to cook and you realized you were putting your food agency into practice?	Self-perceived food agency Skills Structural barriers
Thinking more about your food agency, how is it going now, after the course is completed and you are no longer cooking in the foods lab?	Skills Impact of food agency building Structural barriers College transition Attitude toward cooking Identity
Now, I want you to think back to the last school year. Can you tell me about a time that you particularly remember, outside of our class, when you made a meal? Why does this meal stand out to you?	Structural barriers College transition Perceived food agency Skills Attitudes toward cooking
How about this past summer? How was cooking during the summer different from cooking during the school year?	Structural barriers Instability Skills Attitudes toward cooking
What do you hope cooking will be like for you during this next school year? What do you think it will be like?	Future selves Instability College transition Structural barriers

Question	Theme explored
	Attitudes toward cooking Self-perceived food agency Skills Impact of food agency building
When you imagine yourself 10 years from now, what kind of role does cooking play in your everyday life?	Future selves Attitudes toward cooking Self-perceived food agency Impact of food agency building
Is there anything else you want to tell me about your experience taking Cooking for Health and how it impacted you?	Impact of food agency building

Note: Spontaneous follow-up questions not captured in this protocol

2.3 Data analysis

Although quantitative CAFPAS data was collected to measure students' food agency at the time of in-person interviews, to avoid influencing my interpretation of the qualitative data, CAFPAS scores were not tabulated nor analyzed until after the qualitative data had been analyzed. The quantitative data was then used to triangulate the qualitative findings and provoke a richer emergent understanding of the results and their application in the field.

2.3.1 Qualitative analysis

Audio recordings of student interviews were transcribed verbatim by a professional service then uploaded to the qualitative data analysis software NVIVO to facilitate coding, data management, and analysis.

The first round of coding followed a grounded theory approach [21] in which inductive analysis is used to allow themes to emerge from the data that capture its essence or meaning. Morse & Field (1995) observe that such themes frequently only become apparent when the researcher steps back to ask, what are these people trying to tell me?

[43] Thus the iterative process proceeded slowly as I took pauses to reflect and consider the possible meanings behind participants' words. Why did they tell me *this* story? What significance is embedded within? Though described as emergent, when conducting social research, emergent themes are often informed or influenced by what Blumer (1954) called "sensitizing concepts"—interpretive devices that form the starting point of a qualitative study [7, 8]. It has been suggested that research usually begins with such concepts, whether the researcher is aware of them or states their influence [20]. Thus, though a priori codes had not been established for the first round of coding, my iterative and inductive processing and coding of transcript data was informed by my prior participant observation, entanglement with food agency concepts through my teaching and deep reading on the topic, and the adoption of emerging adulthood as a conceptual framework for this study.

2.3.2 Quantitative analysis

After qualitative analysis reached the level of thematic saturation, I processed the quantitative data from the CAFPAS scale measuring food agency. Using an Excel statistics program, I calculated the unadjusted sum for each subscale (attitude, self-efficacy, structures) for each student and found the unadjusted mean for each subscale for the population. Then, using the formula developed for the validated scale by Lahne et al (2017), I 'scaled' the data for each subscale across the population to produce an adjusted subscale score for each individual, and for comparison purposes found the mean and median of these three data sets. Finally, following Lahne's formula, I summed the adjusted

subscale scores to produce each student's total CAFPAS score, and calculated the mean and median CAFPAS total scores for the population [31].

2.3.3 Data integration

At this stage of the analysis, I used qualitative data to explore and illuminate the CAFPAS quantitative results. I visualized the quantitative data by arranging the students in order by subscale ranking and arrayed these subscale rankings side by side. I then color-coded total CAFPAS scores into the arrayed subscale rankings to promote clearer visual understanding of the impact of individual subscale scores on overall food agency. Finally, I used qualitative data from both the interviews and my classroom participant observation to help make sense of emergent patterns and discrepancies in the visualized data. At this stage, I also considered the impact of relevant demographics, including year in school during the 2021-2022 school year when they took Cooking for Health; year in school at the time of our in-person interview; and living situation (on-campus or off-campus housing) both during Cooking for Health and at the time of the interview.

Integrating the quantitative and qualitative data was an exercise in mutual meaning making: CAFPAS data validated and gave structure to the qualitative findings, while qualitative data enriched the value of the quantitative results.

3. Results

3.1 Quantitative data description

Characteristics of the study sample are summarized in Table 3. Of the 18 participants, 15 were female and 3 were male: compared to the total population of students

who took Cooking for Health during the 2021-2022 school year, these figures overrepresent males and underrepresent females, though within the sample, females are overrepresented by a factor of 5:1. 28% of the sample (N=5) were enrolled in Cooking for Health during the fall semester, thus the interval between intervention and interview was 1 year. The remaining 72% (N=13) of the sample took Cooking for Health in the spring. ~56% of the study sample (N=10) were second-year students at the time of the interview (and first-years when they took Cooking for Health), ~28% were third-year students (N=5) who took Cooking for Health as second-years, ~5% were fourth-year students who took the class as third-years (N=1), and ~11% had graduated, having taken Cooking for Health as fourth-years (N=2). At the time they took Cooking for Health, ~78% of the sample (N=14) were living in on-campus housing, while the remainder (N=4) were living in an apartment. At the time of the interviews, ~61% of the sample (N=11) were still living in on-campus housing while ~39% (N=7) were living in an apartment.

Quantitative results for total food agency as measured by the CAFPAS are presented in Table 4. The mean adjusted food agency score for this sample was 22.04 while the median was 21.95, indicating high food agency, particularly in comparison to the students in Pope et al's (2021) earlier study, who improved from baseline to a mean score of 14 [118]. George had the highest total food agency score (25.23); the lowest total food agency score belonged to Jess (15.6). Given that, in qualitative interviews, students who were still living on-campus at the time of the interview frequently talked about dorm-life inhibiting their ability to cook, the influence of living on- versus off-campus on food

agency was considered. Students in the sample who lived in on-campus housing at the time of the interview had a mean adjusted food agency score of 21.4 (min 15.6; max 24.1), while students who lived off-campus had a mean adjusted food agency score of 23.06 (min 20.5; max 25.2).

Participants scored most highly on the attitude subscale: the average unadjusted attitude sum on the 10-question subscale was 59.1, the mean and median score across all items was 6 (calculation reflects reversed scores on 6 items), reflecting a strongly positive attitude toward cooking. Students who lived in on-campus housing had a mean score of 5.9 and a median score of 6 on the attitude subscale; students who lived off-campus in an apartment had a mean score of 5.98 and a median score of 6. Attitudes toward cooking appear unaffected by place of residence, on- or off-campus.

Participants' lowest scores were on the structures subscale; the average unadjusted attitude sum on the 5-question subscale was 20.78, the mean and median score across all items was 4 (calculation reflects reversed scores on all 5 items). Students who lived in on-campus housing had a mean score of 3.85 and a median score of 3 on the structures subscale; students who lived off-campus in an apartment had a mean score of 4.6 and a median score of 5, indicating that while all students identified contextual barriers to their food agency related to time and responsibilities, the barriers were higher for students living on campus without easy or regular access to kitchen space.

The average unadjusted self-efficacy sum on the 13-question subscale was 71.44; the mean score across all items was 5.5 while the median score was 6 (calculation reflects

reversed scores on 1 item). Students who lived in on-campus housing had a mean score of 5.79 and a median score of 6 on the self-efficacy subscale; students who lived off-campus in an apartment had a mean score of 5.78 and a median score of 6. The difference between students living on- and off-campus in terms of confidence in their cooking abilities and ability to navigate structures or barriers to achieving their food-related goals is nearly indistinguishable; both students living on- and off-campus report a high degree of self-efficacy and cooking confidence.

Table 3: Characteristics of the study sample

Variable	N
Gender	
Female	15
Male	3
Interval since intervention	
6 months	13
1 year	5
Residence at time of intervention	
On campus	14
Off campus	4
Residence at time of interview	
On campus	11
Off campus	7

Table 4: Food agency and responses to individual CAFPAS Questions

Responses	Mean	Median
Overall food agency	22.04	21.95
*On campus	21.4	-

Responses	Mean	Median
*Off campus	23.06	-
Attitudes subscale		
I feel like cooking is a waste of effort**	6.6	7
If everything else is equal, I choose to cook rather than have food prepared by someone else	5.1	6
I find cooking a very fulfilling activity	6.6	7
Compared with other activities, cooking brings me little enjoyment**	6.5	7
I am inspired to cook for other people, like my family and friends	6.4	7
I think a lot about what I will cook or eat	5.9	6
For me, cooking is just something to get through as quickly as possible**	5.7	6
I feel burdened by having to cook for other people, like my family or friends**	6.2	6
If I try making a new type of food and it does not come out right, I usually do not try to make it again**	5.1	6
I prefer to spend my time on more important things than food**	5.5	6
Attitude subscale average	6	6
*On-campus dwellers	5.94	6
*Off-campus dwellers	5.98	6
Self-efficacy subscale		
Before I start cooking, I usually have a mental plan of all the stages I need to complete	5.5	6
In preparing food, I can solve most problems through effort	5.8	6
When I shop for food, I know how I will use the ingredients I am purchasing	5.7	5.5
I feel limited by my lack of cooking knowledge**	5.4	6
I am confident in creating meals from the ingredients I have on hand	5.5	6
I know where to find ingredients I need to prepare a meal	6.4	6
I know how to use the kitchen equipment that I have	6.3	6
When preparing food, it is easy for me to accomplish my desired result	5.6	6
I am comfortable preparing foods	6	6
When preparing food, I am confident that I can deal with unexpected results	5.5	5.5
I am involved with daily meal preparation	4.2	4.5
I can always decide what I would like to eat at any given time	4.3	4.5
When presented with two similar products to purchase, I feel confident choosing between them	5.3	5

Responses	Mean	Median
Self-efficacy subscale average	5.5	6
*On-campus dwellers	5.8	6
*Off-campus dwellers	5.8	6
Structures subscale		
My family responsibilities prevent me from having time to prepare meals**	5.9	6
My job responsibilities prevent me from having time to prepare meals**	4.2	4
I wish that I had more time to plan meals**	2.3	2
I have a hard time finding enough time to prepare the food I'd like to eat**	3.8	3
My social responsibilities prevent me from having the time to prepare meals**	4.6	5
Structures subscale average	4	4
*On-campus dwellers	3.85	3
*Off-campus dwellers	4.6	5

* Residency at time of interview

** Questions scored in reverse order to create the CAFPAS score

Note: All questions were measured on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Other scale points were labeled 2 (disagree), 3 (somewhat disagree), 4 (neither agree nor disagree), 5 (somewhat agree), and 6 (agree)

3.1 Integrated qualitative and quantitative description

Three dominant themes emerged when qualitative data from the student interviews were analyzed and interpreted through the lens of emerging adulthood and integrated with the quantitative findings: (1) Attitudes anchored by care and connection beliefs strongly influenced perceived food agency; (2) Leaving home to attend college was a disruptive event and cooking perceptions were influenced by the transition; and (3) After an interval of six months to a year, several skills learned in Cooking for Health were still relevant and being deployed.

3.1.1 Cooking is about care and connection

Given that most of the participants (N=11) were living on campus with inconsistent access to cooking facilities at the time of our interviews—and that the theory of food agency attributes skillfulness and higher food agency to the ongoing practice of learned and embodied cognitive, social, and mechanical actions—one would reasonably expect lower CAFPAS scores from this study's participants, many of whom couldn't dice an onion before we first met in the kitchen.

Instead, while the group's scores were, indeed, relatively low on the structures subscale that measures the influence of barriers like time and outside obligations on cooking (median = 4), study participants gravitated toward high and strong responses everywhere else, producing an overall high score for perceived food agency (mean = 22.04; median = 21.95). Scales and surveys are imprecise and potentially unreliable tools given the range of factors that may influence survey-takers' responses. Nonetheless, high food agency amongst largely inexperienced and episodic cooks is an unexpected result. Interpreted through the lens of emerging adulthood, however, an emergent theme of care and connection may help explain the finding.

The group's highest and most enthusiastic scores were tallied on the 10-item attitude subscale that measures enjoyment of cooking and how much satisfaction one derives from it (mean and median response score = 6, reflecting reversed scores on six items). On this subscale, the group strongly disagreed (median response = 1) with two statements that assessed cooking negatively—"I feel like cooking is a waste of effort" and "compared with other activities, cooking brings me little enjoyment"—and strongly agreed

(median response = 7) with two that positively assessed cooking—" I find cooking a very fulfilling activity" and "I am inspired to cook for other people, like my family or friends." All other statements on the attitude subscale received a median response of 6 or 2, depending on whether the statement was positively or negatively worded. By comparison, on the 13-item self-efficacy subscale, the median response score was 5.5 and *no* statement received a median response of 1 or 7. In this study, participants' *attitudes* toward cooking were the most highly charged and influential, and appear to be rooted in strong beliefs about cooking as a social act of care and connection which may have crystallized in the family kitchen and were then validated through peer relationships.

Parents appear frequently in the genesis stories of study participants' cooking beliefs, illustrating Trubek's observation that learning to cook is a social act that "never revolve[s] around a narrative of rugged individualism" [64, p. 38]. Arnett contends that parents may gain stature in emerging adults' eyes after they leave home, a reflection of the in-betweenness of emerging adulthood: emerging adults are advancing toward independence, but not yet there, and during the transition, "most people come to see their parents in a much more sympathetic and benevolent lights; as persons and not merely parents" [3, p. 47]. For example, Joey talked wistfully about his dad not being "the biggest talker," but noted how "through food you can kind of express things that you couldn't before." Then he used the example of his father's chili to illustrate his belief that cooking is a form of care:

> It's like with soup. Because my dad made that dish. He loved that dish. Or chili. Chili and sour cream. Those have meaning because he made them for me. So, I think that cooking – because being cared for by someone, like someone else has made your meals, you see how deep it goes beyond just like, "All right. I've gotta eat. What are we eating?" [Joey, living on campus]

In other participant stories, parents set a template for the importance of family meals, preserved family and cultural traditions and recipes, and conveyed nutritional and dietary information and values that study participants believed set them up to be more healthful and mindful eaters, like that a meal should always include protein and veggies, or that produce should be organic. Chandler, who described himself as "currently" a vegan for health reasons, said of his parents who exposed him to vegetarian and macrobiotic cooking, "It comes with age, too… realizing, 'Oh, my parents weren't cooking these meals just because they felt like it. There's a reason to it.'"

