UNIVERSITY OF CALIFORNIA,

IRVINE

Victuals and Values:

Exploring Cultural Differences in Family Health Using a Food Memory Framework

DISSERTATION

Submitted in partial satisfaction of the requirements

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DOCTOR OF PHILOSOPHY

in Psychological Science

by

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DEDICATION

To the people and places that feed our souls and our stomachs.

"The pleasures of the table, belong to all times and all ages, to every country and to every day; they go hand in hand with all our other pleasures, outlast them, and remain to console us for their loss."

– Jean Anthelme Brillat-Savarin, "The Physiology of Taste"

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VITA

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Lukowski, A. F., & **Slonecker, E. M.** (2017). Development. In M. Altman & L. Jacobi (Eds.), *Introduction to Psychology: An Interactive Text.* Toronto, ON: Top Hat

Slonecker, E. M. (2017). Altricial. In J. Vonk & T. K. Shackelford (Eds.), *Encyclopedia of Animal Cognition and Behavior.* Cham: Springer International Publishing.

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Slonecker, E. M., & Klemfuss, J. Z. (2021, April). Caregiver-child conversations and autonomy support across contexts. Poster presented at 2021 Society for Research in Child Development Biennial Meeting.

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Klemfuss, J. Z., **Slonecker, E. M.,** *Akhavein, K., & *Deepali, D. (2019, March). Cultural, ideological, and valence-based differences in caregiver reminiscing goals. Talk presented at 2019 Society for Research in Child Development, Baltimore, Maryland.

Slonecker, E. M., & Klemfuss, J. Z. (2019, March). Yes, no, maybe so: Using evaluative feedback across contexts during parent child reminiscing. Poster presented at 2019 Society for Research in Child Development, Baltimore, Maryland.

Slonecker, E. M., & Klemfuss, J. Z. (2019, March). Conversation contexts and individual differences in the way children report past experiences. Talk presented at 2019 American Psychology-Law Society Conference, Portland, Oregon.

Slonecker, E. M., & Lukowski, A. F. (2017, October). Does sleep protect memories from interfering information in early childhood? Poster presented at 2017 meeting of the Cognitive Development Society, Portland, Oregon.

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Dettmer, A. M., **Slonecker, E. M.,** Suomi, S. J., & Meyer, J. S. (2017, August). Dams' social behavior and long-term cortisol profiles in response to their infants being nursery-reared. Poster presented at 40th meeting of the American Society of Primatology, Washington, D.C.

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ABSTRACT OF THE DISSERTATION

Exploring Cultural Differences in Family Health Using a Food Memory Framework

by

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Food memories are salient across the lifespan and recent work suggests that memories for past food experiences, especially those from childhood, may influence caregivers' present-day eating and family meal planning behaviors. Yet, researchers have not identified how cultural ideology interacts with the memory system to inform the intergenerational transmission of food values and beliefs within the family unit. This omission has the potential to perpetuate pre-existing health disparities in families belonging to minority groups and limits the efficacy and appeal of nutritional initiatives within an ever-diversifying U.S. population.

Across three studies, the present dissertation examined qualitative and quantitative data on childhood memories, eating motivations, and physical health collected from caregivers belong to four subcultural groups in the U.S. The primary aims of this dissertation were to provide a systematic comparison of food and non-food memories using mixed methods (Study 1), examine food memories from a cultural perspective (Study 2), and identify potential pathways between food memories, eating motivations, and health (Study 3). The three studies presented in this dissertation demonstrated that childhood autobiographical food memories are unique, culturally bound, and potentially linked to food-related behaviors, eating motivations, and health status later in life. This dissertation provides the first known evidence of a culturally moderated

pathway between the autobiographical memory system, eating motivations, health perceptions, and caregiver BMI and represents a first step towards identifying how the memory system can be used to develop more inclusive and efficacious healthcare programs.

CHAPTER 1: AUTOBIOGRAPHICAL MEMORY

What did you eat for dinner yesterday? Most people, when presented with this type of question, involuntarily travel back in time within their mind's eye; right now, you likely find yourself imagining not only the food you ate last night, but also how you felt during the meal, who you were with, and other contextual details. You are viewing the dinner from your perspective, and you recognize yourself as the "experiencer" of the event. As you think back on that meal, you might find your mind spontaneously jumping to tangential memories and making meaningful connections between different past events. For example, when I reflect on the "dinner" of Starbursts and crackers I foraged from my office cupboards yesterday, my mind immediately begins to draw connections with other information from my past – eating Starburst jellybeans with my family during Easter, studying for comprehensive exams, making homemade hummus and crackers for the first time. In other words, I am remembering that moment within the context of my sense of self, my environment, and my greater life narrative. Memories that are anchored to a specific time and viewed from a subjective, first-person perspective are commonly referred to as autobiographical memories. Although multiple species experience episodic memory (i.e., memory for the who, what, where, and when of a past event), autobiographical memories are often touted as a "unique human form of memory" (Fivush, 2011, p. 560). To the best of our knowledge, humans alone possess the unique ability to mentally travel through time, introspect on past experiences, and perceive the past, present, and future as a singular biography of the self (Barnes, 1998; Conway et al., 2004; Fivush, 2011; Pillemer, 1998; Tulving, 2002).

Conceptualizing Memory

While the nuances of the memory system are still hotly contested, it is generally agreed that human memory consists of two intertwined systems of nondeclarative and declarative

memory (Baddeley et al., 2014; Tulving, 1972, 2002). The nondeclarative memory system houses information that is usually accessed and utilized without conscious awareness. This system helps you carry out procedural and habitual actions, like singing along to your favorite song or brushing your teeth, without needing to explicitly recall how to complete these actions (Schacter et al., 2000; Squire, 2004). In contrast, declarative memories are consciously recalled and explicitly accessed. Declarative memory can be further broken down into semantic, episodic, and autobiographical memory. Semantic memories contain specific knowledge that is separated from an awareness of time and space – you can actively recall the information (e.g., the date the Declaration of Independence was signed), but you do not necessarily remember where or how the information was originally learned or collected.

In contrast, episodic and autobiographical memories are specific events rooted in a distinct place and time (Haberman & Bluck, 2000; McAdams, 2000). While some researchers do not differentiate between episodic and autobiographical memories (e.g., Tulving, 2002), there are compelling theoretical and practice reasons to distinguish between knowing a past event occurred (i.e., episodic memory) and knowing a past event occurred *to you* (i.e., autobiographical memory). Both types of memories contain factual details about what happened, but autobiographical memories also contain information about your feelings and thoughts during the event, as well as the broader meaning of the event (see Fivush et al., 2011 for similar argument). Within these parameters, autobiographical memories can therefore be distinguished as memories of the self that are assigned personal meaning and significance (Bruner, 1990; Fivush, 2010; Fivush & Haden, 1997; Pillemer, 1998). Or, due to their personal nature, autobiographical memories are perhaps best conceptualized as subjective reconstructions of what we *believe* happened in the past, rather than objective play-by-play representations of theevents (Baddeley,

1992; Bartlett, 1932; Brewer, 1996). The flexibility and interpretation involved in creating and recalling autobiographical memories allows us to interweave details about the event and our own perspectives, emotions, and thoughts into a cohesive memory narrative. This narrative can then be internally retrieved and applied or linguistically expressed to others (Fivush, 2011; Fivush & Merrill, 2016; Nelson, 1996; Rubin, 2005).

But why do we remember in the first place? Or, as Alan Baddeley once asked, "But what the hell is it for?" (Baddeley, 1988). According to the functional approach to autobiographical memories, we develop and share autobiographical narratives to achieve a variety of concrete and abstract goals (Bluck, 2003; Bluck et al., 2010; Conway & Pleydell-Pearce, 2000). When choosing our behavior in the present, or planning future behavior, we use autobiographical narratives to predict the potential benefits and consequences of our actions and decide on the correct path forward (Conway et al., 2016; MacLeod, 2016; Schacter & Madore, 2016). Across the lifespan, we accumulate autobiographical memories and weave them together into a larger life narrative that helps us maintain a distinct sense of self and identity (Fivush, 2019; Fivush et al., 2011; McAdams, 1985; McLean, 2017; Wang, 2013). Memories become a vessel for both shaping and maintaining our essence as an individual.

The functional approach to memory also highlights an interesting conundrum – if the purpose of autobiographical memory is interpretation and meaning making, then are distortions in our memories really "errors" or simply the system working as it should? There is, understandably, a desire to explore how and why personal memories of a past event deviate from reality , and much of the memory literature is focused on exploring the volume or accuracy of recalled memory information. However, the permutable nature of autobiographical memory

makes the study of more subjective metrics, such as memory expression, equally informative (see Bluck, 2003 for similar argument).

Memory expression refers to the subjective process of remembering, describing, and communicating an autobiographical memory (Fivush, 2011; Haun et al., 2011; Nelson, 1996; Roberson et al., 2005; Rubin, 2005). From a functional perspective, the ease of access to a memory or the language used to describe the event is meaningful. For example, positive memories are more often spontaneously recalled than negative memories (Rasmussen & Bernsten, 2009; although see Chapter 3 for discussion of cultural considerations). Positive memories are also rated as more frequently rehearsed (i.e., talked or thought about), more vivid, and more detailed than negative memories (D'Argembeau et al., 2003; Destun & Kuiper, 1998; Larsen, 1998; Raspotnig, 1997). This tendency could be conceptualized as a memory error or a "positive memory bias". Or, from a functionalist perspective, it could be perceived as a purposeful reflection of our desire to maintain a positive view of the self and our life (Taylor & Brown, 1988).