Students often described their parents as their cooking role models and wished to emulate their cooking behavior. In one poignant example, Karina reflected on her late father, the family cook and keeper of family rituals like making dumplings, who passed away when she was 9. "My mom was never the cook, ever," she said. So, after his death, "We kinda went from having these awesome dinners to like frozen meals or going out to eat." When Karina decided to learn to cook in high school, it was a way to "reconnect" with and to enact the values and traditions she associated with her dad.

> So, I think that that's something I would definitely carry with me, just seeing how that's so important to him, that it's also important to me. And I want to be like – I always saw him as the best cook, and when I have kids, I want them to see me as – food, but as something that brings us together. [Karina, living on campus]

Notably, the focus of Karina's story—as in Joey's—is on the values she believed her father expressed through cooking—caring and togetherness—rather than on the skills or techniques he deployed. Rather than *how* he made the dumplings, she reflected on what the dumplings *meant*—care and connection—and how his home-cooked meals were different—better and more meaningful—than the frozen dinners she and her mother ate after his death.

An important feature of emerging adulthood is identity exploration, which Arnett describes as encompassing the development of a worldview, or a set of values and beliefs [2-4]. When study participants like Karina and Joey talked about cooking *like* their parents, they generally weren't referencing learned skills—most had only *observed* their parents cooking—but instead, were often demonstrating this form of identity exploration: trying on a set of beliefs and values about caring and connection they thought (or assumed) their parents possessed. When Elaine cooked for her own friends, for example, she tried on the nurturing identity she associated with her mother to see if it fit.

> I feel like dinner's a really intimate meal. My mom always made it feel that way. We had family dinner every night. She would cook and we would sit down to the table together and eat. I guess that just feels like family, so doing that with my really

close friends, I feel like the same sort of connection. And then, also like a lot of the food I cook is like stuff that I watched my mom make. I like it, because my mom makes it for me, so then I'm like making the foods that my mom made for me for my friends. Like she showed me love by doing that and I'm showing my love by cooking for my friends. [Elaine, living on campus]

Likewise, George, who strongly self-identified with the role of cook and provider among his friends, was recreating a familiar culture of care and connection when he fed others, which made the effort of cooking both meaningful and worthwhile to him.

Personally, I like the process of cooking. It reminds me of—I don't know. It just makes me feel like I'm growing up and hanging out with my family. And it's like, "Oh, man. Were gonna make food." It's very much like a love language in my family is to prepare food. I feel like I'm practicing self-love when I make food for myself, something good to give to myself. And I really like feeding other people. Inevitably, I always make more food than I need so that I can share it with my housemates because many of them can't cook their way out of a wet paper bag. It's like, "I would love to see you eat something that's not beige, like so much. So, here you go." [George, living off campus]

Positive associations with cooking were formed in study participants' homes and often based on parents' examples, but when they transitioned to college, study participants continued to hone their positive cooking beliefs, often in social settings. Peers are influential in the lives of children and adolescents [24, 45]. In emerging adulthood,

however, when many young people have physically separated from parents to attend college, the example and approval of peers may acquire additional significance, filling a parental void [3, 4, 61]. In this study, students like Lori and Maggie joined organizations like the UVM chapter of Slow Food specifically to find friends who shared and validated the affinity for cooking they had acquired in their pre-college home lives, as well as their understanding of cooking as a means of showing care and connection. Lori described cooking with such friends as "communion":

> And for me, that's been super pivotal. Being at college and connecting with people over food and through potlucks, and communion, and all of that, and finding joy in creating and sharing food together. And so, one of my really good friends Maris is the president of Slow Foods, and she was like, "You should come to a Slow Foods potluck." And I was like, "Okay." [Lori, living off campus]

Meanwhile, even though Karina lived in the dorms and rarely cooked at school, she was invested in being perceived as a cook by people she cared about:

> And I think just having people around me recognize me, and being known as a good cook, among my friends, or my mom's friends. I'll cook Thanksgiving, and I'm just known as dedicated kind of to that. And that is important for me. [Karina, living on campus]

And Amanda expressed a common belief that cooking for others was more rewarding than cooking just for herself.

> When I'm cooking for another person, I am 10 times more likely to A) cook and B) really try because when I know I'm just making it for myself, I'm just like, "If it doesn't come out okay, it's okay. It's just me." But I cook for others and with others. That's really, really nice. [Amanda, living off campus]

Separated from parents and the home environments where their cooking beliefs formed, students gravitated toward social opportunities for cooking where they could enact their beliefs and values about cooking as caring.

Cooking with and for friends also offered study participants opportunities for "adulting," an expression of emerging adulthood's in-betweenness. Many students aspired to host dinner parties, for example. Talking about cooking in her future apartment, Kate focused on how she and her roommates "can't wait to have dinner parties and all this fun little stuff." These were seen as a distinct type of cooking, a social gathering warranting extra effort since the meal would be shared with and appreciated by friends. Similarly, Diane told me a story about living with a friend on Martha's Vineyard the summer between her first and second year of college. She described hosting fish taco gatherings at the tiny house they rented—grilling the fish outdoors on a camp stove because the kitchen was so small—and ranked the experience as a personal cooking milestone that made her feel accomplished:

> I was like, "This is such an experience I wanna tell my kids about and stuff like that" because it was just so – everyone was like, "How are you guys doing this?

> How are you doing this?" And we'd be like, "I don't know. You just kinda make do." [Diane, living on campus]

Meanwhile, Becky, who grew up eating traditional Russian dishes like buckwheat, said she was at a time of her life when, "I feel like I need more than just buckwheat, because I'm trying to be more sophisticated, I guess." Having just graduated from college, dinner parties and cooking with friends was part of her personal growth—her quest to become more adult and sophisticated.

> We actually have a group chat that's called 'dinner parties,' so we have like 20 people there who might be interested in doing a dinner party with us and it's like all of my friends and friends of a friend. You know, so we started, I'd say sophomore year college, and now it's still going strong. [Becky, living on campus]

When students talked about dinner parties, they were characterized as social gatherings that were small and intimate, opportunities for connection and conversation. Rituals like setting the table and making a scene or setting were important, and food at these gatherings served dual roles. It was the draw—the reason for the party—and a medium. Cooking for a dinner party represented an adult capability and facilitated an adult experience. In turn, these experiences were opportunities to practice adult behaviors while enacting caring beliefs about cooking.

Features of emerging adulthood may help explain the strongly positive attitudes toward cooking that characterize this group of students' high overall perceived food agency. Leaving home created an opportunity to enact and reinforce beliefs rooted in their

early experiences with food, like that cooking is a way to show care and nurture connection. When students cooked for and with friends, they often emulated behavior their parents had modeled—in effect, trying on identities they associated with their parents—from cooking the same recipes to using cooking and meals to strengthen social ties. Dinner parties with friends showed care, fostered connection, and were also a way to practice adulting, illustrating the in-between nature of emerging adulthood, when one is neither truly a child nor an adult, but is actively engaged in the process of making the transition. It's ability to express care and connection were *reasons* that students felt so strongly that cooking was "worth the effort"—even when they didn't cook very often, or, as I observed in the classroom, had more confidence in their cooking than an objective assessment of their capability would seem to warrant. For this group of emerging adults, food agency was a highly subjective, highly personal appraisal.

3.1.2 Leaving home disrupts perceptions of cooking

Although demographic data related to socioeconomic status was not collected as part of this study, none of this study's participants talked about having grown up in an environment of food insecurity. Instead, they described households where family meals were common, valued, and frequently prepared by family members in the home. The range of these meals varied widely, from the vegetarian meals described by one student who traced their family's vegetarianism to parents who "read *Omnivore's Dilemma*, I think," to the self-professed "American eater" who said, "We eat our white people tacos. We eat our spaghetti with meat sauce, and it's ground beef, and it's a can." Other students mentioned

parents who maintained cultural practices like preparing Persian dishes from scratch or Russian meals that required "a whole day of work," or who even owned restaurants and had worked in professional kitchens. In this group, the described parental engagement in meal preparation and family meals was overall quite high, though in two-parent households, one parent—either mom or dad, with a fairly equal representation of each—usually took the lead. Students also attributed a range of perceived attitudes to their households' primary cooks: from passionate meal preparers who, in the eyes of their offspring, enjoyed cooking; to parents—primarily mothers—who, their offspring believed, seemed bored with or burdened by the responsibility of cooking. Only one student in the study grew up with parents who they described as detached from the process of cooking and family meals:

> So, my parents both work, and they always worked, so I had nannies who would cook at my house and have dinner with me and my sister… sometimes we had family dinner when my parents came home on time. [Jess, living off-campus]

Reflecting the food dynamics in their household environments, most of the participants in this study reported having been involved with cooking before leaving home to attend college, and many also self-identified as passionate cooks. Their expressed affinity for cooking is reflected in the group's high attitude subscale scores on the CAFPAS, where the group both strongly disagreed that "I feel like cooking is a waste of effort" (median response = 1) and strongly agreed that "I find cooking a very fulfilling activity" (median response = 7) [31]. Prior to college, however, few had been *responsible*

for the tasks associated with producing meals on a regular basis, like planning, shopping, or cooking the meal. Under normal circumstances, such everyday tasks fell to household adults. Study participants expressed satisfaction with this arrangement, which gave them the chance to cook what they wanted, when and if they wanted, which, they reported, kept cooking from feeling like a burden or a chore.

> There was one question [on the CAFPAS] that I remembered thinking this is hard to answer. It was something about like if I feel burdened cooking for my friends and family. And I don't, but it's because I don't have to. It's like a choice. When I have to – when my mom's like, "Oh. You have to make dinner tonight." I'm like, "Oh, it's not exciting. I have to do this. This is a chore." [Elaine, living on-campus]

> I don't like prying eyes, so it's fun when nobody's home, and I get to enjoy the process. I think it's fun. And that's why sometimes I lean a little bit more towards baking because there's not a rush when you bake. Whereas when you're cooking, there's people expecting a meal, you know? For me, at least, cooking is at 5:00 when my family is home and everyone's sitting around the kitchen and they're, "What are you doing?" And I don't like that. I liked it being my own processes, you know? [Rachel, living on campus]

Beyond establishing a notion that cooking becomes a chore when it involves meeting others' expectations, these quotes illustrate a common belief among participants that cooking should be exciting or fun—akin, at least emotionally, to the experiences they

remembered from their earliest forays into cooking. As described in our interviews, these early experiences were often of the low-stakes/high-reward variety, with few if any consequences if they ended in failure, but opportunities for praise and admiration—particularly from family and friends—when they ended in success. For example, during this time, many participants chose to explore cooking through baking, and described the appeal of making sweet treats for others:

> I remember making cookies, a bunch of different types of cookies … I think that's when I started liking to cook for other people. I'd tell my friends, "Oh, I can drop off this. I'm making this for you. I'll have a bunch of extra." [Farrah, living on-campus]

> My greatest triumph. I got this chocolate cake recipe…I put it in the pans. I put it in the oven. It comes out, perfect, beautiful chocolate cake. I made frosting from scratch. Double layer. Put on, frosted it. I think it was for my brother's birthday or something. And then I had these molds that were shaped like roses. And I had molding chocolate. And I melted it, put it in there, and I put all these roses on top. And then I piped whatever age he was turning that year. And that was like, success. [Laura, living on-campus]

As recollected by study participants, cooking primarily for fun or excitement—or, as Trubek has defined it, as an act of creative expression to win the praise of an audience [64]—seldom provoked a critical self-assessment of their own cooking knowledge,

capabilities, or skills. Instead, more often the *point* was to experiment and make a mess—to play. An objective disaster could be deemed a success—and even spur confidence—if the experience was personally satisfying.

> So, I took that idea. I was like, "This is so good. Everybody loves Special K." Check, right? You know? And I threw them in. I threw sticks of butter in, and I threw sugar in, and I just made that into a bar. And then I would – I was like, "Dad, do you want some?" Because I was just chowing – and I was young enough where this didn't disgust me. Now, it disgusts me, but I just ate so much of it and I was like, "I made this thing and it's delicious." [Joey, living on-campus]

> I remember trying to make a lot of weird, different kinds of pancakes. I've always been an experimenter with everything, but food especially and just not measuring anything. Just dumping in this, dumping in that until it got the right consistency I wanted. Sometimes it would work really well. Sometimes it wouldn't, and I would burn – cake a pan in pancake batter. And just smoke and ugh. [Laura, living on-campus]

Exploration was encouraged in many of these students' home environments, where, as noted, parents who regularly cooked meals and were perceived to be talented and knowledgeable cooks were frequently present. Sometimes, a parent's knowledge was of a professional nature, as in the instance of two different parents who owned cafes and worked as chefs in their own businesses, and two others who, according to their children, had once

attended culinary school or cooking classes. Other forms of parental knowledge described by participants include being able to reproduce family recipes, knowing how to make special dishes associated with the family's heritage or culture, and being capable of cooking elaborate holiday meals. When study participants characterized their own involvement with cooking in these environments, they often described themselves as helpers or students responsible for discreet tasks. Some were invited into the kitchen; others initiated the involvement themselves.

> Cooking was more so – my dad's the cook in our family, and he would always call us in to help him in the kitchen, with super simple stuff like cutting the onions, or grating the cheese, or whatever, and the slowly, would give us more responsibility. Like, "Okay. You're gonna make the dough. You're gonna make the sauce," kind of dividing that way, but it was never like a chore. It was more so he was inviting us into the kitchen to learn how to make these things that we really liked eating. [Lori, living off-campus]

> I'd say I myself, I'm just curious. So, I would come down and be like, how do you – I'll help out occasionally. Definitely less as I was in high school because I was just busier with sports and school, but I would wanna learn. [Monica, living on-campus]

> I think probably entering high school was when I really started getting interested in

> wanting to know or helping out my dad. What are you making? How are you doing this? Kinda asking a bunch of questions. [Diane, living on-campus]

> Something that my mother said to me when I – recently, within the last two or three years, that really stuck with me is, "You wanna cook something weird or you wanna try this? Try it. Absolutely try it. If it turns out terrible, we'll throw it out and order a pizza." [George, living off-campus]

Before leaving home, students felt little if any *pressure* to broaden or improve their cooking skills or to engage in aspects of the cooking *process* that went beyond performing discreet tasks. Students reported cooking few if any of their own meals beyond assembling breakfast or lunch. Engagement with cooking was largely self-initiated, and pursued because it was a fun and satisfying creative act that brought opportunities for audience acclaim, as when Maggie, who began baking at a young age, recalls baking an apple cake for a school project when she was 10:

> After I went through the whole recipe, I was like, "I brought in some for you to try if you want." And I think seeing my peers being like, "Wow, this is delicious. Thank you," was one thing. But seeing the adults as the little kid, and I surprised them, that's when I was like, "Oh, yes. I will be continuing to do this. This is a really good feeling." [Maggie, living off-campus]

The lack of pressure also gave participants the freedom to fail. Another student summarized the pressure she *didn't* feel to have any cooking knowledge or skill in high school by

sharing a story about her senior year when she made a vegan carrot cake for an environmental science assignment. Laughing as she described the "atrocious" sunken cake she was initially worried would earn her a failing grade, she remembered cheering herself up by thinking, "I'm literally 17. I don't need to know how to cook yet." Prior to leaving home and going to college—transitions associated with the pursuit of an individual identity—cooking was generally perceived as fun and exciting, an opportunity to play and learn, a creative expression, and someone else's responsibility, usually a parent.