Similarly, the language we use to describe personal memories conveys a wealth of information about how we understand, interpret, and interact with the past (Tausczik & Pennebaker, 2010). Researchers have been able to predict coping with intimate partner violence (Holmes et al., 2007), deception and lying (Bond & Lee, 2005), narcissism (Jones et al., 2016), major depressive disorder (Himmelstein et al., 2018), and health outcomes following a traumatic event (Kross & Ayduk, 2008) simply by analyzing the words used to describe the event in question. Although many of these metrics do not address the veracity of an individuals' memory for the past, autobiographical memories are not meant to be verbatim records of the past. They exist to be relived, reinterpreted, and reconstructed in a fluid manner across the lifespan.

Memory Socialization

When considering the evolution of autobiographical memories across the lifespan, it is crucial to recognize the individual, and therefore the autobiographical memory system, as deeply embedded within a larger network of socioecological influences. The functional approach to autobiographical memory is rooted in a social ecological perspective (Stokols et al., 2000), which suggests that human behavior is best understood as a collection of contextually anchored adaptations to our surrounding environment. Within this framework, then, a symbiotic relationship exists between the autobiographical memory system and the social ecological system – the broader social world influences our memory, and our memory helps us interact with and influence the broader social world. This bidirectional process, commonly referred to as memory socialization, begins in infancy and continues across the lifespan (Nelson & Fivush, 2000).

Caregivers often represent one of the most omnipresent socialization agents within a child's life (Bronfenbrenner, 1979; McLean, 2016). Long before children possess the capacity for autobiographical memory, let alone conversation, caregivers begin to share memories and discuss the past with their children (Haden & Tõugu, 2020; Reese & Farrant, 2000, 2003). This practice, often referred to as reminiscing or sharing family narratives, plays a crucial role in teaching children how to socially bond with others, adopt social norms and attitudes, and internalize cultural ideologies and practices (Fivush, 2011; Wang, 2013).

According to the ecological model of family narratives (Fivush & Merrill, 2016), there are three embedded levels of memory sharing that occur within the home. The most immediate level, called the microsystem, contains conversations about shared, past events experienced by both the narrator and the listener. An example of a microsystem narrative might be a caregiver-

child conversation about a recent family trip to the beach. The most distant level, the macrosystem, contains stories that were not experienced by the narrator or the listener. For example, a parent telling their child about a great-great grandparent would be considered a macrosystem narrative. In between the micro- and macro-system is the exosystem, the exosystem includes narratives about events experienced only by the narrator and not the listener. An example of an exosystem narrative might be a child telling their parent about their day at school or a parent telling their child about their day at work. This ecological layer also contains conversations commonly known as intergenerational narratives.

Intergenerational narratives are personal stories passed down from a previous generation to a younger generation (Fivush et al., 2011; Merrill & Fivush, 2016). These narratives often contain anecdotes or information about the parent's own childhood. For example, if a child is learning to ride a bike, their caregiver might describe their own experiences as a child learning to ride a bike. Parents often use these narratives as a socialization tool, with some beginning to share intergenerational narratives during their child's infancy (Pratt & Fiese, 2004). Intergenerational narratives provide a medium for teaching children about their culture and transmitting privileged information, such as traditions and family history, from one generation to the next (Wang, 2013). By drawing parallels between their own experiences and those events being experienced by their child, caregivers can simultaneously reinforce cultural values and beliefs, while teaching their child how to apply those values to their own life (Bruner, 1987; McAdams, 2019). As the child grows and becomes more capable of reciprocating these narrative conversations, they begin to internalize the values, beliefs, and attitudes that are transmitted through this method of storytelling. Over time, they may even co-op their parent's memory as

their own, shared collective memory, creating an intergenerational transmission of values, beliefs, and attitudes.

Memory, Meaning, and the Self

In summary, autobiographical memories are inherently idiosyncratic, and subjective measures of memory expression, including memory phenomenology and linguistic characteristics, are functional, meaningful, and informative. The way we interpret and make meaning of the past informs our everyday decisions and the way we interact with the social world around us. Within the context of the family, this means that caregivers' perceptions of the past both directly inform their choices and approaches to raising a family and indirectly shape the communication of more abstract ideals and beliefs within the family setting (Alkhuzaim, 2018; Baxter & Braithwaite, 2006; Penderi & Petrogiannis, 2011). When caregivers share intergenerational narratives within the family unit, they are intrinsically linking their perceptions of the past with their child's understanding of the present and their experiences across childhood. As time passes, these children soon find themselves sharing stories of their own childhood with a new generation, creating an intergenerational transmission of ideals, values, beliefs, and identity. Thus, caregivers' autobiographical memories, and the narratives associated with them, play a crucial role in shaping child development across multiple generations. Caregivers create a pattern of development that ripples throughout future generations, making the study of caregivers' autobiographical memories paramount within the field of developmental psychology.

Researchers have worked diligently to generate empirical evidence supporting a robust link between caregivers' autobiographical memories and various domains of child development, like cognitive functioning and language development (see Wu & Jobson, 2019 for review). However, other domains remain understudied. For example, despite concerns over growing child

obesity rates within the United States (Hales et al., 2020), little is known about the role autobiographical plays in shaping family physical health and eating habits. Therefore, the series of studies outlined in the present dissertation lay the foundation for an interdisciplinary framework that applies theory on autobiographical memory and intergenerational narratives to the study of health outcomes and biopsychosocial factors in the family unit.

CHAPTER TWO: FOOD WITHIN THE FAMILY SYSTEM

In the opening paragraph of a recent paper published in *Neuroscience and Biobehavioral Reviews,* Benjamin Seitz states that "memory researchers would be well-served to consider eating behavior as an emerging frontier in the study of memory" (Seitz et al., 2021, p. 795). While this statement pays homage to the small, but growing collection of empirical work demonstrating a link between memory and food, it also hints at the limited attention the topic has received thus far from the broader field of psychology. This oversight is unexpected, given that the indelible nature of food memories is a common theme throughout cinema (e.g., "Julie and Julia", "27°C - Loaf Rock"), literature (e.g., "The Hundred Foot Journey", "Tastes Like Cuba: An Exile's Hunger for Home"), art (e.g., "Apple of My Eye", "Harvest"), anthropology (e.g., Agutter & Ankeny, 2017; Sutton, 2001), and folk stories (e.g., "Tenali Raman and the Mango Tree"; "The Pigeon and the Crow"). Yet, a review of the existing empirical literature on food memories reveals a fragmented collection of work that is scattered across multiple fields of study, including psychology, sociology, anthropology, cognitive science, and neurobiology. Recent efforts to unite these pockets of evidence under a more cohesive framework have revealed the promise and potential of the topic.

Food Memories

In general, humans show a remarkable proclivity for remembering food-related personal experiences. Memories about food or food-related events are often surprisingly robust and long lasting (Fox & Alldred, 2019; Sutton, 2008). While researchers have yet to uncover a definitive explanation for the longevity of food memories, multiple theories have been proposed. Some researchers suggest that the episodic memory system originally developed for the specific purpose of maintaining information related to food storage and foraging techniques (e.g., Seitz et al., 2018, 2021; Sherry et al., 1992). They point to food-specific mnemonic adaptations in other species as evidence. For example, the size of the Black-Capped Chickadee's hippocampus has grown over time to allow for the long-term storage of information related to food stashes (Feeney et al., 2009; Shettleworth, 1990). Thus, they argue that the episodic memory system is, by design, uniquely adept at encoding, storing, and retrieving memories related to food and eating.

Others suggest that the functional implications of food memories encourage stronger retention. As discussed in Chapter 1, functional perspectives of memory posit the mnemonic system helps us achieve specific goals, including the retention of important information for future use (Josselyn & Tonegawa, 2020; Mullally & Maguire, 2014; Schacter et al., 2012). Often, we may find it challenging to predict what information will or will not be of use in the future. But under this assumption, food memories are automatically flagged as important given their relevance to survival and prioritized for storage.

Finally, researchers point to neurological correlates between the memory system and eating behaviors. Both rely heavily on hippocampal functioning (Stevenson & Francis, 2017; Swithers et al., 2009) and utilize similar neuroendocrine signals (Hsu et al., 2016; Kanoski &

Grill, 2017; Suarez et al., 2019). For example, ghrelin and leptin are both hormones that interact with the hypothalamus to signal hunger and satiation, respectively (Farooqi et al., 1999; Müller et al., 2015), and genetic work with mice and rats demonstrates that ghrelin and leptin levels can influence spatial and contextual memory (Chuang et al., 2011; Perello et al., 2010), hippocampal spinal density (Cahill et al., 2014), and memory consolidation within the hippocampus (Kanoski et al., 2011).

Regardless of the underlying mechanism, a small collection of work has demonstrated that food-related memories, at least in the short term, are related to eating choices and behaviors. For example, researchers compared the eating habits of patients with and without severe amnesia for explicit recent events and found that patients with amnesia would willingly accept and eat up to three full meals within a 90-minute span if they were offered by researchers (Higgs et al., 2008a; Rozin et al., 1998). Other researchers found that participants who were prompted to think about past meals prior to eating consumed less food overall (Collins & Stafford, 2015; Higgs, 2002; Higgs et al., 2008b; Szypula et al., 2020). Notably, the same effect was found when participants were prompted to imagine and think about future meals they might eat (Vartanian et al., 2016). Work by Robinson and colleagues (2011, 2012) demonstrated that simply asking participants to think about a past enjoyable food experience moderated their later eating choices. Participants in the study ate a meal and then half were randomly assigned to ruminate on what they found enjoyable during the meal immediately after eating. Participants who were assigned to think about the food later rated the meal as more enjoyable and ate more at a later lunch buffet than those in the control group. Despite these intriguing results, far less is known about the spontaneous, long-term recall of food memories we usually associate with autobiographical

memories. However, the work that does exist points to some consistencies in the way humans remember food.

Food memories are often described with rich detail. The details recalled may be about the actual food, but often, people focus on the context of the meal (i.e., where they were, who they were with), rather than the food that was served (Agutter & Ankeny, 2017; Hingle et al., 2010; Holtzman, 2006; Janowski, 2012). For example, a recent qualitative study examined participants' dialogue while cooking a familiar dish with a researcher who was unfamiliar with the recipe (Claxton, 2019). Participants were asked to self-nominate a recipe they were familiar with and had cooked at least once before. Each participant then prepared the nominated dish with the researcher, with the participant acting as the "teacher" guiding the researcher through the recipe. Analysis of participants' dialogue revealed that, in addition to explaining the actual culinary steps associated with the recipe, most participants also recalled detailed descriptions of past experiences with the food. For example, one participant preparing fried chicken explained that he associates the dish with the television show *Seinfeld.* Reminiscing on the experience, the participant explained that he remembers "having my glass of Coke, my fried chicken, mashed potatoes, macaroni and cheese, and just being in heaven and watching *Seinfeld*" as a child (Claxton, 2019, p. 65).

Many food memories are also linked to experiences that were highly arousing at the time, in an either overtly positive or negative way (Fox & Alldred, 2019). As with non-food memories, when people are asked to recall past food experiences, they tend to organically recall more positive events than negative events. These positive experiences in particular seem to be frequently steeped in nostalgia. Across multiple research studies, positive memories for food have been associated with terms like love, warmth, comfort, security, happiness, and sharing

(Lambert, 1988; Moisio et al., 2004; Supski, 2013; Tye, 2010). Positive food memories can be so affecting that some work suggests they are used in diaspora as coping mechanisms to bring comfort and mental escapism to refugees (Azar et al., 2013; Messer, 1984; Raman, 2011).

Food memories are often social in nature. Many positive food memories are recalled as occurring within the context of larger social events, such as holidays or parties. Positive memory descriptions tend to focus not only on what was eaten, but also how other people engaged with and around the food (Moisio et al., 2004). Often, when people describe a remembered meal as "special", they point to the company, location, and context, rather than the food, as the distinguishing factor (Piqueras-Fiszman & Jaeger, 2015). Some suggest it is these positive external events, more so than the actual food, that make positive food memories so nostalgic and emotional (Fox & Alldred, 2019).

Finally, food memories tend to be about childhood experiences. While people can and do remember more recent food memories, the most vivid or frequently recalled seem to be related to childhood (Batsell et al., 2002; Claxton, 2019; Moisio et al., 2004; Sutton, 2011). Frequently, memories of food, and in particular those positive in valence, include references to family (Fox & Alldred, 2019; Piqueras-Fiszman & Jaeger, 2015). Narratives about past memorable meals usually include information about family relationships, traditions, and structures (Boutaud et al., 2016; Fox & Alldred, 2019) and interviews suggest that many adults link their childhood memories of food to family relationships and rituals (Lupton, 1994). As described in one study, people use individual food memories to "narrate understandings of what family is, what key features of family are, and what a family ought to be like" (Moisio et al., 2004, p. 366).

Clearly, the emotions, meaning, and values we associate with food stick with us long after the last slice of cake has been served and feelings of hunger and satiation have come and

gone. Therefore, it is important to consider how autobiographical memories for past events might factor into the broader food selection process in the present day.

Food Choice Process Model

While countless theories exist to explain food behavior, the present work was designed within the Food Choice Process Model (FCPM; Furst et al., 1996) framework (see Figure 2.1). The FCPM model includes three main components: the life course, influences, and the personal food system (Devine, 2005; Falk et al., 1996; Furst et al., 1996; Sobal et al., 2006). The **life course** represents the various individual, micro-contextual, and macro-contextual factors that shape food choices across the lifespan. Within this framework, eating behaviors are conceptualized as agentic, accumulative, and anticipatory; people exercise agency in choosing their own food choices, experiences are accumulated across the life course, and life history is used to anticipate future food choices.

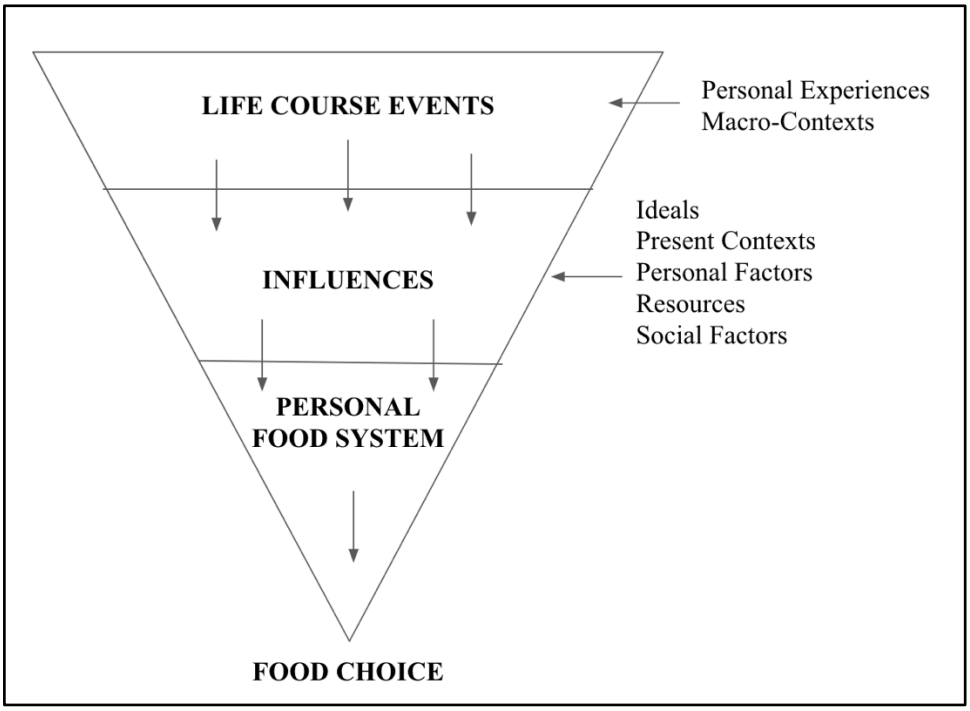

Figure 2.1. Food choice process model (adapted from Sobal et al., 2006).

Experiences over the life course help develop and shape multiple **influences** of food choice. Influences are commonly clustered into five domains: personal factors, resources, social factors, contexts, and ideals. *Personal factors* include individual characteristics (e.g., genetics, phobias, personality) that shape eating behavior. An individual who prioritizes personal factors over other influences is often particular about food choices and may engage in behaviors that differ from others' eating habits (Bove et al., 2003). *Resources* include tangible (e.g., money, equipment) and theoretical (e.g., effort, cooking skills) forms of capital that are used to make food choices. Resources are often used to exclude certain food choices and label them as unobtainable due to limited capital. *Social factors* include personal relationships that influence food choice. This influence is particularly pronounced when individuals eat with others or are required to manage others' food choices in addition to their own (Sobal & Nelson, 2003). *Contexts* include the larger physical system in which food choices are made. Issues of context include factors such as the seasonality of certain produce, media marketing, and policies regulating certain food behaviors. Finally, *ideals* are food standards developed through processes like socialization. Ideals reflect the social norms an individual is exposed to across the lifespan through their family, ethnic group, religion, culture, and other large social groups (Sobal, 1998; Devine et al., 1998). Many argue that ideals represent some of the most salient factors driving individual food choice (Falk et al., 1996; Sobal et al., 2006).

Together, these influences are internalized to create a **personal food system.** The personal food system synthesizes an individual's various experiences and influences to assign tangible or symbolic value to different foods (Connors et al., 2001; Furst et al., 1996; Jabs et al., 1998; Sobal et al., 2006). This system is also used to balance competing attributes when

necessary. While many food values co-exist quite easily within the United States (e.g., high convenience, low cost), others are historically harder to align (e.g., high quality, low cost). In such situations, individuals use their personal food system to not only assign value to food, but also negotiate competing values and prioritize foods that reflect their larger goals.

The FCPM framework was chosen because its theoretical assumptions overlap with those commonly found within the autobiographical memory literature. First, the FCPM is rooted in a biopsychosocial perspective of health. Biopsychosocial perspectives suggest that health behaviors and outcomes are related to the overlapping influence of psychological and social factors, in addition to biological factors (Engel, 1980). As described previously, autobiographical memory is perceived as a psychologically and socially driven phenomenon. Therefore, the hypothesized link between the autobiographical memory system and food relies on the fundamental belief that food behaviors are also susceptible to the influence of psychological and social factors.

Second, the model incorporates a constructionist approach to eating (Berger & Luckmann, 1967; Spector & Kitsuse, 1987). This approach frames people as active agents in their food behaviors and decisions. While food choices are heavily influenced by external factors, this approach emphasizes the individual variation in how people interpret, perceive, and act on food influences. This is similar to the functional approach to autobiographical memory, which frames the act of remembering, and discussing memories, as a purposeful and functional act that is also susceptible to individual variations (see Chapter 3 for more details).