Leaving home was this group's first taste of the instability associated with emerging adulthood: a disruptive event that changed the dynamics around cooking as newly autonomous participants confronted new structural barriers like lack of time and resources concurrent with the new daily *responsibility* of feeding themselves, one of the major lifestyle transitions associated with attending college. Embedded within this responsibility is the ongoing question of whether to do so by cooking.

During their first two years of college at UVM, study participants perceived this question to be largely moot, given the barriers introduced by the university's requirement that first and second-year students (henceforth, "underclassmen") live on campus in dormitory housing—where communal kitchen access is inconsistent—and purchase a meal plan. While it can be used to purchase a limited variety of fresh, frozen, and processed ingredients at campus stores, meal plans are commonly utilized to buy pre-made meals either in the cafeteria or from a campus eatery, and regardless of how high their perceived food agency was (as expressed in individual CAFPAS scores), underclassmen in this study

primarily spoke of feeding themselves this way. Under the circumstances, the alternative seemed ludicrous to some. As Rachel put it, "Yeah, so, at home I love to cook. … But here, I don't have access to a kitchen so it's how much meal preparation am I doing? I'm like, 'None.' I'm on a meal plan, you know?"

When cooking did happen in the dorms, it was often in response to a perceived lack of quality meals in the dining halls: dorm dwellers described these on-campus meals as lacking in everything from taste to variety to nutritional quality. Nonetheless, meal plans provided secure daily sustenance, a fact that may explain why study participants' stories of dorm cooking often have a quest or adventure quality, reminiscent of the narratives study participants shared about pre-college cooking projects. For example, one underclassman described how she and a friend would forage on their dorm floor to collect the supplies they needed:

> A lot of times though, last year, I didn't have a pan, a pot, all those things. So, we'd have to go knocking on the doors to see if anyone would have them. And people ended up having them, and we'd go and collect all their pots and oils and stuff like that, and then we'd bring it all into the common room. And, usually, people are walking in and out, so some people would come and join cooking with us, or they'd just come for the end. But, yeah, we'd have to scavenge to find all of these cooking supplies. And that's also what made it hard was we didn't have good knives. We really just tried our best. [Diane, living on campus]

In a story Elaine told about making up a recipe and sharing it with friends, the cooking experiment itself, not the unpalatable result, seems to be the point:

> I would make these mug cakes a lot in the dorm. Because I just like wanted something sweet, but I didn't have a recipe, so I just kind of throw everything in a mug and it just like depended on what I had that day, so it was always turning out different. I loved to share it with like my friend. I was like, "Look. I made something good." And they hated every single time. They were like, "This is just gross. I can't believe you're eating this." It was like banana, flour, baking soda, and like yogurt. [Elaine, living on campus]

Project stories like these illustrate how motivated underclassmen episodically pursued creative and often socially collaborative workarounds to cook despite structural barriers associated with living away from home. Diane's story also illustrates her growing awareness of the complexity of the cooking *process*: how it requires planning, organization, and coordination—tasks that, previously, household adults had executed on students' behalf.

The same awareness infuses many underclassmen's narratives. For example, many spoke about meal planning and shopping strategies—even though most weren't regularly deploying them and didn't *need* to. These were skills on the horizon: students anticipated needing them in the future. Encountering cooking's complexity prompted some students to assess their self-efficacy, deriving lessons from their experiences (although CAFPAS

self-efficacy subscale scores remained, on the whole, high for this group). For example, Karina realized that her current habits made planning and budgeting more difficult:

> I'm not so good at planning on buying things at the store and making the ingredients. I'm more of an impulse buyer with food. So, I'm trying to work on that because I just bought three peppers, and I was like, "Oh, I'm gonna eat these peppers." And they went bad and I didn't get to eat them. So, I need to work on spending my money on what I'm gonna make, which is hard, especially with fresh food, because I need to be like, I really have to cook this. [Karina, living on campus]

For most underclassmen, though, dorm life eased and prolonged the transition toward self-sufficiency, given that, with meal plans, cooking was not essential. Some underclassmen cultivated new skills and strategies to cook despite structural barriers—seeking variety, perceived control, creative fulfilment, or perceived improvement over their meal-plan diets—but others perceived the barriers as too high, regardless of their perceived food agency (expressed in CAFPAS scores) or stated desire or motivation to cook. Kate made it clear that, to her, cooking in the dorms just didn't make sense:

> I just can't be asked to have a bunch of pans under my bed, go out an buy a bunch of frying pans, and then all the utensils and – I don't know. I don't want to buy a bunch of materials because I know I'm not gonna use them, and I don't like wasting food. If I buy something to make a recipe, I want to use either all of it and eat all the leftovers or use it again the next time I cook that same thing. So, I feel like, if I bought ingredients to make something here, it would just go to waste because I'm

not gonna use six sticks of butter. And obviously, you can't just buy one stick of butter. You know what I mean? [Kate, living on campus]

And Farrah's response typifies the resignation many study participants expressed about cooking on campus:

I think it's tough. Without more resources, I would say time, money, that kitchen supplies and stuff, space to hold kitchen supplies, I don't think any amount of skill would really – no honestly, because it's just tough what to buy. Being in the dorms, it's tough. [Farrah, living on-campus]

Demonstrating the optimism and future focus that is characteristic of emerging adulthood, however, nearly all dorm-dwelling underclassmen perceived the situation as temporary. Kate expressed this belief when she said:

I feel like I want to cook, but it's just definitely not part of my schedule right now, which is sad. But I'm also like, "You know what? It's okay. You'll have your time." It'll come back onto my life. [Kate, living on campus]

In the literature, this aspect of emerging adulthood has been described as having a Plan A/Plan B mentality [2-4], a sensibility that was often present when underclassmen pivoted to imagine their lives in the near future. Reflecting the subgroup's high perceived food agency and awareness of their dorm years' transience (a tacit recognition of the instability associated with emerging adulthood), dorm dwellers looked forward to having a kitchen, owning cooking equipment, and preparing meals in their own apartments. In narratives like those below, they discussed the benefits they believed would flow from

cooking in their own kitchens. Engaging in the identity exploration that characterizes emerging adulthood, they optimistically imagined their future cooking selves as healthier; more organized and social; and more communal and less individualistic.

> We're really excited. We all talk about like just like just having a kitchen space in general is really awesome. We plan on having like nights where we all cook dinner, so it will be my turn to cook dinner, and then someone else's other night. And we're really just excited to have cute like dinner nights. [Elaine, living on campus]

> I think I might wanna get one of those little bento box lunchboxes next year because then I'll bring my lunch onto campus and have it meal prepped. Or maybe do, if not a weekly, but at least maybe one of my roommates or a couple of us can meal prep for a day or two and have a meal. So, I'm not running out the door, and last minute, and grabbing something because I know where I'm gonna be at. It's not just a back and forth. [Monica, living on campus]

> So, we'll definitely do a lot of cooking. And I'm thinking just trying to have most meals thought out maybe at the start of the week so we know how long it might take or what ingredients we need to get. And also, it'll be cool … I don't know if you've heard of Food Knockoffs. They're big on sharing. So, something like that where each of us doesn't own a thing in the refrigerator. It's all a shared food or shared resource which is interesting … So, cooking-wise, that could be an

> interesting thing to do. And it seems like it definitely works. Then you get even more connection with the food because you're not like, "Oh, that tote was mine." It's also a shared – because community is often built around food. There's a lot of culture involved. And like I said earlier, a lot of that is gone. So, creating a little bit of that would be cool. [Chandler, living on campus]

Most underclassmen living in the dorms expressed belief that they would cook and cook frequently once they had their own apartment, and notably, the expressed certainty in their beliefs appears to align with their relatively high perceived food agency (mean = 21.4). The exception is Jess, who had both low perceived food agency (15.6) relative to her peers in this subgroup (and to the students in this study as a whole) and was the only dorm dweller to use veiled language when imagining her cooking life in an apartment. It is, of course, impossible to assign causation to Jess's reticence to express certainty in her cooking future: many possible explanations exist. The correlation with her low perceived food agency, however, suggests one possible interpretation wherein Jess's lower perceived food agency inhibited her from feeling optimistic—or inspired—about a future involving food and cooking. Compared to her underclassmen peers, Jess may be more ambivalent—or more comfortable *expressing* ambivalence—about a future cooking identity.

> Yeah, I'm still figuring out exactly what I'm going to do. I think I'm going to have a place with a kitchen. I think it will have a real kitchen. I do think I'll have more freedom next year to make food I think. I think I would do it more. I'm also planning to lighten up my classes so I think that would also impact it. And I think

even if it's not, like, cooking-cooking, I could still prepare food. [Jess, living on campus]

The process and complexity of cooking was no longer theoretical for upperclassmen *actually* living in apartments when we spoke, who no longer had compulsory meal plans providing daily meals. For this group, now in an even more autonomous stage of college life, cooking—or, at least, making food—was once again in transition. Daily routines included managing cooking responsibilities like planning, shopping, and meal preparation that household adults (or dining hall and other food service staff during their dorm years) previously shouldered. Having more responsibility and more daily *experience* with cooking may have helped this group *develop* more food agency in response: compared to the subgroup of underclassmen (mean = 21.4), their perceived food agency was higher (mean = 23.06). Of course, an alternative, inverted interpretation is that underclassmen's lower perceived food agency scores reflect higher structural barriers associated with their inconsistent access to kitchen facilities and tools in the dorms.

Nonetheless, when triangulated with qualitative data, a finding that the perceived food agency scores of upperclassmen divide into distinct groups is interesting. Upperclassmen George (25.2), Becky (24.6), Maggie (24.6), and Kristy (23.8) cluster at the top of the high end of study participants' food agency (mean = 22.04; median = 21.9); while Lori (21.7), Amanda (21.0), and Phoebe (20.5) cluster below the study's mean and median. The gap between Kristy and Lori is nearly 2 points; comparatively, within the underclassmen, the widest gap between contiguously ranked scores is 5 points, but it falls

between Elaine (20.6) and Jess, who at 15.6 was an outlier for the study as a whole. Outside of the gap between Elaine and Jess, the gap was less than 1 point between contiguously ranked underclassmen.

In addition, outside of the structures subscale, study participants generally gravitated toward strongly positive responses on the CAFPAS survey: the median score on both the attitude and self-efficacy subscale (reflecting reverse-scored responses) was 6. Subsequently, it seems significant that Lori, Amanda, and Phoebe all agreed (score = 2) or mildly agreed (score = 3) with the attitude subscale statement, "If I try making a new type of food and it does not come out right, I usually do not try to make it again," when the median score for that same item across *all* students was 6, indicating disagreement.

The shared data point was also unusual *within* this particular trio. Interpreting all three sets of subscale scores, Phoebe's attitude toward cooking was lukewarm, though she felt basically confident in her skills and felt she had enough time to plan and cook when she wanted to. Of her cooking future, Phoebe said, "I hope that I find a partner who loves to cook and will do a majority of it. I will cheer them on, and I'll cut the onions. But I don't know if I'm ever gonna be like a big in the kitchen person." On the other hand, Lori and Amanda, were enthusiastic about cooking and felt confident in their skills, but struggled to find time to plan and cook.

Given the data, it seems reasonable to interpret Phoebe's ambivalence toward mastering new recipes as a sign of her relative ambivalence toward cooking in general; while Amanda and Lori might be struggling to reconcile their cooking ideals with their

cooking reality (in comparison to George, Becky, Maggie, and Kristy, who may have more settled feelings about cooking at this moment in their lives—like Phoebe, but in a positive direction).

For example, Amanda, a frequent cook who said, "I really don't ever eat other food just because I don't think about it … I normally cook my own food," knew that she was fast and "efficient" in the kitchen and "really good at the nitty gritty cutting and chopping and roasting and all the small steps that at first take a lot of energy and attention," especially after a summer job working in a farm-restaurant kitchen. She also felt most comfortable and confident cooking with recipes, the assistance of a YouTube instructional video, or a meal-planning subscription: having guidance made her feel less stressed. But Amanda viewed her cooking abilities as less impressive than friends who could improvise in the kitchen or who were "more intentional" with their meals, used cooking as a "grounding mechanism," and took "a really long time to cook" compared to the way she was often "rushing" through it. Despite evidence of competence, she wasn't living up to her own *ideal* as a cook.

> Food is really cool. But I am not creative in the sense of – I'll add a few spices here and there because that's fun. And I know how they taste, and how it'll work. But I don't ever wanna make up a recipe on my own. I don't even wanna deal with that. That sounds so complicated to me. I'm just very much like, "I'll do what it says. And if I trust the recipe, it'll come out well." [Amanda, living off campus]

Meanwhile Lori grew up in Alaska in a divorced household, splitting time between a father she described as "insanely talented" who cooked professionally, owned a café/bakery, and encouraged her and her siblings to spend time in the kitchen; and a mother who hunted and cooked bear, moose, and venison, but also "focused on convenience… very much, like, I guess, standard mac and cheese, standard American diets and stuff." Intimidated by her father's skill, Lori largely avoided his kitchen, but learned how to cook "bulk stuff" like dried beans and sourdough bread and had a high school friend group whose standing tradition was to cook and trade curry recipes with each other. At UVM, she joined the Slow Food chapter and formed a friend group with other members who frequently got together for potlucks; in the summer she returned to Alaska to work as a dishwasher in a five-star lodge where she became friendly with the chef. Lori admires her father's and the lodge chef's cooking skill and says that she's "still slightly intimidated" by her Slow Food friends because "they are just insane cooks," which she defines as having expansive ingredient knowledge—for example, one friend recently turned her on to goat cheese—and the ability to come up with "new flavor combos that I didn't consider." She would like to be an equally impressive cook, and says that with time, she has become confident "to be able to try harder recipes or maybe more technical, or ones that take longer." But her self-proclaimed perfectionism makes her impatient and restless. Comparing herself to another friend who "throws together" galettes and other showy dishes, she noted that becoming equally capable was going to take time. Like Amanda, Lori didn't think she fit her own ideal as a cook.