Finally, the FCPM framework incorporates the dynamic life course perspective (Baltes et al., 1998; Elder, 1985), which posits that an individual's present behavior is shaped by the accumulation of experiences across the lifespan (i.e., the past influences the present). This

perspective has become commonplace in other work on health behaviors and trajectories in recent years (e.g., Darnton-Hill et al., 2004; Heikkinen, 2011) and provides a more dynamic understanding of food choices. This perspective overlaps nicely with the perception of the self, behaviors, and identity as an accumulation of interwoven memories across the lifespan.

Although the autobiographical memory system is not explicitly mentioned as a component of the FCPM framework, its presence is implied throughout each level of the model. Within the life course, past experiences with food are accumulated and referenced across the lifespan. Presumably, this process would require the encoding, storage, and retrieval of personal memory information over the long term, a process that is rooted in the episodic memory system (Baddeley, 2001; Tulving, 2002). Moreover, the act of inferring meaning and value from an accumulation of multiple past events suggests the capacity to synthesize multiple memory events into a coherent, overarching narrative, an ability that is tied specifically to autobiographical memory (Fivush & Nelson, 2006). Shifting to food influences, autobiographical memory seems particularly relevant to the development of ideals. As described previously, the concept of the self and identity is derived from the autobiographical memory system (Fivush, 2011; Wang, 2013). Thus, many of the ideals that inform food influence (e.g., cultural norms, beliefs, ideology) are rooted in the presence of autobiographical memory. Finally, the personal food system again relies on the ability to consistently access, interpret, and draw meaning from past experiences with food. The autobiographical memory system allows individuals to make inferences about the past that are consciously accessible and personally meaningful (McAdams, 1985; McLean, 2017).

In summary, the Food Choice Process Model provides an apt theoretical background for investigating the role of autobiographical memory within the food system. Within the presented

framework, past experiences appear to be a promising mechanism for understanding, and potentially modifying, eating behaviors and practices. Recently, evidence for this premise has shifted from the theoretical to the tangible, and researchers have begun to systematically explore the implications of autobiographical food memories, specifically within the context of the caregiver-child relationship.

Family Food Processes

Children's eating behaviors serve as robust predictors of their development, health, well-being, and life satisfaction across the lifespan (Reilly et al., 2003; Williams et al., 2011). The eating patterns we learn as children often persist into adulthood, making the early establishment of healthy nutritional habits crucial for the prevention of the short- and long-term health consequences associated with obesity and maladaptive eating (Kelder et al., 1994; Li & Wang, 2008; Lien et al., 2001; Lobstein et al., 2004; Mikkilä et al., 2004; Must & Straus, 1999; Reilly et al., 2003; Skouteris et al., 2012; Trost et al., 2003). Given rising rates of obesity within the United States (Hales et al., 2017, 2020), researchers, clinicians, and policymakers alike have worked to understand how childhood food environments are formed and found that caregivers both control children's actual food consumption and shape how children are socialized to think about food (Hoerr et al., 2009; Lobstein et al., 2004; Pesch & Lumeng, 2018; Rozin, 1996; Skouteris et al., 2012).

A few studies conducted within the past decade have tried to bridge our understanding of caregivers' complex food choices and autobiographical memories. During recent qualitative interviews conducted by Fox and Alldred (2019), multiple adults mentioned using their personal memories for childhood food experiences to inform their current eating behavior. In other work, caregivers reference using memories of past family meals to inform their own children's food

experiences, thus creating an intergenerational transmission of family meal practices and ideals (Trofholz et al., 2018). Moreover, caregivers in a separate study reported actively trying to either mimic or avoid their childhood food environments depending on whether they were remembered as pleasant or unpleasant (Malhotra et al., 2013).

Taken together, this limited body of research on food memories supports the theoretical assumptions of the FCPM and suggests that food events experienced over the lifespan are internalized through memories and used to inform current food choices. However, the FCPM also demonstrates that there are numerous other factors to consider when analyzing food choices. Research with caregivers in particular demonstrates that seemingly simple food decisions within the family unit usually involve a complex choreography shaped by parents' resources, family preferences or biological needs, competing schedules, time constraints, and food availability, among other influences (Afflerback et al., 2013; Agrawal et al., 2018; Allen et al., 2008; Anderson, 2012; Bauer et al., 2012; Brannen et al., 2013; Dixon et al., 2014; Southernton, 2006; Trofholz et al., 2018a; Tubbs et al., 2005).

With so many competing demands and constraints at play, it is understandable that the role of autobiographical memory has been generally overlooked within the study of caregiver food choices to date. Yet, highly salient food memories have been reported across countless cultures, geographical locations, and eras. This potency and ubiquity suggest that successful intervention on the level of the food memory could be applicable to large portions of the world's population. Therefore, the series of studies outlined in the present dissertation explore how food memories may be used to inform policy and choices related to food and understand subcultural health disparities within the United States.

CHAPTER 3: CULTURE, MEMORIES, AND FOOD

In 2020, the Diversity Index (DI) of the United States was calculated as 61.1%, a roughly 7% increase from the DI noted in 2010 (U.S. Census, 2020). Put plainly, this means that there is a 61% chance that two people chosen at random from the U.S. population will belong to different racial or ethnic groups from one another. While the origins of this diversity are many, one key factor is likely that The United States of America was founded through settler-colonialism and forced migration (Andrews, 1836; Andrews, 1988; Dei, 2017; Hixson, 2013; Mamdani, 2015; O'Malley, 2016; Wolfe, 2006), meaning that many U.S. citizens can trace their ancestry to other geographical and cultural origins (Hixson, 2013; Veracini, 2011). As a result, the U.S. is home to a diverse array of cultural beliefs and identities.

The cultural diversity of the U.S. interacts with the concept of food memories in multiple noteworthy ways, and the framework outlined in this dissertation focuses on two key factors. First, there are robust diet-related health disparities within the United States, meaning that certain subcultural groups, typically racial and ethnic minorities, experience consistently lower-quality dietary patterns and inferior health outcomes relative to other subcultural groups (Bell & Lee, 2011; Graham, 2004; Smedley et al., 2008; Williams et al., 2010). Second, recent work demonstrates that the autobiographical memory system is heavily influenced by multiple cultural factors, suggesting that food memories may be susceptible to cultural considerations as well. Before moving to further discussion of these points, it is important to specify how key terms were defined within the scope of the present projects.

Key Terms

Subcultural Group

The term *subculture* or *subcultural group* refers to socially constructed identifiers, often rooted in racial and ethnic identity, that influence an individual's perceptions and experiences (Gunaratnam, 2013). According to the most recent U.S. Census (2020), approximately 57.8% of people in the U.S. self-identity as White American, 18.7% as Hispanic/Latino Americans, 12.1% as Black/African American, and 5.9% as Asian American. These groups represent the four largest subgroups within the U.S. and were therefore chosen as the primary focus in the present studies. Specific definitions for each subgroup were pulled from the language used in the 2020 U.S. Census and are listed in Appendix A. Abbreviations will be used to label Hispanic/Latino (HLC) and Black/African American (BAA) participants in figures and tables when necessary.

Cultural Ideology

Cultural ideology refers to a set of cultural beliefs and norms, most often about the self, social arrangements, and group membership, that is commonly shared by multiple people within a cultural group (Triandis, 2004; Triandis et al., 1988). The present studies measured four aspects of cultural ideology: collectivism, individualism, vertical orientation, and horizontal orientation. *Collectivism* refers to a cultural ideology rooted in a group-oriented approach to the self and society. People who identify as highly collectivist are group-oriented and value the greater well-being over individual gain. Their sense of self is defined by relationships with others, including their larger community (Hui & Triandis, 1986). *Individualism* refers to a cultural ideology rooted in an individual-oriented approach to the self and society. People who identify as highly individualistic are self-oriented and driven by personal goals. They endorse the concept of independence and personal achievement over larger, group-oriented goals and base behaviors on their personal attitudes and preferences. While it is not uncommon within the literature for collectivism and individualism to be treated as polar ends of a continuum, many researchers

suggest it is more accurate to view them as two, non-mutually exclusive values (Chang et al., 2011; Markus & Kitayama, 2010; Oyserman et al., 2002). *Horizontal orientation* refers to a cultural ideology rooted in the belief of egalitarian social structure. People who identify with a horizontal orientation are generally accepting of interdependence and equality and engage in limited social comparison. *Vertical orientation* refers to a cultural ideology rooted in the belief of a hierarchal social structure. People who identify with a vertical orientation value social rank and status and are accepting of inequality.

Western/Eastern Ideals

Much of the early research in cultural psychology, and within the field of autobiographical memories specifically, focused on the dichotomous comparison of Western and Eastern ideals/populations. *Western ideals* refer to the beliefs, practices, and values that are commonly found in populations of White or European Americans. Western values are traditionally associated with individualism and vertical orientations – there is a strong focus on independence and autonomy of the self (Marksu & Kitayama, 2010). Competition and achievement are encouraged, and success is status oriented (Schweder et al., 1998; Oyserman et al., 2002). Samples that are commonly defined as "Western" within the cultural literature are usually collected from the United States, and in particular, individuals within the United States who identify as White and/or European American. *Eastern ideals* refer to the beliefs, practices, and values that are commonly found in East Asian populations. Eastern values are traditionally associated with collectivism and horizontal orientations, although some argue that Chinese culture is more vertical than horizontal (Triandis, 1995). Regardless, Eastern values are focused on connecting with the larger-in-group. The sense of self is derived from connections with others and the well-being of the community is prioritized over personal growth or wellness

(Markus & Kitayama, 2010). Samples that are commonly defined as "Eastern" within the cultural literature are usually collected from China and other countries in East Asia (e.g., Japan, Korea) or include individuals within the United States who identify as Asian American (see Wang, 2021 for review).

Majority and Minority Groups

The terms *majority group* and *minority group* have a demographic definition and a sociological definition, which may or may not overlap. From a demographic perspective, *majority group* refers to the most populous subgroup within a nation or region, while *minority group* refers to subgroups that are smaller than the majority (Meyers, 1984). Within present-day sociology, however, the terms are expressions of dominance, power, and advantage—the majority group represents the most dominant, powerful, and advantaged group in the region while minority groups are more frequently disadvantaged, tend to hold less power, and often face discrimination and structural inequalities at the hands of the majority group (Healey et al., 2019).

Majority/minority status is fluid, complex, and variable depending on the culture, the region, the observer, and the subject (Laurie & Khan, 2017). However, within the United States, White Americans currently represent the most populous subgroup and have historically maintained positions of power and authority, whereas Hispanic/Latino Americans and Black/African Americans, and Asian Americans represent less populous subgroups and have historically experienced systemic marginalization (Mamdani, 2015). Therefore, within the present studies, White Americans will be referred to as belonging to the *majority* and Hispanic/Latino Americans, Black/African American, and Asian Americans will be referred to as belonging to the *minority*.

Food Systems and Cultural Considerations

Food and culture are fully intertwined – food is an expression of culture, and culture influences how we express and approach food. Researchers suggest that eating behaviors offer a prime example of a preadaptation. That is, eating behaviors initially evolved out of necessity for sustenance but have since be co-opted into a highly social behavior imbued with meaning and culture (Rozin, 2006). Therefore, what we eat, how we eat, when we eat, and who we eat with is both biologically and socially motivated.

Many subcultural groups have certain types of foods (e.g., "soul foods" or "heritage foods") that are deeply entrenched in social meaning and history (James, 2004; Williams-Forson, 2013). As a result, food choices are often used to emphasize in-group membership and allegiance towards a specific cultural background (Chapman et al., 2011; Fiddes, 1991; Guendelman et al., 2011; Janowski, 2012; Valliantos & Raine, 2008; Vue et al., 2011). For example, many Hispanic/Latino caregivers report making a concerted effort to serve their children "heritage foods" that reassert their cultural identity (Fuster et al., 2019). Similarly, if caregivers feel a strong connection to a larger social group, they can use the consumption of food to emphasize their child's connection to those groups and understanding of their role as a global citizen (e.g., other Muslims around the world are engaging in iftar to break their fast).

Conversely, some cultural beliefs may encourage the avoidance of certain food or eating behaviors. For example, many dishes within the Black/African American community were established within the context of slavery and oppression, and this association remains salient in present society. During qualitative interviews about cooking, multiple Black/African American women reported struggling to mentally disentangle the legacy of oppression that ties kitchen work and cooking to slavery (Manring, 1998; Wallace-Sander, 2008). Similarly, Black/African

American adults participating in a study on nutritional interventions reported feeling that healthy eating was synonymous with conformity to majority culture and could only be obtained through a forfeiture of their ethnic identity or heritage (Parker & Grinter, 2004).

Within the context of the family, there are noted subcultural variations in how caregivers perceive their child's health and approach feeding their family (Andrew et al., 2010). For example, in predominantly White samples, caregivers who report frequently restricting their child's eating also report high levels of concern over their child's weight and health status (Birch et al., 2001). However, the two variables are inversely correlated in Black/African American samples, with caregivers who frequently engage in feeding restrictions reporting lower levels of concern over their child's weight and health status (Anderson et al., 2005). While the exact reasons behind this difference are unknown, researchers argue that culturally constrained differences in food behaviors and motivations are responsible. They suggest that while White caregivers may be motivated to restrict food intake for nutritional purposes, Black/African American caregivers may be motivated by more socially-drive motivations, like not wanting their child to "spoil" their dinner (Anderson et al., 2005). Further complicating matters are subcultural difference in caregivers' baseline perceptions of child health. On average, Hispanic/Latino and Black/African American caregivers underestimate the weight of their children more often than White caregivers (Anderson et al., 2005; Baughcum et al., 2000; Killion et al., 2006). In addition, Black/African American caregivers are more likely than Hispanic/Latino caregivers to perceive their child as average or underweight when they actually meet the criteria for being overweight (i.e., body mass index equal to or higher than the 85th percentile; Anderson et al., 2005).

Understandably, researchers have begun to question whether these cultural variations influence the efficacy of healthcare in the U.S. To date, many nutritional interventions developed within predominately White communities have failed to translate to minority communities (e.g., Brown et al., 2002; Warda, 2000), and some suggest this is due, in part, to a limited effort to integrate cultural perspectives (Sato et al., 2014; Warin et al., 2008; Williams & Collins, 1995). Research demonstrates that culturally insensitive healthcare can cause feelings of social isolation, reduce treatment efficacy, lower adherence rates, and make people less likely to try future programs (James, 2004; Horowitz et al., 2004; Karanja et al., 2002; Parker & Grinter, 2014; Plowden & Thompson, 2002; Sanders-Thompson, 2002). As a result, there is a growing coalition of public health officials and medical researchers who argue that health disparities must be examined, understood, and addressed within a cultural context. From this perspective, then, autobiographical memories may be a key mechanism to consider.

Sociocultural Differences in Autobiographical Memory

The memory system is undeniably saturated by the influence of culture (see Wang, 2021 for recent review). Even on a basic perceptual level, we find that the perceptual encoding of time (Boroditsky et al., 2011), space (Goek et al., 2015; Levinson, 1997), and colors (Roberson et al., 2005) vary cross culturally. Similar influences are found throughout the entire human mnemonic system and are particularly pronounced within the realm of autobiographical memories. As described in Chapter 1, the functional approach to autobiographical memory suggests that autobiographical memory exists as a functional tool that we use to adapt to and interact with our environment (Bluck, 2003; Conway & Pleydell-Pearce, 2000). From this perspective, cultural differences in autobiographical memory are expected; different environmental and social pressures would require different adaptations within the mnemonic system. And indeed, a

substantial body of work has revealed consistent cultural differences in the structure, content, valence, functional usage, and accessibility of autobiographical memory (e.g., Wang, 2013, 2016).

Independence and Interdependence

Given how intertwined the autobiographical memory system is with our view of the self, cultural variations in self-perception are thought to play a crucial role in producing cultural differences in autobiographical memories (e.g., Wang, 2013, 2016). As discussed previously, people with Western ideals, such as European Americans, view self-expression and autonomy as the norm. This perspective is sometimes referred to as an independence self-construal and it encourages the encoding and retrieval of personal, self-centered experiences (Han et al., 1998; Wang, 2001; Wang & Ross, 2005). Recalled experiences tend to be focused on specific, detailed, one-time events, especially if those events were related to personal achievement autonomy (Jobson et al., 2014; Wang, 2001, 2006). For example, a study comparing European American and Korean children found that European American children talked more about their own perspective and roles in an activity than Korean Children (Chae et al., 2006).

In contrast, Eastern cultures prioritize group-level harmony and relationships. This perspective is sometimes referred to as an interdependence self-construal and it encourages the encoding and retrieval of group level, relationship-centered experiences (Han et al., 1998; Schweder et al., 1998; Wang, 2001; Wang & Ross, 2005). Recalled experiences tend to be focused on general, routine experiences that emphasize the individual's affiliation with social conventions. Interdependent individuals strive to secure relationships and become affiliated with others, and their autobiographical memory privileges the storage of information related to group activities and social harmony.

Self Enhancement and Improvement

Our goals for the self also interact with the autobiographical memory system. From a functional perspective, our autobiographical memories exist to help us achieve goals, meaning that our mnemonic systems will prioritize the information that best aligns with larger cultural expectations and goals. In other words, we are far more "skilled" at remembering information that is culturally relevant. Western cultures expect people to maintain a positive sense of self and encourage the pursuit of self-satisfaction, while Eastern cultures emphasize improvement of the self. As a result, individuals with Western values tend to recall past events that boost their self-perception, while individuals with Eastern values frequently recall memories that boost self-confidence but also incite criticism (Endo & Meijer, 2004). Similarly, researchers found that Westerner participants remembered performing better on a task than Asian participants, despite equal performance levels (Oishi & Deiner, 2003).

Emotional Expression

Variations in language and memory socialization are also likely key mechanisms behind cultural differences in autobiographical memories. Semantic concepts do not unilaterally translate across all languages, and some emotional concepts may be particularly challenging to express within specific cultures. For example, "futterneid" is a German word that essentially means food envy – it is used to describe the feeling of jealousy you experience when someone is eating a food that you enjoy. The term "natsukashii" is a Japanese term for a mixed emotion related to nostalgia; it is used to express the combination of happiness and sadness one might feel when thinking about a positive experience that is in the past. Even with emotions that are more universal, there are cultural differences in how we are taught and expected to express them.

Western cultures perceive happiness as a common and crucial component of a good life, while Eastern cultures believe life should contain both highs and lows (Oishi, 2002). As a result, autobiographical memories are reconstructed in a manner that supports these beliefs, and Westerners are more likely to recall positive rather than negative experiences, while Asian Americans recall positive and negative experiences at similar rates (Oishi, 2002). The two cultures also vary in their beliefs about the purpose of emotions and how they should be addressed and communicated. Overall, individuals with Eastern orientations view emotions as potentially disruptive to others and hesitate to disclose them (Kim et al., 2008). As a result, Eastern mothers are less likely to talk to their children about internal states, and Eastern children are less likely to mention information about affect or subjective states when talking about the past (Wang 2004, 2006). In contrast, Western individuals see emotions as an expression of individuality. Therefore, Western parents discuss internal states with their children often, and Western children frequently talk about their desires, feelings, and thoughts when discussing the past (Denham & Kochanoff, 2002; Wang, 2004, 2006).