> I'm also aware that something like that takes attempts and failures to get it perfected, and I'm a perfectionist. So, I'm a self-proclaimed perfectionist, but I've been working through it, and that's one thing that I'm like, "Okay. Well, I just have to start doing it and get to that point." So, there's that. [Lori, living off campus]

Despite their professed fondness for and engagement with cooking, both Amanda and Lori wondered what their cooking futures held, and were the only two in the study—besides Jess and Phoebe—to openly speculate about futures that *didn't* feature cooking. Amanda worried cooking would cease to be exciting, and talked to a chef friend at the farm about how he kept the spark alive.

> Something crazy I asked him, I was like, "How are you not tired of – how do you still find exciting recipes? How do you still find cooking exciting?" Because I'm just like, "I'm 20 years old. For the rest of my life, that's gonna get a little boring. Is that gonna happen?" [Amanda, living off campus]

Lori thought she might burn out on cooking like her mother if she couldn't keep it fun and nonrepetitive:

> So, I'm hoping … I don't get burnt out after 10 years of cooking for myself as an adult, you know? Like what my mom is like. She's like, "I'm so sick of cooking for three kids over 20 years," just relying on the same recipes over and over again, and it's a little different than comfort recipes, which, I cook risotto all the time sorta thing. But I'm not burnt out from it because I love it. And I think it's just the lack of inspiration, like feeling uninspired by food. [Lori, living off campus]

For these students, the experience of cooking almost seemed to widen the gap between aspiration and action as they struggled to reconcile their creative ideals—their perception of what it means to be a cook—with their lived experience. They were not yet sure if a cooking identity "fit."

The complexity of cooking includes what Trubek describes as its fluidity: the process of cooking is both creative *and* a chore, at different moments, under different circumstances [58, 64, 65]. Food agency may represent a negotiated reconciliation with this complexity, brokered by skill. In our modern era, when young people do not typically take on cooking responsibilities at home during youth, developing such skill early in life is unusual [64, 74, 78]. More typical and perhaps culturally normative is to develop the types of positive attitudes toward cooking that students in this study expressed and that were presented in the previous section—attitudes that remain largely untested until an escalating confrontation with cooking's complexity is provoked by the disruption of leaving home during emerging adulthood, then transitioning from dorms and meal plans to apartments and autonomy. Identity may be tested when prior perceptions of cooking are stressed by such new experiences: to *be* a cook may not always be fun and exciting. Cooking might enable the actualization of food-related goals and the achievement of more virtuous characteristics—like being healthier, more socially connected, organized, impressive, or a more thoughtful participant in the food system—but not without effort and sacrifice. How students respond to their confrontation with cooking's complexity depends on a great many factors, including what skills they possess.

3.1.3 Food agency skills stay relevant

Most students in this study (N=14) took Cooking for Health while living in the dorms, where access to cooking facilities was limited and inconsistent. Subsequently, few students interviewed had done much cooking in the six months to a year since leaving the lab—many of those who returned home for summer said they had resumed eating meals prepared by their parents, for example. Nonetheless, when prompted to recall skills learned in class that they felt had "stuck with them," students repeatedly mentioned the same three: (1) learning to cut an onion; (2) organizing their cooking process; and (3) applying knowledge about average cook times to make cooking more efficient and predictable.

To develop food agency—diminishing the gap between aspiration (what is desired) and action (what is produced)—the food-agency pedagogy promotes professional epistemes [14, 77]. Among these, cutting an onion is perhaps *the* most basic and fundamental skill. Professional cooking emphasizes consistency of outcome: in part, this is established through knife skills. Precise, consistently sized ingredients cook evenly, thereby reducing the cook's margin for error. Learning to cut an onion in a professional manner, novice cooks confront a fundamental knife-skills problem that transfers to a multitude of other ingredients: how to transform a wobbly, irregular, and/or spherically shaped object into small pieces of consistent shape and size. It is at once at once a cognitive geometry problem—envisioning the desired outcome then devising a path to get there—and a mechanical safety issue—how to grip a knife while using the other hand to immobilize the onion, then proceed without cutting one's fingers.

In Cooking for Health, students were taught the skill and the culinary concept, and then, to embody the knowledge, chopped an onion in almost every class. Though most students in the class claimed prior cooking experience, few had learned to cut an onion in this way, nor had connected the dots between even cuts and even cooking. Kate recalled going home for the summer and, for the first time, noticing that her mother cut onions in a way she now considered "wrong."

> So, there'd be like half an onion, and then I'd go and look at it. I'd be like, "Who the heck cut this like this. Why would you cut an onion like this?" … And then my mom would be like, "Well, I didn't take a cooking" – because I told her. She was so into me taking a cooking class, and she was like, "Well, now you know how to cut an onion. You have to show me." [Kate, living on campus]

While it's unclear from this reflection whether Kate recalled the connection between cutting the onion "correctly" and even cooking, Chandler and Amanda did specifically note the connection when they talked about the relevance of the knife skills they learned in Cooking for Health.

> Like how to properly hold a knife. I don't know if we touched on this. Specifically chopping onions in the right way so that they caramelize so you're not cutting it breaking the cell wall or something. [Chandler, living on campus]

> I know how to chop an onion pretty well now. And that's really fun. I like doing the garlic too and mincing it. I think just being a little bit more precise with cuts

> has been really helpful just in terms of appearance and also even cooking. [Amanda, living off campus]

For other students, knowing how to cut an onion symbolized their ascendency to a new level of cooking proficiency. Laura felt she had more capability now than her friends, noting, "I definitely cringe at other people's knife skills." Phoebe, who before the class said, "I hated cooking. It stressed me out. I could never do it well. I burned everything I touched," said that:

> I can cut an onion really, really well now. That is like the biggest thing because I never knew how to cut an onion … I was just like kind of willy-nilly with it, and now I'm like okay I know how to do it. [Phoebe, living off campus]

And Rachel graduated to using a chef's knife:

> And I think I've gotten so much more comfortable using a chef's knife, which is so important because usually I would just use one of the shitty little kitchen knives to cut an onion, but now I feel more comfortable using a chef's knife. [Rachel, living on campus]

Organization, like knife skills, is central to professional cooking. In professional settings, time constraints are paramount – a dish must be finished and delivered to the table within a set timeframe. Cooks are therefore trained to work methodically and in a logical sequence established by the timings in any recipe or recipes they are preparing: dishes that are to be served hot or with a particular texture, for example, must be finished *at the correct time* so they don't sit and degrade after preparation. A sequence tells the cook when to *start*

cooking so that they finish *on time*; it divides a recipe into steps that must be finished *before* active cooking (generally, the application of heat) begins, and those associated with the active cooking phase itself. The pre-cooking steps are called prep and are part of a cook's *mise en place*, a French term that comes from the culinary-brigade system codified under 19th century French chef Auguste Escoffier, that means "to put into place." Doing a mise en place—or as chefs call it, your "meez"—you eliminate physical obstacles and set up your cooking space so that you can cook quickly—everything is at your fingertips, where you need it, when you need it. It is both a mindset (being prepared) and a physical practice (having a tidy, organized workspace) [14].

Like professionals, home cooks—and the students in this study—have little time to spare: not having enough time to plan and cook is frequently cited as a barrier to cooking, and time is the main structural barrier addressed by the CAFPAS survey. In this study, Jess said that she found cooking stressful because of "…the timing. And I also like I feel like I'm a slow cooker… I mean I feel like it takes a long time." Notably, Jess not only felt like she *had* little time, she also felt like she didn't know how to cook *quickly*. The food-agency pedagogy addresses both these aspects of the time constraint by teaching organization strategies, including mise en place and sequencing, to streamline the cooking process and make it more efficient.

At first, many students feel like mise en place is an extra, burdensome step: they react to urgency with action, and want to do *something*, like heat up a pan. But without a plan, their actions are disorganized and sometimes counterproductive. Amanda noted this

tendency in herself. At the time of our interview, she didn't always do her meez, but she knew that when she did, she cooked in a less chaotic manner.

> I'm like, "I need to make dinner right now." And then I start cooking. But then I'm like, "Oh, I need this." And I'm like, "Things are burning." And it's like, "Oh, my gosh. I should have taken everything out and done mise en place and stuff." So, I've been doing that. [Amanda, living off campus]

Preparing a mise en place and making a sequence requires that students approach the cooking process methodically rather than haphazardly, eschewing urgency for intention. Before doing anything else, they must read the entire recipe and make an action plan. Jess expressed something I had witnessed repeatedly in the classroom when she said, "I feel like before [the class], the first time I would look at the next step would be right then. I wouldn't have read over it before." Working from a plan made after closely reading the entire recipe frees the cook from having to stop and look at the recipe repeatedly while cooking, saving time while promoting an engaged flow state that channels attention and improves the ultimate outcome. The benefits of organization are not just temporal or aesthetic, however. Karina and Phoebe both expressed that working methodically improved their mindset in the kitchen: in the case of Phoebe, her overall attitude toward cooking improved when she gained more control over the process.

> Before, I would just always jump in and be super disorganized and being running to grab all the things when I need them. And I think planning on like, "Okay, this needs to cook for this long, and I need these ingredients," and just gathering them

and having them out before I start, I think that I really implemented in my cooking. And it's made me enjoy it more because I feel less frazzled when I'm cooking. [Karina, living on campus]

Prior to these classes, I hated cooking. It stressed me out. I could never do it well. I burned everything I touched. I still do. I still do. But now with the mise en place, like planning ahead, and having my steps planned out and portioned out, it makes it a lot better, and I feel more comfortable in the kitchen. [Phoebe, living off campus]

Making the plan itself requires that students understand how the most basic properties of ingredients (e.g., how fibrous, dense, or watery something is, and whether it is primarily protein- or carbohydrate-derived) interact with the most basic principles of heat transfer (e.g., are you cooking on a hot surface or surrounding an ingredient with hot air or liquid). In combination, these two factors determine the *rate* at which an ingredient cooks. While this cursory explanation deliberately oversimplifies cooking, conceptually, it helps students establish an order of operations for their plan and to imagine ways to save time through efficiency. For example, Joey knew that if his prep time was limited, he could prep in the same order he would add things to the pan, based on their rate of cooking:

Like timing. Timing really. Because it is nice to know, "Okay. I need to have the onions ready because they're gonna go in first, but quickly after that, I need to have this ready." [Joey, living on campus]

Joey also grasped that the combined properties of ingredients and heat meant sometimes you cooked something for *less* time than you thought:

> But we were making sausages and I was like, "Do they look ready?" She was like, "No." But I was like, "It's gonna carryover cook." Because the outside was getting kinda crispy. So, I was like, "Okay. We'll take it off because the inside's gonna – it's gonna like pew-pew-pew-pew-pew because that's how cooking works. [Joey, living on campus]

Meanwhile, Diane realized that "cooking everything at the same time" without logic or a plan kept her dishes from achieving the aesthetic outcome to which she aspired:

> Usually, I found myself before Cooking for Health if I had something like carrots or something that's harder to cook, I would cook everything at the same time. And there would be different – the carrots would still be raw and stuff like that. So, I think using the backward sequencing and being able to plan "Okay. These vegetables are really hard and stiff still, so we're gonna cook those first." [Diane, living on campus]

And like Karina and Phoebe, Rachel found that applying time management strategies reduced her stress and improved her overall mindset in the kitchen.

> Yeah… again, cooking kind of stressed me out because it's like, "Oh, I don't know how much time I need for this and this and this." But going home and actually being able to sit through and be like, "Okay, I know that this is going to take me this amount of time." So, definitely applied it a lot more to my cooking and I've been

> able to use that skill of time management and preparation beforehand. Because now it's almost instinctual to look at a recipe and say, "This is going to take me this amount of time, and this is going to take me this amount of time." [Rachel, living on campus]

A final reflection from Elaine on the impact of organization is worth considering within the framework of emerging adulthood. "I was a mess in the kitchen before," she explained. Elaine talked about being messy and hating to clean numerous times in our interview. At one point, she said:

> I love cooking. It's just I don't like how much time it takes up and I don't like the cleaning process, so like the class really helped me like work with cleaning as I go and getting the big stuff out of the way, so then it's just – it's not as much work at the end. [Elaine, living on campus]

Elaine, who was the only vegan in her family, thought she was messy because she lacked cooking knowledge. "I had an idea of what – of what I wanted to make, but I didn't know how to get there," she said. She hadn't been taught to cook: "I just like have watched my parents and I just like copy them." Her father would "yell at me so much" about the messes. After Cooking for Health, though, Elaine said, she began to work cleaner and "I'll set things up first." Her father noted the difference when she returned home for the summer:

> He actually like made a comment. He was like, "Finally. Like, you've been listening to what I told you." I was like this isn't – you didn't – it's not from you. Not from you. [Elaine, living on campus]

I pressed Elaine to explain what she meant:

> I think when my dad says it, it's like I know better, because he's also not like a great cook, either. Like he does it, but he's not like amazing. And I think I just like viewed it as like, oh, you actually don't know what you're talking about. Like you also learned these skills just by watching like your parents and just because you've cooked for yourself, and I thought it sounds – from him, like it sounded like condescending and not like he was trying to help me learn. Just like he was telling me what to do, because it would make his life easier. And then, like in your class, it was like oh, I'm teaching these skills, because it'll make cooking better. [Elaine, living on campus]

Establishing independence from parents is *the* task of emerging adulthood and may explain the tension between parents and offspring typically associated with the late teens and twenties [3]. Notwithstanding the real possibility that Elaine may always have had a contentious relationship with her father, features of the life phase may exacerbate the types of adversarial feelings she describes; an inversion of how other study participants—when they weren't living at home—thought of their parents as cooking role models. In this reflection, Elaine *rejects* a lesson derived from her father's lived cooking experience in favor of much the same lesson, communicated in a more neutral, less emotionally loaded educational setting. There are many ways to interpret this reflection, but one is that, at a time when emerging adults may be open to, curious about, or even actively pursuing a

cooking identity, a professionalized approach may gain traction in the wake of parents' retreating influence.

4. Discussion

This study assessed the impact of an intervention to build food agency during emerging adulthood. It grew out of an extended period of immersion and participant observation teaching a class using the food agency pedagogy. During participant observation, questions arose about how such a class might be interacting with processes of identity exploration associated with emerging adulthood, and the extent to which building food agency might help students navigate the disruptive college transition, during which they took on the responsibility for feeding themselves. How would they do it? Would they cook? How did they perceive cooking? Did this set them up for a future as people who cooked? Ultimately, this mixed-method, descriptive research aimed to explore and describe whether and why emerging adulthood might be an ideal window of opportunity for interventions to build food agency.

The cooking behavior of young people is not well understood and has not been a focal point of academic research. Most research into cooking and cooking interventions have focused on the practices of adults. The empirical data describing the cooking of college students has largely focused on outcomes, specifically the healthfulness of their

diets. This reduces young people's cooking to a mechanistic tool, a means to an end[8]. But as this study has shown, college students cook for many different reasons, including health, and they also don't cook for many different reasons. This spectrum has not been broadly explored or described in detail in the literature. When the cooking habits of college students are considered, there is likewise a tendency to view them through an adult lens, which can result in patronizing depictions of their capabilities[9] or assumptions about their perceived ambivalence.

The theory of emerging adulthood, meanwhile, reminds us that college students *are not yet* adults. They exist in a liminal state *between* childhood and adulthood, with its own psychosocial attributes that impact the way they experience and perceive the world and how it works. Subsequently, their stories and experiences of cooking are different, and should occupy their own place in the literature, expanding our understanding of the complexity of cooking across the life course. As Trubek writes, "It is crucial to explore the many manners of making modern meals that involve home cooks (both women and men) without relying too heavily on what we think or imagine is the case at hand. Instead, there need to be more forensic examinations…this requires observing and documenting the actual lived experiences of home cooks" [64, p. 4]. This study answers Trubek's call for

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[8] And, for that matter, to a contested end, as metrics like BMI and weight status ignore other measurements of health, like wellbeing and food security, both of which may be impacted by students' cooking capabilities [5, 66, 73].

[9] For example, at the same time as I use the term "adulting" in this study, I am wary and aware of how it is often used colloquially to dismiss or patronize emerging adults' experiences.

more granular depictions of the lives of home cooks. A strength of this study and a key difference between it and previous research into the cooking behavior of young people is that it uses qualitative methods: students spoke for themselves and were not reduced to statistics or stereotypes. It also aims to grant this group of young people agency: they are accepted as authorities on their own experience. Subsequently, though this study's results are not generalizable to the wider population, they paint a vivid picture of the cooking lives of a group of emerging adults, a characterization that is missing in the literature.

At the same time, emerging adults are not a monolith, and this study explored the experiences of a highly specific subset of the population, reflecting its reliance on purposive sampling. As evidenced by details in their stories, the students in this study came from privileged backgrounds where kitchens, access to a wide variety of ingredients, and engaged and supportive adults were generally the norm. This study also overrepresents the experiences of students living on campus and contending with that set of cooking realities and structural barriers. Further research should expand the sample set to include the experiences of more students living off-campus. Future studies should also aim to include students from a wider variety of socioeconomic backgrounds.

These caveats should not diminish the significance of one of this study's key conclusions, however: namely, that food agency may be transferable between generations. In interviews, students provided vivid, rich details about their home cooking environments. From these details, the conclusion that their *parents* had high food agency is reasonable. Growing up in food agent households helped create strongly positive associations with

cooking that in turn elevated these students' own perceived food agency, even though they were infrequent cooks. You could say that they "borrowed" their food agency from their parents. Prior to leaving home, cooking was largely an abstraction, but because it was grounded in lived-experience—their parents' lived experience—it felt real. Many of these young people felt like they had been cooking—and enjoying cooking—their whole lives, and their CAFPAS scores reflect this level of confidence and positivity[10]. Much of the literature on intergenerational transfer of cooking knowledge has focused on skills, but in the case of these students, a transfer of *disposition* appears to have been formative. Strongly positive attitudes toward cooking may have predisposed these students toward exploring a cooking identity during emerging adulthood, even without much prior daily experience with cooking. They *aspired* to cook before the *need* to take action ever entered the equation.

The implications of this conclusion are manifold. If food agency perpetuates between generations, the finding lends weight to arguments in favor of food-agency building interventions for parents of young children, for example. The outlier in this group, Jess, illustrates that growing up in a household of low food agency might predispose children to have low food agency themselves, even in privileged households. Food agency

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[10] This may explain the notable difference in CAFPAS scores between participants in this study and the post-intervention scores in Pope et al's (2012) earlier study to increase food agency (22.04 versus 14)—though without access to descriptive data about the home environments of students in Pope's study, it is impossible to speculate. Participants in Pope et al's (2021) study raised their CAFPAS scores by 2 points from baseline, indicating that, possibly regardless of the ability to "borrow" parents' agency, the pedagogy improves students' food agency [46].

may be cyclic. Another interpretation of this conclusion, given the evident privilege of the students in this study, is that food agency can be a form of capital or privilege that perpetuates between generations. If so, this highlights the need for food-agency building interventions at all socioeconomic levels. The ability to "borrow" your parents' food agency may help young people gain an advantage when heading into the disruptions of emerging adulthood, including leaving home for school.

For the students in this study, the college transition—a pivotal behavioral catalyst in emerging adulthood—was impactful because it exposed the gap between their attitudes about cooking and their capability. In Kate's words, for the first time, they "needed to know" how to cook—at least once they left the dorms. In the behavioral psychology literature, the liminality and instability of emerging adulthood creates a moment of heightened receptivity to behavioral intervention. In the case of building food agency during emerging adulthood, the skills conveyed through the pedagogy become uniquely *relevant.* In this study, most of the students came to college with strongly positive attitudes toward cooking and a borrowed sense of capability. That positive attitude was pivotal to maintaining a connection to cooking even while structural barriers inhibited actual meal preparation. Attitude may also have primed students to seek out a skill-building intervention in the first place. Although few felt they *needed* it, they *wanted* an opportunity to cook. Regardless, skill building in the cooking intervention helped them to replace that borrowed self-efficacy with capabilities of their own. While not in daily use during their dorm years, the skills stayed relevant because of emerging adulthood's future focus: as

students explored a cooking identity, they not only thought about how the skills would be immediately useful, they also actively considered how skills would help them achieve their food-related goals in the future. If food agency represents a diminished gap between aspiration and action, given the ability of emerging adults to future project, that gap began to close even while students were still in the most nascent stages of developing food agency for themselves. The experiences of this subgroup of students in the study suggests that interventions during the underclassmen years of college are impactful, even though the skills may not be put to immediate use. Instead, they may be incorporated into emerging adults' envisioning of their future selves, growing their confidence that they will be able to handle the challenges they know await them when they leave the security of the dorms and a meal plan.

Among those challenges are a new reckoning with the complexities of cooking. It is possible that, when they leave meal plans behind, students' food agency begins to disassociate from the "borrowed" food agency of their dorm years, "right-sizing" to reflect their own lived experience. At this point, being skilled—as from a food-agency building intervention during their underclassmen years—may help *counteract* the stresses, responsibilities, and demands of cooking: they go into daily cooking with more strategies for how to navigate the complexities of meal preparation. However, *additional* skill-building during this time could also be beneficial; if, for example, a level-two phase of a food-building intervention was available. For novice cooks, maintaining a fledgling cooking identity and *developing* food agency during college can be difficult. While there

is reason to believe that food agency "sticks[11]," alternatives to cooking are always accessible; and, as illustrated by Lori and Amanda, fledgling cooking identities can be fragile, subject to the pressure and scrutiny of what Short called the creative ideal standard, that makes some cooks doubt whether they can live up to their own expectations. An intervention at this stage could buttress self-belief and commitment to cooking. Ultimately, if we believe our collective societal goals are served by more home cooking, this should be our aim.

And that *is* the belief of this thesis. Having concluded this research, I believe that emerging adulthood represents an optimal window for interventions to develop food agency, and thus cooking skills and the frequency of home cooking throughout the life cycle. The food agency pedagogy should be promoted throughout higher education. As an 8-week, 1-credit course, Cooking for Health illustrates one effective model that requires less of an institutional commitment but still provides students with an opportunity for repetition and reinforcement during skill building. Courses like Basic Concepts of Food require more resources but may be even more impactful: additional research should commence to study the outcomes associated with having taken this longer, even more structured course. The Foods Lab at UVM provides a working model for establishing

[11] It did not use the term "food agency," but Laska et al's (2012) longitudinal findings of increased adult cooking frequency among Project EAT participants who had cooking skills during college, may have shown that food agency gained during emerging adulthood develops into high food agency in adulthood [32].

culinary laboratories on college campuses and integrating the lab into the major requirements of allied disciplines, like nutrition and food sciences.

However, we should also think bigger, give serious consideration to the role of cooking in food systems transformation, and begin to offer food-agency building opportunities to as many students as possible. Students majoring or minoring in food systems or health and medical studies like nursing or pre-med come immediately to mind. Given the perils facing the planet and their relationship to our diets, platforming cooking within these programs would represent a powerful ontological and epistemological commitment to sustainable practices. There is no "switch" to be flipped that will ensure that sustainable food choices flow from cooking capabilities, but without capabilities, we are left hoping that those who cook on our behalf will choose as we would have, had we invested in our own empowerment. Is that a risk we are willing to take? Trubek and Short, the author and progenitor, respectively, of the theory of food agency, concluded that they were optimistic about the future of cooking: it couldn't be *lost*, instead, it was perpetually changing [58, 64]. I, however, am worried about the changes. I am concerned about the prevalence of meat in our diets and the rigidity of our meat-eating habits. I am anxious when raw and whole ingredients are displaced by premade substitutes, and disquieted by how smoothly perceptions of cooking have flexed to include assembling meals from these alternatives. I think that deskilling *is* an emergent property of our current food system. But while I don't share Trubek and Short's optimism about the future of cooking—its current trajectory—I *am* optimistic about young people, including the emerging adults interviewed

for this study. In recent years, this generation has demonstrated an unwillingness to accept slow change and incremental reform—strategies of adaptation—on so many fronts, and has rapidly moved both the Overton window and prevailing social norms on everything from gender identity to climate change. They are transformative. Investing in their potential to reshape our food system as empowered, food agent cooks is, indeed, "a meaningful act."

5. References

1. Alpaugh, M., Pope, L., Trubek, A., Skelly, J., & Harvey, J. (2020). Cooking as a health behavior: examining the role of cooking classes in a weight loss intervention. *Nutrients*, *12*(12), 3669.

2. Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480.

3. Arnett, J.J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties (2nd edn).* New York: Oxford University Press.

4. Arnett, J.J. (2019). *Emerging adulthood and higher education: A new student development paradigm*. New York: Routledge.

5. Bacon, L., & Aphramor, L. (2011). Weight Science: Evaluating the Evidence for a Paradigm Shift. *Nutrition Journal*, *10*(1), 9.

6. Barr, A., Hanson, A., & Kattelmann, K. (2020). Effect of cooking classes on healthy eating behavior among college students. *Topics in Clinical Nutrition*, *35*(1), 62–70.

7. Blumer, H. (1954). What is wrong with social theory? *American Sociological Review, 1*(9), 3-10.

8. Bowen, G.A. (2020). *Sensitizing concepts.* Sage Publications Limited.

9. Bowen, S., Brenton, J., & Elliott, S. (2019). *Pressure Cooker: Why Home Cooking Won't Solve Our Problems and What We Can Do About It*. Oxford University Press.

10. Brekken, C. A., Peterson, H. H., King, R. P., & Conner, D. (2018). Writing a recipe for teaching sustainable food systems: Lessons from three university courses. *Sustainability (Switzerland)*, *10*(6).

11. Campbell, B. M., Beare, D. J., Bennett, E. M., Hall-Spencer, J. M., Ingram, J. S. I., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J. A., & Shindell, D. (2017). Agriculture production as a major driver of the earth system exceeding planetary boundaries. *Ecology and Society*, *22*(4).

12. Clifford, D., Anderson, J., Auld, G., & Champ, J. (2009). Good Grubbin': impact of a TV cooking show for college students living off campus. *Journal of Nutrition Education and Behavior*, *41*(3), 194–200.

13. Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, *2*(3), 198–209.

14. Culinary Institute of America. (2007). *Introduction to Culinary Arts*. Pearson Prentice Hall.

15. Ericksen, E.H. (1950). *Childhood and society*. New York: Norton.

16. Ericksen, E.H. (1968). *Identity: Youth and crisis.* New York: Norton.

17. Ericksen, P. J. (2008a). Conceptualizing food systems for global environmental change research. *Global Environmental Change*, *18*(1), 234–245.

18. Gans, H.J. (1999). Participant observation in the era of "ethnography." *Journal of contemporary ethnography*, *28*(5), 540-548.

19. Gerber, P. J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A., & Tempio, G. (2013). *Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities.* Food and Agriculture Organization of the United Nations (FAO).

20. Gilgun, J.F. (2010). A primer on deductive qualitative analysis and theory testing & theory development. *Current Issues in Qualitative Research*, *1*, 1-6.

21. Glaser, B.G., & Strauss, A.L. (2017). *Discovery of grounded theory: Strategies for qualitative researchers.* Routledge.

22. Graça, J., Calheiros, M. M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite*, *95*, 113–125.

23. Graça, J., Godinho, C. A., & Truninger, M. (2019). Reducing meat consumption and following plant-based diets: Current evidence and future directions to inform integrated transitions. *Trends in Food Science & Technology*, *91*, 380–390.

24. Hartup, W.W., & Stevens, N. (1997). Friendships and adaptation in the life course. *Psychological bulletin, 121*(3), 355.

25. Hasan, B., Thompson, W. G., Almasri, J., Wang, Z., Lakis, S., Prokop, L. J., Hensrud, D. D., Frie, K. S., Wirtz, M. J., Murad, A. L., Ewoldt, J. S., & Murad, M. H. (2019). The effect of culinary interventions (cooking classes) on dietary intake and behavioral change: A systematic review and evidence map. In *BMC Nutrition* (Vol. 5, Issue 1). BioMed Central.

26. Hedenus, F., Wirsenius, S., & Johansson, D. J. A. (2014). The importance of reduced meat and dairy consumption for meeting stringent climate change targets. *Climatic Change*, *124*(1), 79–91.

27. Hoek, A. C., Pearson, D., James, S. W., Lawrence, M. A., & Friel, S. (2017). Shrinking the food-print: A qualitative study into consumer perceptions, experiences and attitudes towards healthy and environmentally friendly food behaviours. *Appetite*, *108*, 117–131.

28. Hubert, B., Rosegrant, M., Van Boekel, M. A. J. S., & Ortiz, R. (2010). The future of food: scenarios for 2050. *Crop Science*, *50*, S-33.

29. Jones, S. A., Walter, J., Soliah, L., & Phifer, J. T. (2014). Perceived motivators to home food preparation: focus group findings. *Journal of the Academy of Nutrition and Dietetics*, *114*(10), 1552–1556.