Memory Sharing and Functions

Finally, autobiographical memory is shaped by our understanding of what makes a "good" narrative. During the process of memory socialization, we are explicitly and implicitly taught what information is most important to remember and how we are expected to use our memories for the past. Those points are then privileged during the encoding and retrieval process. For example, intergenerational narratives play a crucial role in maintaining the culture of the Māori, an indigenous Polynesian ethnic group in New Zealand (MacDonald et al., 2000;

Reese et al., 2009).[1] Likely as a result, Māori adults report significantly earlier memories than European or Asian adults and cite family stories as a primary source of their earliest memory information (MacDonald et al., 2000).

Similarly, the Tohono O'odham, a community indigenous to the Sonoran Desert, have a long history of using oral storytelling to teach children. Recent research demonstrated that familial engagement in traditional practices was related to children's incidental recall of a folk story described near them (i.e., to another child in the same room) but not directly to them. Researchers posited that children who were deeply immersed in tribal tradition perceived the folk story as more important and therefore more worthy of listening to and remembering than children less familiar with tribal tradition (Tsethlikai & Rogoff, 2013). Within the context of Western/Eastern comparisons, Western caregivers tend to talk about the past with their children for the goal of facilitating autonomy and helping children dissect their own actions and experiences, while Eastern parents focus more on teaching children behavioral standards that will allow them to assimilate into the larger community (Wang & Fivush, 2005). These patterns are then reflected in the way children describe the past both during conversations with their caregivers and with others, such that Western children make more spontaneous references to the self when describing the past, while Eastern children make more references to social rules and group activities (Han et al., 1998; Wang, 2003; Wang & Leichtman, 2000).

In summary, individuals who identify with Western or individualistic values tend to have an independence orientation focused on self enhancement, perceive emotions as a unique expression of the self, and see autobiographical memory as a tool for achieving autonomy and

[1] Common proverbs (or *whakataukī*) in Māori include *kia mau koe ki ngā kupu o ōu tupuna* ("Hold fast to the words of your elder") and *kia whakatōmuri te haere whakamua* ("I walk backwards into the future with my eyes fixed on my past")

development of the self. As a result, these individuals recall memories that are more egocentric, focused on specific and unique experiences, rich with emotional detail and expression, generally positive in nature, and retrieved with the goal of further building the identity. In contrast, individuals who identify with Eastern or collectivist values tend to have an interdependence orientation focused on self-improvement and group well-being, perceive emotions as a potential disruption to social harmony, and see autobiographical memories as a tool for confirming relationships with others and learning social expectations. As a result, these individual recall memories that are less egocentric, focused on general, socially conventional experiences, include limited emotional information, include both positive and negative aspects, and are retrieved with the goal of maintaining relations.

Yet, none of the robust differences mentioned above have been documented within the context of food-specific memories. Instead, the majority of literature on food memories characterizes them quite consistently – they are described as detailed memories, often positive or nostalgic in valence, focused on social environments, and frequently retrieved from childhood experiences. Theoretically, this suggests that either (1) food memories are, for some reason, particularly impervious to cultural influences, or (2) our understanding of food memories is woefully underdeveloped and overlooks the very groups that are most at risk for diet-related disparities. Therefore, the program of research outlined in the present dissertation aimed to rectify this oversight.

CHAPTER 4: EMPIRICAL WORK

Study Overview

It is not an overstatement to say that food is life. Starting in infancy, eating habits fuel our everyday functioning and serve as robust predictors of health, well-being, and life satisfaction

(Grunert et al., 2007; Reilly et al., 2003; Ruddock et al., 2019; Williams et al., 2011). However, food does more than provide sustenance. From celebratory birthday cake to holy communion, food is also a deeply meaningful and symbolic aspect of the human experience (Fiese et al., 2006; Fischler, 1980; Fox, 2003; Harris, 1998; Jones, 2007; Lupton, 1994; Mintz & Du Bois, 2002; Rossano, 2012; Thomson & Hasenkamp, 2002; Vohs et al., 2013; Wallendorf & Arnould, 1991). As a result, food has social significance and our food choices, behaviors, and beliefs are culturally constructed.

Food choices can be particularly complex for the majority of caregivers in the United States, as they are required to balance their own preferences, health, and goals with those of their children. Viewed within the Food Choice Process Model (FCPM; Furst et al., 1996) framework, the mechanism behind this balancing act is called the personal food system. A personal food system is used to assign value to foods and prioritize different values when we make food choices. We develop our personal food system based on the personal experiences we encounter across the lifespan. In accordance with this framework, then, the autobiographical memory system plays a crucial role in shaping food values and food choices (Furst et al., 1996).

Autobiographical memories perform a variety of functions and serve as a key mechanism for the intergenerational transmission of beliefs, values, and behaviors (Bluck et al., 2010; Fivush et al., 2011; Wang, 2013). Preliminary evidence suggests food memories, which are frequently characterized as highly salient and long lasting, are related to food behavior in the short term, and potentially in the long term (Seitz et al., 2021). However, researchers have yet to examine this phenomenon from a cultural perspective, despite known cultural differences in more general autobiographical memories (Wang, 2021). This omission limits the insight researchers can offer regarding the generalizability and efficacy of nutritional initiatives within

the U.S., leading to the potential marginalization of groups that are already at a higher risk for health disparities.

The series of study outlined in this dissertation introduce a new area of developmental research that combines cognitive science, health, and cultural psychology to explore how families from different subcultural groups engage in the intergenerational transmission of food experiences, values, and attitudes across the lifespan. The goal of Study 1 was to identify if and how food memories vary from non-food memories. In this study, I used a mixed-method approach to compare the phenomenology and linguistic contents of childhood food and non-food memories in a diverse sample of adult caregivers. This study was the first to my knowledge to directly compare childhood autobiographical memories about food to non-food memories. The goal of Study 2 was to examine the findings of Study 1 from a cultural perspective. Specifically, Study 2 was designed to identify whether the subcultural differences commonly reported in non-food memories also appear in food memories. In this study, I identified subcultural differences in food memory phenomenology and explored the role of cultural ideology as a moderator. This was the first study to my knowledge to record cultural differences in childhood autobiographical food memories. Finally, Study 3 aimed to begin establishing a cultural framework connecting early autobiographical memories about food and health outcomes. Based on the findings from Study 1 and Study 2, moderated mediation models were used to establish an association between food memory phenomenology and various health outcomes, with the mediating role of eating motivations and the moderating role of culture considered. This framework lays the foundation for a new interdisciplinary subfield of research focused on exploring the interaction between autobiographical memory and family health behaviors from a cultural perspective.

Method

All data were collected using online participant-sourcing platforms (Cloud Research, Prolific) and the same sample was used for all three studies included in this dissertation. As described in detail below, workers were initially screened for inclusion using the information provided in their Cloud Research/Prolific participant profile. Workers on Prolific were also asked to fill out a separate five question pre-screener to ascertain whether they had a child in the targeted age range.[2] Qualified workers were invited to take the main survey. At the beginning of the main survey, workers were asked to confirm the information provided in their participant profile and/or pre-screener. Workers who did not pass this secondary pre-screener were informed of their ineligibility and immediately redirected back to Cloud Research/Prolific without finishing the survey.

Participants

Pre-screener

Data were collected using Cloud Research (formerly known as TurkPrime) and Prolific, two online participant-sourcing platforms that allow individuals to complete surveys for a monetary incentive. Both platforms are commonly used within the social sciences and produce high quality data when filters and screenings are used appropriately (Buhrmester et al., 2011; Chandler et al., 2019; Eyal et al., 2021; Peer et al., 2017). Moreover, these platforms allow for access to more diverse samples than other forms of in person data collection, which commonly use undergraduate subjects or snowball sampling (Casey et al., 2017; Huff & Tingley, 2015).

The demographic panels available on Cloud Research were sufficient for identifying our population of interest; we could filter workers based on the age, current country of residence,

[2] Cloud Research workers who identify themselves as a primary caregiver report the age of their child(ren) on their profile. This information is not readily available on Prolific.

primary subculture, caregiver status, and child age provided in their research profile. Prolific includes multiple panels as well but does not have a child age demographic panel. Therefore, we had to utilize a demographic pre-screener before recruiting Prolific workers for the main survey. The demographic pre-screener was created using Qualtrics and advertised to Prolific workers who indicated in their profile that they were at least 18 years old, lived within the United States, identified as either White, Black/African American, Hispanic/Latino, or Asian, and were the primary caregiver to at least one child. In the demographic survey, participants were asked to confirm their age, current country of residence, primary subculture, and caregiver status. They were additionally asked whether they were the primary caregiver of a child between the ages of three and eight years old. All participants who completed the pre-screener survey (n = 431) received a small monetary incentive of $0.32 USD. Participants qualified for the main survey if they indicated during the pre-screener that they were over the age of 18, currently lived in in the United States, identified as one of the four target subcultural groups (White, Black/African American, Hispanic/Latino, or Asian), and were the primary caregiver of a child between the ages of three and eight years old.

Main Survey

Prolific participants who qualified via the pre-screener (n = 307) and Cloud Research participants who met the qualification criteria based on their research profile were invited to complete the main survey via Qualtrics. Recruitment for each subgroup was closed after 70 participants from that group preliminarily qualified for inclusion in the final sample. Target sample size was determined by an a priori power analysis in *G*Power* (Faul & Erdfelder, 1992) assuming a <10% post-hoc exclusion rate, a moderate (r = .30) correlation among within-subjects variables, and small-sized (f = 0.18) effects. In total, 305 participants (Prolific, n = 143;

Cloud Research, n = 162) completed the main survey. All participants who completed the main survey received $6.30 USD (Prolific) or $4.10 USD (Cloud Research). Participant payment scales were set based on best practices provided by each website (Prime Research Solutions, 2021; Prolific Team, 2022) and pilot data suggesting an average completion time of 40 minutes. Prolific requires a minimum payment of $8.00/hr USD ($5.33 for 40 minutes) and Cloud Research recommends a minimum payment of $6.00/hr USD ($4.00 for 40 minutes).

Prior to data collection, inclusion/exclusion criteria were determined for the data. Participants who completed the main survey would be excluded from the final sample if they failed more than two of the six attention checks included in the survey (n = 1), took the survey in less than 1200 seconds (n = 1)[3], provided inconsistent information (i.e., indicated they identified primarily as Asian at the beginning of the survey, but White at the end of the survey; n = 5), did not belong to one of the subcultural groups of interest (n = 48), were suspected of being produced by bot activity (n = 9)[4], or indicated during the main survey that they did not have a child between the ages of 3 and 8 years old (n = 2). Based on these criteria, 66 participants were excluded from the final sample.

The final sample consisted of 239 primary caregivers of a child between the ages of 3 and 8 years old (White, n = 67; Black/African American, n = 64; Hispanic/Latino, n = 61; Asian, n = 47). Caregivers ranged in age from 21 to 58 years old (M = 35.59, SD = 6.34) and over half (54.8%) of the caregivers were biological mothers. Caregivers reported about children across the full range of 3- to 8-years of age (M = 5.67 years, SD = 1.60 years) and child racial demographics were similar to that of caregivers (White, n = 77; Black/African American, n = 57;

[3] An average completion time of 2400 seconds was estimated based on pilot data.
[4] For example, one suspected bot provided the following as a memory description: “The dickey was a very natty boy and very jolly feeling on our faces all time and its make a very interesting in some vegetable foods like a carrot.”

Hispanic/Latino, *n* = 55; Asian, *n* = 38; multiracial, *n* = 11; prefer not to report, *n* = 1). Full demographic information split by parent subcultural category and data collection method (Prolific, Cloud Research) is available in Tables 4.1 and 4.2.

Measures

Memory Descriptions

Participants were prompted to recall two food-related memories (one positive, one negative) and two non-food related memories (one positive, one negative) from their early childhood, defined here as occurring between the ages of three and eight (e.g., Sidik & Ahmad, 2004). A food-related memory was defined as any memory related to the consumption or presence of food, while non-food memories were defined as any memory unrelated to food. See Appendix B for full description. Participants were asked to provide a nickname for each memory that could serve as a retrieval cue during subsequent questioning (e.g., "How vivid was your [NICKNAME] memory?"). Participants then described the memory in as much detail as possible.

Memory Age and Phenomenology

After describing the memory, participants were asked multiple questions about the memory's phenomenology. Specifically, participants were first asked to estimate how old they were to the nearest month when the memory event occurred. Participants were then asked to indicate whether their memory was personal or social, herein referred to as memory sociality, and general or specific, herein referred to as memory specificity. Finally, participants were asked to rate the phenomenology (i.e., frequency of rehearsal, personal importance, vividness, emotional intensity, and arousal) of the memory on a Likert scale of 1 to 5 (Wang & Conway, 2004). See Appendix C for full list of questions.

Table 4.1

Sample Demographics within Subculture

Demographic Variable	White (n = 67)	Black, African American (n = 64)	Hispanic, Latino (n = 61)	Asian (n = 47)
Parent Gender				
Male	38.8% (26)	43.8% (28)	39.3% (24)	44.7% (21)
Female	61.2% (41)	56.3% (36)	60.7% (37)	55.3% (26)
Parent Age*	35.49 ± 6.68	33.65 ± 5.80	35.13 ± 6.58	37.91 ± 5.56
Caregiver Relationship				
Mother or stepmother[a]	56.7% (38)	56.3% (36)	57.4% (35)	53.2% (25)
Father or stepfather[a]	38.8% (26)	37.5% (24)	37.7% (23)	44.7% (21)
Parent's partner[b]	1.5% (1)	3.1% (2)	-	-
Grandparent, aunt, or uncle	3.0% (2)	1.6% (1)	4.9% (3)	-
Cousin or older sibling	-	1.6% (1)	-	2.1% (1)
Child Gender				
Male	58.2% (39)	44.4% (28)	52.5% (32)	51.1% (24)
Female	41.8% (28)	55.6% (35)	47.5% (29)	48.9% (23)
Child Age*	5.75 ± 1.56	5.56 ± 1.59	5.73 ± 1.72	5.64 ± 1.69
Child Subculture				
White	94% (63)	1.6% (1)	14.8% (9)	8.5% (4)
Black/African American	3% (2)	87.3% (55)	0% (0)	0% (0)
Hispanic/Latino	3% (2)	3.2% (2)	83.6% (51)	0% (0)
Asian	0% (0)	3.2% (2)	0% (0)	76.6% (36)
Multiracial	0% (0)	4.8% (3)	1.6% (1)	14.9% (7)
Annual Household Income	$77,807	$75,249	$83,430	$118,390
Parent Education Level				
High school or GED	7.5% (5)	10.9% (7)	16.4% (10)	2.1% (1)
Some College	23.9% (16)	14.1% (9)	27.9% (17)	4.3% (2)
College Graduate	44.8% (30)	35.9% (23)	44.3% (27)	59.6% (28)
Graduated Degree	23.9% (16)	39.1% (25)	11.5% (7)	34.0% (16)

Note. Data are presented as $M \pm SD$ or %(n) as appropriate
*Values expressed in years.

a. Include both biological and adoptive parents
b. Partner confirmed they live in household with the child

Table 4.2

Sample Demographics within Data Collection Method

Demographic Variable	Prolific (n = 137)	Cloud Research (n = 102)
Parent Gender		
Male	52.6% (72)	26.5% (27)
Female	47.4% (65)	73.5% (75)
Parent Age*	35.60 ± 6.69	35.11 ± 5.87
Parent Subculture		
White	20.4% (28)	38.2% (39)
Black/African American	26.3% (36)	27.5% (28)
Hispanic/Latino	27.0% (37)	23.5% (24)
Asian	26.3% (36)	10.8% (11)
Caregiver Relationship		
Mother or stepmother[a]	44.5% (61)	71.6% (73)
Father or stepfather[a]	49.6% (68)	25.5% (26)
Parent's partner[b]	0.7% (1)	1.0% (1)
Grandparent, aunt, or uncle	2.9% (4)	1.0% (1)
Cousin or older sibling	1.5% (2)	1.0% (1)
Child Gender		
Male	57.4% (78)	44.1% (45)
Female	42.6% (58)	55.9% (57)
Child Age*	5.59 ± 1.63	5.79 ± 1.56
Child Subculture		
White	25.7% (35)	41.2% (42)
Black/African American	24.3% (33)	23.5% (24)
Hispanic/Latino	24.3% (33)	21.6% (22)
Asian	21.3% (29)	8.8% (9)
Multiracial	4.4% (6)	4.9% (5)
Annual Household Income	$99,109	$69,562
Parent Education Level		
High school or GED	5.8% (8)	14.7% (15)
Some College	12.4% (17)	26.5% (27)
College Graduate	44.5% (61)	46.1% (47)
Graduate Degree	37.2% (51)	12.7% (13)

Note. Data are presented as $M \pm SD$ or %(n) as appropriate

*Values expressed in years.

a. Includes both biological and adoptive parents
b. Partner confirmed they live in household with the child

Cultural Ideology

The present studies included an abbreviated, 14-item version (Sivadas et al., 2007) of the original horizontal and vertical individualism and collectivism scale (Shavitt et al., 2006; Singelis et al., 1995). The abbreviated scale has been piloted in four ideologically distinct countries and appears to bypass some of the instability associated with the original scale (e.g., Cukur et al., 2004; Kurman & Sriram, 2002; Probst et al., 1999; Soh & Leong, 2002). Four items measure horizontal collectivism (HC) and vertical collectivism (VC), respectively, and three items measure horizontal individualism (HI) and vertical individualism (VI), respectively. All items were answered on a five-point scale (1 = disagree, 5 = agree).

Eating Motivations

The present studies utilized three subscales of the brief Eating Motivation Survey (TEMS; Renner et al., 2012). The full survey consists of the item stem "I eat what I eat…" followed by a list of 45 potential motives, separated into semantic categories like price, convenience, and visual appeal. Participants rate each motive on a seven-point scale (1 = never, 7 = always). Participants in the current project completed three subscales: Health, Affect Regulation, and Tradition Eating. Each subscale contained three motivations, for a total of nine motivations across the three subscales. See Appendix D for full list of motivations.

Health Questions

Participants answered three questions from the Child Feeding Questionnaire (CFQ; Birch et al., 2011) assessing concerns about their child's weight (1 = unconcerned, 5 = very concerned) and rated their perception of their child's weight (1 = markedly underweight, 5 = markedly overweight). Caregivers also provided their height in feet and inches and weight in pounds, as well as their child's height and weight.