30. Kwasny, T., Dobernig, K., & Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of intervention effectiveness, 2001–2019. *Appetite*, *168*, 105739.

31. Lahne, J., Wolfson, J. A., & Trubek, A. (2017). Development of the Cooking and Food Provisioning Action Scale (CAFPAS): A new measurement tool for individual cooking practice. *Food Quality and Preference*, *62*, 96–105.

32. Laska, M. N., Larson, N. I., Neumark-Sztainer, D., & Story, M. (2012). Does involvement in food preparation track from adolescence to young adulthood and is it associated with better dietary quality? Findings from a 10-year longitudinal study. *Public Health Nutrition*, *15*(7), 1150–1158.

33. Lavelle, F., Spence, M., Hollywood, L., McGowan, L., Surgenor, D., McCloat, A., Mooney, E., Caraher, M., Raats, M., & Dean, M. (2016). Learning cooking skills at different ages: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(1).

34. Levy, J., & Auld, G. (2004). Cooking classes outperform cooking demonstrations for college sophomores. *Journal of Nutrition Education and Behavior*, *36*(4), 197–203.

35. Lindlof, T.R., & Taylor, B.C. (2017). *Qualitative communication research methods*. Sage publications.

36. Machovina, B., Feeley, K. J., & Ripple, W. J. (2015). Biodiversity conservation: The key is reducing meat consumption. *Science of The Total Environment*, *536*, 419–431.

37. Mah, A., Matsuba, M. K., & Pratt, M. W. (2020). The politics behind environmentalism: How political ideological development in emerging adulthood may play a role. *Journal of Environmental Psychology*, *69*, 101417.

38. Marinova, D., & Bogueva, D. (2019). Planetary health and reduction in meat consumption. *Sustainable Earth*, *2*(1), 3.

39. Matias, S. L., Rodriguez-Jordan, J., & McCoin, M. (2021). Evaluation of a College-Level Nutrition Course With a Teaching Kitchen Lab. *Journal of Nutrition Education and Behavior*, *53*(9), 787–792.

40. Maugeri, I. P., Brimblecombe, J., Choi, T. S. T., Kleve, S., & Palermo, C. (2021). For whom and under what circumstances do nutrition-education cooking interventions work: a realist synthesis. *Nutrition Reviews*, *79*(4), 479–493.

41. Milford, A. B., Le Mouël, C., Bodirsky, B. L., & Rolinski, S. (2019). Drivers of meat consumption. *Appetite*, *141*, 104313.

42. Morgan, C. B. (2020). Expanding food agency theory and measurement with mixed methods: A study from Philadelphia. *Journal of Agriculture, Food Systems, and Community Development, 9*(4), 229-244.

43. Morse, J.M., & Field, P.A. (1995). *Nursing research: The application of qualitative approaches.* Nelson Thornes.

44. Nelson, M. C., Story, M., Larson, N. I., Neumark-Sztainer, D., & Lytle, L. A. (2008). Emerging adulthood and college-aged youth: An overlooked age for weight-related behavior change. In *Obesity* (Vol. 16, Issue 10, pp. 2205–2211).

45. Newcomb, A.F., & Bagwell, C.L. (1995). Children's friendship relation: A meta-analytic review. *Psychological bulletin, 117*(2), 306.

46. Pope, L., Alpaugh, M., Trubek, A., Skelly, J., & Harvey, J. (2021). Beyond ramen: Investigating methods to improve food agency among college students. *Nutrients, 13*(5).

47. Popkin, B. M. (1994). The Nutrition Transition in Low-Income Countries: An Emerging Crisis. *Nutrition Reviews, 52*(9), 285–298.

48. Popkin, B. M. (1998). The nutrition transition and its health implications in lower-income countries. *Public Health Nutrition, 1*(1), 5–21.

49. Popkin, B. M. (1999). Urbanization, Lifestyle Changes and the Nutrition Transition. *World Development, 27*(11), 1905–1916.

50. Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *Journal of Nutrition, 131*(3).

51. Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. *The Lancet, 395*(10217), 65–74.

52. Reese, W. J. (2013). In search of American progressives and teachers. *History of Education, 42*(3), 320–334.

53. Ripple, W. J., Smith, P., Haberl, H., Montzka, S. A., McAlpine, C., & Boucher, D. H. (2014). Ruminants, climate change and climate policy. *Nature Climate Change, 4*(1), 2–5.

54. Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., De Wit, C. A., Hughes, T., Van Der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., … Walker, B. (2009). *Planetary Boundaries: Exploring the Safe Operating Space for Humanity* (Vol. 14, Issue 2).

55. Schwartz, S. J., Côté, J. E., & Arnett, J. J. (2005). Identity and agency in emerging adulthood: Two developmental routes in the individualization process. *Youth and Society, 37*(2), 201–229.

56. Shapiro, L. (2008). *Perfection Salad: Women and Cooking at the Turn of the Century*. University of California Press.

57. Shim, S., Serido, J., Bosch, L., & Tang, C. (2013). Financial identity-processing styles among young adults: A longitudinal study of socialization factors and consequences for financial capabilities. *Journal of Consumer Affairs, 47*(1), 128–152.

58. Short, F. (2003). Domestic cooking practices and cooking skills: findings from an English study. *Food Service Technology, 3*(3–4), 177–185.

59. Shulman, L. S. (2005). Signature Pedagogies in the Professions. *Daedalus, 134*(3), 52–59.

60. Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., De Vries, W., De Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223).

61. Swenson, L.M., Nordstrom, A., & Hiester, M. (2008) The role of peer relationships in adjustment to college. *Journal of College Student Development, 49*(6), 551-567.

62. Szczepanski, J. R., Litchfield, R. E., Beirman, E. A., Nolting, L. M., & Genschel, U. (2021). Effects of a Culinary Boot Camp intervention on food/nutrition aptitudes and dietary intake of college students. *Journal of American College Health*.

63. Todd, J. E., Mancino, L., & Lin, B.-H. (2010). *The Impact of Food Away From Home on Adult Diet Quality*.

64. Trubek, A. B. (2017). *Making Modern Meals: How Americans Cook Today*. University of California Press.

65. Trubek, A. B., Carabello, M., Morgan, C., & Lahne, J. (2017). Empowered to cook: The crucial role of 'food agency' in making meals. *Appetite*, *116*, 297–305.

66. Tylka, T. L., Annunziato, R. A., Burgard, D., Daníelsdóttir, S., Shuman, E., Davis, C., & Calogero, R. M. (2014). The Weight-Inclusive versus Weight-Normative Approach to Health: Evaluating the Evidence for Prioritizing Well-Being over Weight Loss. In *Journal of Obesity* (Vol. 2014). Hindawi Limited.

67. Utter, J., Larson, N., Laska, M. N., Winkler, M., & Neumark-Sztainer, D. (2018). Self-Perceived Cooking Skills in Emerging Adulthood Predict Better Dietary Behaviors and Intake 10 Years Later: A Longitudinal Study. *Journal of Nutrition Education and Behavior*, *50*(5), 494–500.

68. Valley, W., Wittman, H., Jordan, N., Ahmed, S., & Galt, R. (2018). An emerging signature pedagogy for sustainable food systems education. In *Renewable Agriculture and Food Systems* (Vol. 33, Issue 5, pp. 467–480). Cambridge University Press.

69. Vermeulen, S. J., Park, T., Khoury, C. K., & Béné, C. (2020). Changing diets and the transformation of the global food system. *Annals of the New York Academy of Sciences*, *1478*(1), 3–17.

70. Verplanken, B., Walker, I., Davis, A., & Jurasek, M. (2008). Context change and travel mode choice: Combining the habit discontinuity and self-activation hypotheses. *Journal of Environmental Psychology*, *28*(2), 121–127.

71. Virudachalam, S., Long, J. A., Harhay, M. O., Polsky, D. E., & Feudtner, C. (2014). Prevalence and patterns of cooking dinner at home in the USA: National Health and Nutrition Examination Survey (NHANES) 2007–2008. *Public Health Nutrition*, *17*(5), 1022–1030.

72. Vosylis, R., Sorgente, A., Serido, J., Lanz, M., & Raižienė, S. (2023). Becoming financially self-sufficient: developing a need-supportive and need-thwarting scale for financial parenting of emerging adults. *Journal of Personality Assessment*, *105*(2), 215–226.

73. Watson, T. D., Malan, H., Glik, D., & Martinez, S. M. (2017). College students identify university support for basic needs and life skills as key ingredients in addressing food insecurity on campus. *California Agriculture*, *71*(3), 130–138.

74. Werhan, C., & Way, W.L. (2006). Family and consumer science programs in secondary schools: Results of a national survey. *Journal of Family and Consumer Sciences*, *98*(1), 19.

75. Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Majele Sibanda, L., … Murray, C. J. L. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. In *The Lancet* (Vol. 393, Issue 10170, pp. 447–492). Lancet Publishing Group.

76. Wolfson, J. A., Bleich, S. N., Smith, K. C., & Frattaroli, S. (2016). What does cooking mean to you?: Perceptions of cooking and factors related to cooking behavior. *Appetite*, *97*, 146–154.

77. Wolfson, J. A., Bostic, S., Lahne, J., Morgan, C., Henley, S. C., Harvey, J., & Trubek, A. (2017). A comprehensive approach to understanding cooking behavior: Implications for research and practice. *British Food Journal*, *119*(5), 1147–1158.

78. Wolfson, J. A., Frattaroli, S., Bleich, S. N., Smith, K. C., & Teret, S. P. (2017). Perspectives on learning to cook and public support for cooking education policies in the United States: A mixed methods study. *Appetite*, *108*, 226–237.

79. Wolfson, J. A., Tse, J., Ho, A., Bowie, J., Maruthur, N., Richardson, C. R., & Trubek, A. (2023). Complex, Varied and Evolving Manifestations of Food Agency in Daily Life Among Diabetes Prevention Program Participants in Baltimore, Maryland. *Journal of Nutrition Education and Behavior*, *55*(6), 404–418.

80. Wolfson, J. A., Willits-Smith, A. M., Leung, C. W., Heller, M. C., & Rose, D. (2022). Cooking at Home, Fast Food, Meat Consumption, and Dietary Carbon Footprint among US Adults. *International Journal of Environmental Research and Public Health*, *19*(2).

CHAPTER 4: COMPREHENSIVE BIBLIOGRAPHY

1. Adger, W. N., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D. R., Naess, L. O., Wolf, J., & Wreford, A. (2009). Are there social limits to adaptation to climate change? In *Climatic Change* (Vol. 93, Issues 3–4, pp. 335–354).

2. Alpaugh, M., Pope, L., Trubek, A., Sk elly, J., & Harvey, J. (2020). Cooking as a health behavior: examining the role of cooking classes in a weight loss intervention. *Nutrients*, *12*(12), 3669.

3. American College Health Association. *American College Health Association-National College Health Assessment II.* Silver Springs, MD: American College Health Association; 2018:19.

4. Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480.

5. Arnett, J.J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties (2nd edn).* New York: Oxford University Press.

6. Arnett, J.J. (2019). *Emerging adulthood and higher education: A new student development paradigm*. New York: Routledge.

7. Bacon, L., & Aphramor, L. (2011). Weight Science: Evaluating the Evidence for a Paradigm Shift. *Nutrition Journal*, *10*(1), 9.

8. Ball, B., & Brown, L. B. (2012). Qualitative description of college students' dinner groups. *Journal of Nutrition Education and Behavior*, *44*(1), 29–35.

9. Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change*. In *Printed in Great Britain.Reprinted from thePsychologica/Review* (Vol. 1). Pergamon Press Ltd.

10. Bandura, A. (1991). Human agency: The rhetoric and the reality.

11. Barr, A., Hanson, A., & Kattelmann, K. (2020). Effect of cooking classes on healthy eating behavior among college students. *Topics in Clinical Nutrition*, *35*(1), 62–70.

12. Beechey, V. (1982). The sexual division of labour and the labour process: a critical assessment of Braverman. *The degradation of work*, 54-73.

13. Béné, C. (2022). Why the Great Food Transformation may not happen – A deep-dive into our food systems' political economy, controversies and politics of evidence. *World Development, 154*.
14. Benner-Kenagy, S. (2014). *The Theory of Planned Behavior and College Student's Attitudes and Barriers to Cooking*.

15. Bernardo, G. L., Rodrigues, V. M., Bastos, B. S., Uggioni, P. L., Hauschild, D. B., Fernandes, A. C., Martinelli, S. S., Cavalli, S. B., Bray, J., Hartwell, H., & Pacheco da Costa Proença, R. (2021). Association of personal characteristics and cooking skills with vegetable consumption frequency among university students. *Appetite*, *166*.

16. Berrang-Ford, L., Pearce, T., & Ford, J. D. (2015). Systematic review approaches for climate change adaptation research. In *Regional Environmental Change* (Vol. 15, Issue 5, pp. 755–769). Springer Verlag.

17. Birmachu, A., & Heidelberger, L. (2021). Exploration of dietary beliefs and social cognitive factors that influence eating habits among college students attending a rural Midwestem university. *Journal of American College Health*.

18. Blake, C. E., Frongillo, E. A., Warren, A. M., Constantinides, S. V., Rampalli, K. K., & Bhandari, S. (2021). Elaborating the science of food choice for rapidly changing food systems in low-and middle-income countries.

19. Blumer, H. (1954). What is wrong with social theory? *American Sociological Review, 1*(9), 3-10.

20. Bowen, G.A. (2020). *Sensitizing concepts.* Sage Publications Limited.

21. Bowen, S., Brenton, J., & Elliott, S. (2019). *Pressure Cooker: Why Home Cooking Won't Solve Our Problems and What We Can Do About It*. Oxford University Press.

22. Bozeman, J. F., Bozeman, R., & Theis, T. L. (2020). Overcoming climate change adaptation barriers: A study on food–energy–water impacts of the average American diet by demographic group. *Journal of Industrial Ecology*, *24*(2), 383–399.

23. Bozeman, J. F., Springfield, S., & Theis, T. L. (2020). Meeting EAT-lancet food consumption, nutritional, and environmental health standards: A U.S. Case study across racial and ethnic subgroups. *Environmental Justice*, *13*(5), 160–172.

24. Braverman, H. (1974). *Labor and monopoly capital: The degradation of work in the twentieth century.* New York: Monthly Review Press.

25. Brekken, C. A., Peterson, H. H., King, R. P., & Conner, D. (2018). Writing a recipe for teaching sustainable food systems: Lessons from three university courses. *Sustainability (Switzerland)*, *10*(6).

26. Campbell, B. M., Beare, D. J., Bennett, E. M., Hall-Spencer, J. M., Ingram, J. S. I., Jaramillo, F., Ortiz, R., Ramankutty, N., Sayer, J. A., & Shindell, D. (2017). Agriculture production as a major driver of the earth system exceeding planetary boundaries. *Ecology and Society*, *22*(4).

27. Carlsson-Kanyama, A., & González, A. D. (2009). Potential contributions of food consumption patterns to climate change. *The American Journal of Clinical Nutrition*, *89*(5), 1704S-1709S.

28. Charles, H., Godfray, J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., & Toulmin, C. (n.d.). *Food Security: The Challenge of Feeding 9 Billion People*.

29. Clark-Barol, M., Gaddis, J. E., & Barrett, C. K. (2021). Food agency in low-income households: a qualitative study of the structural and individual factors impacting participants in a community-based nutrition program. *Appetite*, *158*, 105013.

30. Clifford, D., Anderson, J., Auld, G., & Champ, J. (2009). Good Grubbin': impact of a TV cooking show for college students living off campus. *Journal of Nutrition Education and Behavior*, *41*(3), 194–200.

31. Colas, A., Edwards, J., Levi, J., & Zubaida, S. (2018). *Food, Politics, and Society*. The University of California Press.

32. Cook, S. D. N., & Brown, J. S. (1999). Bridging Epistemologies: The Generative Dance between Organizational Knowledge and Organizational Knowing. *Organization Science*, *10*(4), 381–400.

33. Côté, J. E., & Levine, C. G. (2014). *Identity, formation, agency, and culture: A social psychological synthesis*. Psychology Press.

34. Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, *2*(3), 198–209.

35. Culinary Institute of America. (2007). *Introduction to Culinary Arts*. Pearson Prentice Hall.

36. Dagevos, H., & Voordouw, J. (2013). Sustainability and meat consumption: is reduction realistic? *Sustainability: Science, Practice and Policy*, *9*(2), 60–69.

37. De Bakker, E., & Dagevos, H. (2012). Reducing meat consumption in today's consumer society: questioning the citizen-consumer gap. *Journal of Agricultural and Environmental Ethics*, *25*, 877–894.

38. de Boer, J., de Witt, A., & Aiking, H. (2016). Help the climate, change your diet: A cross-sectional study on how to involve consumers in a transition to a low-carbon society. *Appetite*, *98*, 19–27.

39. Dibb, S., & Fitzpatrick, I. (2014). Let's talk about meat. *Eating Better, Available at: Www. Eatingbetter. Org/Uploads/Documents/Let'sTalkAboutMeat. Pdf (Accessed 20 September 2017)*.

40. Ericksen, E.H. (1950). *Childhood and society*. New York: Norton.

41. Ericksen, E.H. (1968). *Identity: Youth and crisis.* New York: Norton.

42. Ericksen, P. J. (2008a). Conceptualizing food systems for global environmental change research. *Global Environmental Change*, *18*(1), 234–245.

43. Ericksen, P. J. (2008b). *What Is the Vulnerability of a Food System to Global Environmental Change?* (Vol. 13, Issue 2). and Society.

44. FAO. (2016). *Food balance sheet: Food and agriculture organization.*

45. Farmer, N., Touchton-Leonard, K., & Ross, A. (2018). Psychosocial benefits of cooking interventions: a systematic review. *Health Education & Behavior*, *45*(2), 167–180.

46. Fielding-Singh, P. (2021). *How the Other Half Eats: The Untold Story of Food and Inequality in America*. Little Brown Spark.

47. Gans, H.J. (1999). Participant observation in the era of "ethnography." *Journal of contemporary ethnography*, *28*(5), 540-548.

48. Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy*, *33*(6), 897–920.

49. Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, *1*(1), 24–40.

50. Geels, F. W., & Schot, J. (2007). Typology of sociotechnical transition pathways. *Research Policy*, *36*(3), 399–417.

51. Gerber, P. J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A., & Tempio, G. (2013). *Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities.* Food and Agriculture Organization of the United Nations (FAO).

52. Gilgun, J.F. (2010). A primer on deductive qualitative analysis and theory testing & theory development. *Current Issues in Qualitative Research, 1*, 1-6.

53. Glaser, B.G., & Strauss, A.L. (2017). *Discovery of grounded theory: Strategies for qualitative researchers.* Routledge.

54. Gordillo, P., & Prescott, M. P. (2023). Assessing the Use of Social Cognitive Theory Components in Cooking and Food Skills Interventions. *Nutrients*, *15*(5), 1287.

55. Graça, J., Calheiros, M. M., & Oliveira, A. (2015). Attached to meat?(Un) Willingness and intentions to adopt a more plant-based diet. *Appetite*, *95*, 113–125.

56. Graça, J., Godinho, C. A., & Truninger, M. (2019). Reducing meat consumption and following plant-based diets: Current evidence and future directions to inform integrated transitions. *Trends in Food Science & Technology*, *91*, 380–390.

57. Hansen, S., Drake, T., & Vollmer, R.L. (2019). Perceptions of cooking education among high school students. *Family and Consumer Sciences Research Journal,* 47(4), 359-374.

58. Harguess, J. M., Crespo, N. C., & Hong, M. Y. (2020). Strategies to reduce meat consumption: A systematic literature review of experimental studies. *Appetite*, *144*, 104478.

59. Hartup, W.W., & Stevens, N. (1997). Friendships and adaptation in the life course. *Psychological bulletin, 121*(3), 355.

60. Hasan, B., Thompson, W. G., Almasri, J., Wang, Z., Lakis, S., Prokop, L. J., Hensrud, D. D., Frie, K. S., Wirtz, M. J., Murad, A. L., Ewoldt, J. S., & Murad, M. H. (2019). The effect of culinary interventions (cooking classes) on dietary intake and behavioral change: A systematic review and evidence map. In *BMC Nutrition* (Vol. 5, Issue 1). BioMed Central.

61. Hedenus, F., Wirsenius, S., & Johansson, D. J. A. (2014). The importance of reduced meat and dairy consumption for meeting stringent climate change targets. *Climatic Change*, *124*(1), 79–91.

62. Heller, M. C., Willits-Smith, A., Meyer, R., Keoleian, G. A., & Rose, D. (2018). Greenhouse gas emissions and energy use associated with production of individual self-selected US diets. *Environmental Research Letters*, *13*(4), 044004.

63. Herrero, M., Havlík, P., Valin, H., Notenbaert, A., Rufino, M. C., Thornton, P. K., Blümmel, M., Weiss, F., Grace, D., & Obersteiner, M. (2013). Biomass use, production, feed efficiencies, and greenhouse gas emissions from global livestock systems. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(52), 20888–20893.

64. Hilimire, K., Gillon, S., McLaughlin, B. C., Dowd-Uribe, B., & Monsen, K. L. (2014). Food for Thought: Developing Curricula for Sustainable Food Systems Education Programs. *Agroecology and Sustainable Food Systems*, *38*(6), 722–743.

65. Hinrichs, C. C. (2014). Transitions to sustainability: A change in thinking about food systems change? *Agriculture and Human Values*, *31*(1), 143–155.

66. Hirvonen, K., Bai, Y., Headey, D., & Masters, W. A. (2020). Affordability of the EAT–Lancet reference diet: a global analysis. *The Lancet Global Health*, *8*(1), e59–e66.

67. Hiza, H. A. B., Casavale, K. O., Guenther, P. M., & Davis, C. A. (2013). Diet Quality of Americans Differs by Age, Sex, Race/Ethnicity, Income, and Education Level. *Journal of the Academy of Nutrition and Dietetics*, *113*(2), 297–306.

68. Hoek, A. C., Pearson, D., James, S. W., Lawrence, M. A., & Friel, S. (2017). Shrinking the food-print: A qualitative study into consumer perceptions, experiences and attitudes towards healthy and environmentally friendly food behaviours. *Appetite*, *108*, 117–131.

69. Hollywood, L., Surgenor, D., Reicks, M., McGowan, L., Lavelle, F., Spence, M., Raats, M., McCloat, A., Mooney, E., & Caraher, M. (2018). Critical review of behaviour change techniques applied in intervention studies to improve cooking skills and food skills among adults. *Critical Reviews in Food Science and Nutrition*, *58*(17), 2882–2895.

70. Howard, P.H. (2016). *Concentration and power in the food system: Who controls what we eat?* New York: Bloomsbury Academic.

71. Hubert, B., Rosegrant, M., Van Boekel, M. A. J. S., & Ortiz, R. (2010). The future of food: scenarios for 2050. *Crop Science*, *50*, S-33.

72. Ingold, T. (2000). *The perception of the environment: Essays on livelihood, dwelling, and skill.* London and New York: Routledge.

73. Jaffe, J., & Gertler, M. (2006). Victual Vicissitudes: Consumer Deskilling and the (Gendered) Transformation of Food Systems. *Agriculture and Human Values*, *23*(2), 143–162.

74. Johnson, K. A., & Johnson, D. E. (1995). Methane emissions from cattle. *Journal of Animal Science*, *73*(8), 2483–2492.

75. Jones, S. A., Walter, J., Soliah, L., & Phifer, J. T. (2014). Perceived motivators to home food preparation: focus group findings. *Journal of the Academy of Nutrition and Dietetics*, *114*(10), 1552–1556.

76. Keniston, K. (1971). *Youth and dissent: The rise of a new opposition.* New York: Harcourt Brace Javonovich.

77. Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–260.

78. Kwasny, T., Dobernig, K., & Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of intervention effectiveness, 2001–2019. *Appetite*, *168*, 105739.

79. Lahne, J., Wolfson, J. A., & Trubek, A. (2017). Development of the Cooking and Food Provisioning Action Scale (CAFPAS): A new measurement tool for individual cooking practice. *Food Quality and Preference*, *62*, 96–105.

80. Larson, N. I., Perry, C. L., Story, M., & Neumark-Sztainer, D. (2006). Food Preparation by Young Adults Is Associated with Better Diet Quality. *Journal of the American Dietetic Association*, *106*(12), 2001–2007.

81. Laska, M. N., Larson, N. I., Neumark-Sztainer, D., & Story, M. (2012). Does involvement in food preparation track from adolescence to young adulthood and is it associated with better dietary quality? Findings from a 10-year longitudinal study. *Public Health Nutrition*, *15*(7), 1150–1158.

82. Latvala, T., Niva, M., Mäkelä, J., Pouta, E., Heikkilä, J., Kotro, J., & Forsman-Hugg, S. (2012). Diversifying meat consumption patterns: Consumers' self-reported past behaviour and intentions for change. *Meat Science*, *92*(1), 71–77.

83. Lave, J. (1988). *Cognition in practice: Mind, mathematics and culture in everyday life*. Cambridge University Press.

84. Lavelle, F., McGowan, L., Spence, M., Caraher, M., Raats, M. M., Hollywood, L., McDowell, D., McCloat, A., Mooney, E., & Dean, M. (2016). Barriers and facilitators to cooking from 'scratch' using basic or raw ingredients: A qualitative interview study. *Appetite*, *107*, 383–391.

85. Lavelle, F., Spence, M., Hollywood, L., McGowan, L., Surgenor, D., McCloat, A., Mooney, E., Caraher, M., Raats, M., & Dean, M. (2016). Learning cooking skills at different ages: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(1).

86. Lea, E. J., Crawford, D., & Worsley, A. (2006). Consumers' readiness to eat a plant-based diet. *European Journal of Clinical Nutrition*, *60*(3), 342–351.

87. Lea, E., & Worsley, A. (2008). Australian consumers' food-related environmental beliefs and behaviours. *Appetite*, *50*(2–3), 207–214.

88. Leeuwis, C., Boogaard, B. K., & Atta-Krah, K. (2021). How food systems change (or not): governance implications for system transformation processes. *Food security*, *13*(4), 761-780.

89. Levinson, D.J. (1978). *The seasons of a man's life*. New York: Ballantine.

90. Levy, J., & Auld, G. (2004). Cooking classes outperform cooking demonstrations for college sophomores. *Journal of Nutrition Education and Behavior*, *36*(4), 197–203.

91. Lindlof, T.R., & Taylor, B.C. (2017). *Qualitative communication research methods*. Sage publications.

92. Machovina, B., Feeley, K. J., & Ripple, W. J. (2015). Biodiversity conservation: The key is reducing meat consumption. *Science of The Total Environment*, *536*, 419–431.

93. Mah, A., Matsuba, M. K., & Pratt, M. W. (2020). The politics behind environmentalism: How political ideological development in emerging adulthood may play a role. *Journal of Environmental Psychology*, *69*, 101417.

94. Maillet, M. A., & Grouzet, F. M. E. (2021). Understanding changes in eating behavior during the transition to university from a self-determination theory perspective: a systematic review. *Journal of American College Health*.

95. Malan, H., Challamel, G. A., Silverstein, D., Hoffs, C., Spang, E., Pace, S. A., Malagueño, B. L. R., Gardner, C. D., Wang, M. C., Slusser, W., & Jay, J. A. (2020). Impact of a

scalable, multi-campus "foodprint" seminar on college students' dietary intake and dietary carbon footprint. *Nutrients*, *12*(9), 1–17.

96. Marinova, D., & Bogueva, D. (2019). Planetary health and reduction in meat consumption. *Sustainable Earth*, *2*(1), 3.

97. Marquis, M., Talbot, A., Sabourin, A., & Riopel, C. (2019). Exploring the environmental, personal and behavioural factors as determinants for university students' food behaviour. *International Journal of Consumer Studies*, *43*(1), 113–122.

98. Matias, S. L., Rodriguez-Jordan, J., & McCoin, M. (2021). Evaluation of a College-Level Nutrition Course With a Teaching Kitchen Lab. *Journal of Nutrition Education and Behavior*, *53*(9), 787–792.

99. Maugeri, I. P., Brimblecombe, J., Choi, T. S. T., Kleve, S., & Palermo, C. (2021). For whom and under what circumstances do nutrition-education cooking interventions work: a realist synthesis. *Nutrition Reviews*, *79*(4), 479–493.

100. Maxwell, S., & Slater, R. (2003). Food policy old and new. *Development Policy Review*, *21*(5–6), 531–553.

101. Meadows, D. (1999). Leverage Points. *Places to Intervene in a System*, *19*, 28.

102. Meadows, D. H., & Wright, D. (2008). *Thinking in Systems: A Primer*. Chelsea Green Publishing.

103. Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel. *A Guide to Designing Interventions. 1st Ed. Great Britain: Silverback Publishing*, *1003*, 1010.

104. Milford, A. B., Le Mouël, C., Bodirsky, B. L., & Rolinski, S. (2019). Drivers of meat consumption. *Appetite*, *141*, 104313.

105. Mintel. (2013). *Fruits and vegetables, US*. London, UK: Mintel.

106. Moisio, R., Arnould, E. J., & Price, L. L. (2004). Between mothers and markets: Constructing family identity through homemade food. *Journal of Consumer Culture*, *4*(3), 361–384.

107. Monteiro, C. A., Cannon, G., Levy, R. B., Moubarac, J.-C., Louzada, M. L. C., Rauber, F., Khandpur, N., Cediel, G., Neri, D., & Martinez-Steele, E. (2019). Ultra-processed foods: what they are and how to identify them. *Public Health Nutrition*, *22*(5), 936–941.

108. Morgan, C. B. (2020). Expanding food agency theory and measurement with mixed methods: A study from Philadelphia. *Journal of Agriculture, Food Systems, and Community Development, 9*(4), 229-244.

109. Morse, J.M., & Field, P.A. (1995). *Nursing research: The application of qualitative approaches.* Nelson Thornes.

110. Murray, C. J. L., Abraham, J., Ali, M. K., Alvarado, M., Atkinson, C., Baddour, L. M., Bartels, D. H., Benjamin, E. J., Bhalla, K., & Birbeck, G. (2013). The state of US health, 1990-2010: burden of diseases, injuries, and risk factors. *Jama*, *310*(6), 591–606.

111. Namin, A., Ratchford, B. T., Saint Clair, J. K., Bui, M. (Myla), & Hamilton, M. L. (2020). Dine-in or take-out: Modeling millennials' cooking motivation and choice. *Journal of Retailing and Consumer Services*, *53*.

112. Nelson, M. C., Story, M., Larson, N. I., Neumark-Sztainer, D., & Lytle, L. A. (2008). Emerging adulthood and college-aged youth: An overlooked age for weight-related behavior change. In *Obesity* (Vol. 16, Issue 10, pp. 2205–2211).

113. Neufeld, L. M., Andrade, E. B., Suleiman, A. B., Barker, M., Beal, T., Blum, L. S., Demmler, K. M., Dogra, S., Hardy-Johnson, P., & Lahiri, A. (2022). Food choice in transition: adolescent autonomy, agency, and the food environment. *The Lancet*, *399*(10320), 185–197.

114. Newcomb, A.F., & Bagwell, C.L. (1995). Children's friendship relation: A meta-analytic review. *Psychological bulletin, 117*(2), 306.

115. O'Brien, K. (2012). Global environmental change II: From adaptation to deliberate transformation. *Progress in Human Geography*, *36*(5), 667–676.

116. Pelling, M. (2010) *Adaptation to climate change: From resilience to transformation*. United Kingdom: Taylor & Francis.

117. Philip H. Howard. (2016). *Concentration and Power in the Food System: Who Controls What We Eat?* Bloomsbury Academic.

118. Pope, L., Alpaugh, M., Trubek, A., Skelly, J., & Harvey, J. (2021). Beyond ramen: Investigating methods to improve food agency among college students. *Nutrients, 13*(5).

119. Popkin, B. M. (1994). The Nutrition Transition in Low-Income Countries: An Emerging Crisis. *Nutrition Reviews*, *52*(9), 285–298.

120. Popkin, B. M. (1998). The nutrition transition and its health implications in lower-income countries. *Public Health Nutrition*, *1*(1), 5–21.

121. Popkin, B. M. (1999). Urbanization, Lifestyle Changes and the Nutrition Transition. *World Development*, *27*(11), 1905–1916.

122. Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *Journal of Nutrition*, *131*(3).

123. Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. *The Lancet*, *395*(10217), 65–74.

124. Pratiti, R., Vadala, D., Kalynych, Z., & Sud, P. (2020). Health effects of household air pollution related to biomass cook stoves in resource limited countries and its mitigation by improved cookstoves. In *Environmental Research* (Vol. 186). Academic Press Inc.

125. Reese, W. J. (2013). In search of American progressives and teachers. *History of Education*, *42*(3), 320–334.

126. Rehm, C. D., Peñalvo, J. L., Afshin, A., & Mozaffarian, D. (2016). Dietary intake among US Adults, 1999-2012. *JAMA - Journal of the American Medical Association*, *315*(23), 2542–2553.

127. Reisch, L., Eberle, U., & Lorek, S. (2013). Sustainable food consumption: an overview of contemporary issues and policies. *Sustainability: Science, Practice and Policy*, *9*(2), 7–25.

128. Ripple, W. J., Smith, P., Haberl, H., Montzka, S. A., McAlpine, C., & Boucher, D. H. (2014). Ruminants, climate change and climate policy. *Nature Climate Change*, *4*(1), 2–5.

129. Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, *4*(2), 155–169.

130. Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., De Wit, C. A., Hughes, T., Van Der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Costanza, R., Svedin, U., … Walker, B. (2009). *Planetary Boundaries: Exploring the Safe Operating Space for Humanity* (Vol. 14, Issue 2).

131. Rose, D., Heller, M. C., Willits-Smith, A. M., & Meyer, R. J. (2019). Carbon footprint of self-selected US diets: nutritional, demographic, and behavioral correlates. *The American Journal of Clinical Nutrition*, *109*(3), 526–534.

132. Schwartz, S. J., Côté, J. E., & Arnett, J. J. (2005). Identity and agency in emerging adulthood: Two developmental routes in the individualization process. *Youth and Society, 37*(2), 201–229.

133. Scott, P. (2017). Global panel on agriculture and food systems for nutrition: food systems and diets: facing the challenges of the 21st century. *Food Security, 9*(3), 653–654.

134. Shapiro, L. (2008). *Perfection Salad: Women and Cooking at the Turn of the Century*. University of California Press.

135. Shim, S., Serido, J., Bosch, L., & Tang, C. (2013). Financial identity-processing styles among young adults: A longitudinal study of socialization factors and consequences for financial capabilities. *Journal of Consumer Affairs, 47*(1), 128–152.

136. Short, F. (2003). Domestic cooking practices and cooking skills: findings from an English study*. *Food Service Technology, 3*(3–4), 177–185.

137. Shove, E. (2010). Beyond the ABC: climate change policy and theories of social change. *Environment and Planning A, 42*(6), 1273–1285.

138. Shulman, L. S. (2005). Signature Pedagogies in the Professions. *Daedalus, 134*(3), 52–59.

139. Singleton, W.T. (1978). *The study of real skills*. Lancaster: MTP Press Ltd.

140. Smith, L. P., Ng, S. W., & Popkin, B. M. (2013). Trends in US home food preparation and consumption: analysis of national nutrition surveys and time use studies from 1965–1966 to 2007–2008. *Nutrition Journal, 12*(1), 1–10.

141. Snyder, T.D., de Brey, C., and Dillow, S.A. (2019). Digest of Education Statistics 2018 (NCES 2020-009). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

142. Stefanovic, L., Freytag-Leyer, B., & Kahl, J. (2020). Food System Outcomes: An Overview and the Contribution to Food Systems Transformation. In *Frontiers in Sustainable Food Systems* (Vol. 4). Frontiers Media S.A.

143. Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., De Vries, W., De Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science, 347*(6223).

144. Stoll-Kleemann, S., & Schmidt, U. J. (2017). Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, *17*(5), 1261–1277.

145. Swenson, L.M., Nordstrom, A., & Hiester, M. (2008) The role of peer relationships in adjustment to college. *Journal of College Student Development, 49*(6), 551-567.

146. Szczepanski, J. R., Litchfield, R. E., Beirman, E. A., Nolting, L. M., & Genschel, U. (2021). Effects of a Culinary Boot Camp intervention on food/nutrition aptitudes and dietary intake of college students. *Journal of American College Health*.

147. Taillie, L. S., & Poti, J. M. (2017). Associations of cooking with dietary intake and obesity among supplemental nutrition assistance program participants. *American Journal of Preventive Medicine*, *52*(2), S151–S160.

148. Tiwari, A., Aggarwal, A., Tang, W., & Drewnowski, A. (2017). Cooking at home: a strategy to comply with US dietary guidelines at no extra cost. *American Journal of Preventive Medicine*, *52*(5), 616–624.

149. Todd, J. E., Mancino, L., & Lin, B.-H. (2010). *The Impact of Food Away From Home on Adult Diet Quality*.

150. Trubek, A. B. (2012). Looking at Cooking. *Anthropology Now*, *4*(3), 24–32.

151. Trubek, A. B. (2017). *Making Modern Meals: How Americans Cook Today*. University of California Press.

152. Trubek, A. B., Carabello, M., Morgan, C., & Lahne, J. (2017). Empowered to cook: The crucial role of 'food agency' in making meals. *Appetite*, *116*, 297–305.

153. Tylka, T. L., Annunziato, R. A., Burgard, D., Daníelsdóttir, S., Shuman, E., Davis, C., & Calogero, R. M. (2014). The Weight-Inclusive versus Weight-Normative Approach to Health: Evaluating the Evidence for Prioritizing Well-Being over Weight Loss. In *Journal of Obesity* (Vol. 2014). Hindawi Limited.

154. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025*. 9th edition. December 2020. Available at DietaryGuidelines.gov.

155. Utter, J., Larson, N., Laska, M. N., Winkler, M., & Neumark-Sztainer, D. (2018). Self-Perceived Cooking Skills in Emerging Adulthood Predict Better Dietary Behaviors and

Intake 10 Years Later: A Longitudinal Study. *Journal of Nutrition Education and Behavior*, *50*(5), 494–500.

156. Valley, W., Wittman, H., Jordan, N., Ahmed, S., & Galt, R. (2018). An emerging signature pedagogy for sustainable food systems education. In *Renewable Agriculture and Food Systems* (Vol. 33, Issue 5, pp. 467–480). Cambridge University Press.

157. Vermeulen, S. J., Park, T., Khoury, C. K., & Béné, C. (2020). Changing diets and the transformation of the global food system. *Annals of the New York Academy of Sciences*, *1478*(1), 3–17.

158. Verplanken, B., Walker, I., Davis, A., & Jurasek, M. (2008). Context change and travel mode choice: Combining the habit discontinuity and self-activation hypotheses. *Journal of Environmental Psychology*, *28*(2), 121–127.

159. Virudachalam, S., Long, J. A., Harhay, M. O., Polsky, D. E., & Feudtner, C. (2014). Prevalence and patterns of cooking dinner at home in the USA: National Health and Nutrition Examination Survey (NHANES) 2007–2008. *Public Health Nutrition*, *17*(5), 1022–1030.

160. Von Braun, J., Afsana, K., Fresco, L., Hassan, M., Torero, M., & Chair, G. (2020). Food Systems-Definition, Concept and Application for the UN Food Systems Summit: A paper from the Scientific Group of the UN Food Systems Summit

161. Von Braun, J., Afsana, K., Fresco, L. O., & Hassan, M. (2020). Science and Innovations for Food Systems Transformation and Summit: Actions, Science, and Innovations for Food Systems Transformations.

162. Vosylis, R., Sorgente, A., Serido, J., Lanz, M., & Raižienė, S. (2023). Becoming financially self-sufficient: developing a need-supportive and need-thwarting scale for financial parenting of emerging adults. *Journal of Personality Assessment*, *105*(2), 215–226.

163. Walls, H. L., Johnston, D., Mazalale, J., & Chirwa, E. W. (2018). Why we are still failing to measure the nutrition transition. In *BMJ Global Health* (Vol. 3, Issue 1). BMJ Publishing Group.

164. Wang, D. D., Leung, C. W., Li, Y., Ding, E. L., Chiuve, S. E., Hu, F. B., & Willett, W. C. (2014). Trends in dietary quality among adults in the United States, 1999 through 2010. *JAMA Internal Medicine*, *174*(10), 1587–1595.

165. Wardle, J., Parmenter, K., & Waller, J. (2000). Nutrition knowledge and food intake. *Appetite*, *34*(3), 269–275.

166. Watson, T. D., Malan, H., Glik, D., & Martinez, S. M. (2017). College students identify university support for basic needs and life skills as key ingredients in addressing food insecurity on campus. *California Agriculture, 71*(3), 130–138.

167. Wedgewood, R. (2007). *The nature of normativity*. New York: Oxford University Press.

168. Werhan, C., & Way, W.L. (2006). Family and consumer science programs in secondary schools: Results of a national survey. *Journal of Family and Consumer Sciences, 98*(1), 19.

169. Werhan, C.R. (2013). Family and consumer sciences secondary school programs: National survey shows continued demand for FCS teachers. *Journal of Family & Consumer Sciences, 105*(4), 41-45.

170. Wiig, K., & Smith, C. (2009). The art of grocery shopping on a food stamp budget: factors influencing the food choices of low-income women as they try to make ends meet. *Public Health Nutrition, 12*(10), 1726–1734.

171. Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., De Vries, W., Majele Sibanda, L., … Murray, C. J. L. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. In *The Lancet* (Vol. 393, Issue 10170, pp. 447–492). Lancet Publishing Group.

172. Wolfson, J. A., & Bleich, S. N. (2015). Is cooking at home associated with better diet quality or weight-loss intention? *Public Health Nutrition, 18*(8), 1397–1406.

173. Wolfson, J. A., Bleich, S. N., Smith, K. C., & Frattaroli, S. (2016). What does cooking mean to you?: Perceptions of cooking and factors related to cooking behavior. *Appetite, 97*, 146–154.

174. Wolfson, J. A., Bostic, S., Lahne, J., Morgan, C., Henley, S. C., Harvey, J., & Trubek, A. (2017). A comprehensive approach to understanding cooking behavior: Implications for research and practice. *British Food Journal, 119*(5), 1147–1158.

175. Wolfson, J. A., Frattaroli, S., Bleich, S. N., Smith, K. C., & Teret, S. P. (2017). Perspectives on learning to cook and public support for cooking education policies in the United States: A mixed methods study. *Appetite, 108*, 226–237.

176. Wolfson, J. A., Leung, C. W., & Richardson, C. R. (2020). More frequent cooking at home is associated with higher Healthy Eating Index-2015 score. *Public Health Nutrition*, *23*(13), 2384–2394.

177. Wolfson, J. A., Tse, J., Ho, A., Bowie, J., Maruthur, N., Richardson, C. R., & Trubek, A. (2023). Complex, Varied and Evolving Manifestations of Food Agency in Daily Life Among Diabetes Prevention Program Participants in Baltimore, Maryland. *Journal of Nutrition Education and Behavior*, *55*(6), 404–418.

178. Wolfson, J. A., Willits-Smith, A. M., Leung, C. W., Heller, M. C., & Rose, D. (2022). Cooking at Home, Fast Food, Meat Consumption, and Dietary Carbon Footprint among US Adults. *International Journal of Environmental Research and Public Health*, *19*(2).