Procedures

Qualified participants were given access to the main survey via Cloud Research or Prolific. At the beginning of the main survey, participants answered a series of questions to confirm they met the study inclusion criteria. Following these preliminary questions, participants were asked to recall four memories that occurred between the ages of 3 and 8 – one positive food-related memory, one negative food-related memory, one positive non-food related memory, and one negative non-food related memory. Participants provided a nickname and description for each memory, along with an age estimate and phenomenology rating. participants reported on one memory at a time and memory order was counterbalanced across participants. Participants were not given a time limit for recalling, describing, and rating their memories. Next, participants completed the cultural ideology survey, TEMS, and CFQ, along with other questionnaires unrelated to the present studies. Finally, participants answered a series of demographic questions to verify the information provided in the pre-screener and collect additional information about the participant and their family.

Data Processing

Memory Descriptions

A total of 955 memory nicknames and descriptions were exported verbatim from Qualtrics. Prior to data collection, exclusion criteria were identified for processing the memories. It was determined that memory descriptions and their associated ratings would be removed from the final dataset if the memory (1) was not about the correct topic (i.e., a “non-food” memory that contained references to food), (2) was not the correct valence (i.e., a “negative” memory that was positive in valence), or (3) had an age estimate outside the predetermined range of 3- to 8-years or no provided age estimate. During data collection, it was also noted that some

participants reported highly relevant contextual information or portions of their memory descriptions in the memory nickname section of the prompt, rendering the meaning of their actual memory description ambiguous. For example, one participant provided the memory nickname of "Visiting caves" and provided a memory description of "It was cold and dark. Dad showed a bunch of cool crystals and rocks. I remember wearing a red puffy jacket." It was decided that relevant contextual information provided in the memory nickname would be added to the memory description when appropriate. Two trained research personnel separately reviewed all memory descriptions and coded for exclusion from the data set and inclusion of nickname information in the memory description, respectively. The two sets of codes were then compared, and discrepancies were discussed until a final decision was reached. In total, 74 memories were excluded from the final analysis and eight memories had information moved from their nickname to the memory description, leaving a total of 881 usable memory descriptions. See Table 4.3 for details about exclusions by memory type, Table 4.4. for descriptive statistics regarding memory type and length, and Appendix E for representative examples of memory descriptions by memory type.

Memory descriptions were formatted and entered into the Linguistic Inquiry and Word Count (LIWC) software program (Pennebaker et al., 2015). LIWC is a text analysis software that compares transcripts, word-by-word, with a virtual dictionary containing almost 6,400 words split into 90 different semantic categories. LIWC calculates the number of words in the transcript that fit within each category and divides it by the total number of words in the transcript to create a proportion score for each semantic dimension. Categorization is not mutually exclusive, and a word can belong to multiple categories. As described in more detail below, I was interested in

Table 4.3

Number of Excluded Memories by Memory Type and Reason for Exclusion

Exclusion Criteria	Positive food (n = 238)	Negative food (n = 239)	Positive non-food (n = 239)	Negative non-food (n = 239)
Wrong topic	1.3% (3)	0.8% (2)	1.3% (3)	1.7% (4)
Wrong valence	-	2.1% (5)	0.8% (2)	2.5% (6)
Outside age range	5.5% (13)	4.6% (11)	6.7% (16)	3.8% (9)

Note. Data are presented as %(n)

Table 4.4

Descriptive Statistics by Memory Type for Usable Memory Data

Demographic Variable	Positive food (n = 222)	Negative food (n = 221)	Positive non-food (n = 218)	Negative non-food (n = 220)
Age estimate*	6.72 ± 1.30	6.73 ± 1.29	6.54 ± 1.34	6.78 ± 1.26
Total words	57.60 ± 37.13	68.22 ± 47.13	58.39 ± 38.44	68.81 ± 49.72
Rehearsal	3.35 ± 1.20	2.89 ± 1.22	3.13 ± 1.17	3.27 ± 1.23
Importance	4.05 ± 1.11	2.99 ± 1.32	3.60 ± 1.27	4.01 ± 1.07
Vividness	4.13 ± 1.05	3.97 ± 1.13	4.14 ± 1.01	4.06 ± 1.06
Emotional intensity	3.45 ± 1.23	3.54 ± 1.27	4.09 ± 1.05	3.56 ± 1.17
Arousal	4.56 ± 0.73	3.70 ± 1.26	4.12 ± 1.12	4.58 ± 0.68
Specificity				
Specific	53.2% (118)	75.1% (166)	66.5% (145)	81.4% (179)
General	45.5% (101)	24.4% (54)	33.5% (73)	18.2% (40)
Sociality				
Social	62.2% (138)	34.8% (77)	58.7% (128)	34.5% (76)
Personal	36.9% (82)	64.7% (143)	40.8% (89)	65.0% (143)

Note. Data are presented as $M \pm SD$ or %(n) as appropriate
*Values expressed in years.

assessing qualitative cues regarding the participants' cognitive processing and inclusion of certain themes, like family. Therefore, the dimensions of interest for the present study were references to cognitive processes, including insight (e.g., *think, know*), causation (e.g., *because, effect*), tentativeness (e.g., *maybe, perhaps*), and certainty (e.g., *always, never*), references to social actors, including family, friends, women (e.g., *girl, mom*), and men (e.g., *boy, dad*), time orientation language, including references to past focus (e.g., *ago, did*) and present focus (e.g., *today, now*), and perceptual processes (e.g., *look, feeling*). See Appendix F for examples from the memory descriptions of each dimension.

Memory Age and Phenomenology

Memory ages were exported from the Qualtrics survey and converted to years (i.e., 5 years, 2 months became 5.17 years). Reliability analyses were conducted within memory type for the five continuous phenomenology ratings (frequency of rehearsal, personal importance, vividness, emotional intensity, arousal) and values were indicative of acceptable to good levels of internal consistency (positive food memories, $\alpha = .823$; negative food memories, $\alpha = .774$; positive non-food memories, $\alpha = .800$; negative non-food memories, $\alpha = .775$).

Cultural Ideology

Composite scores for two ideological dimensions (collectivism, individualism) were created by averaging the questions associated with each construct. For example, to calculate the collectivism composite score, an average score was derived from the horizontal collectivism and vertical collectivism questions. Cronbach alphas calculated for each dimension indicate acceptable levels of internal consistency (collectivism, $\alpha = .740$; individualism, $\alpha = .789$).

Eating Motivations

Responses to the three TEMS subscales (Health, Affect Regulation, Tradition) were used to conduct a confirmatory factor analysis (CFA) using maximum likelihood mean-variance adjusted solutions in Stata 16 (StataCorp, 2019). Three factors with three items each were specified in accordance with the hypothesized factor structure of the original scale. Model fit was assessed by the χ^2/df ratio, comparative fit index (CFI) and the root-mean-square error of approximation (RMSEA; Kline, 2011). Good fit is generally indicated by a χ^2/df ratio of 2 to 5, with smaller ratios preferred, CFI values ≥ 0.95, and RMSEA values ≤ 0.06 (Browne & Cudeck, 1993; Hu & Bentler, 1999; Tabachnick & Fidell, 2007; Wheaton et al., 1977). All factor loadings were significant ($p < .001$), with standardized coefficients ranging from .58 to .96. Overall model statistics were indicative of a good fit, χ^2/df ratio = 1.97, CFI = .984, RMSEA = .060, 90% CI = .036-.091. Therefore, factor scores were computed for each subscale and used for subsequent analyses.

Health Questions

Participants' responses to the four CFQ questions were averaged to create a composite score representing caregivers' concerns about their child's weight, $\alpha = .839$. Height and weight values were used to calculate a body mass index (BMI) score for the caregiver and their child. BMI is a commonly used screening tool for obesity. While it does not directly measure body fat, BMI is moderately correlated with direct measures of adiposity (Freedman et al., 2013; Wolfhart-Veje et al., 2014) and predicts obesity-related medical issues, such as cardiovascular disease (Lawlor et al., 2010; Freedman et al., 2009; Willet et al., 2006). Caregiver and child BMI were calculated by dividing weight in pounds by height in inches squared and multiplying the factor by a constant of 703 (Garrow & Webster, 1985). Given the immense physiological changes that occur throughout childhood, child BMI must be interpreted in relation to the child's

sex and age using a centile curve (World Health Organization, 2006). The R software package Zscorer (Myatt & Guevarra, 2019) was used to calculate z-scores for children's weight-for-age, weight-for-height, and body mass index-for-age based on growth standards published by the World Health Organization (de Onis, 2007; World Health Organization, 2007). Adult and child BMIs were reviewed for biological implausible values (BIVs), which may represent errors in data entry. Nine adult BMI values fell below documented limits of human survival (Henry, 2001; Jee et al., 2006), and were removed from the dataset. According to guidelines published by the Center for Disease Control and Prevention, best practices for identifying child BIVs require modifying BMI z-scores so they are expressed by:

$$BMIz_{mod} = \frac{BMI - M}{0.5\,[(M \times LSz)^{1/L} - M]}$$

wherein *BMI* is the BMI of interest, *M* is the median BMI z-score for the child's sex and age, *L* is the lambda parameter, *S* is the sigma parameter, and *z* is the BMI z-score of interest (Center for Disease Control and Prevention, 2016). Child z-scores were modified accordingly and compared to recent BIV standards, which recommend reviewing any modified z-scores that fall outside the range of [-5, 8] (Center for Disease Control and Prevention, 2016; Freeman et al., 2015, 2016). Based on these parameters, 20 child BMIs were removed from the dataset.

Study 1: Phenomenology of Food and Non-Food Memories

Study 1 had three research aims. The first aim was to examine how adults' phenomenology ratings of early food memories differ from those of non-food memories. To date, no study has directly compared personal perceptions of food and non-food memories, despite anecdotal evidence in other bodies of literature emphasizing the vividness, saliency, and specificity of food memories (Agutter & Ankeny, 2017; Fox & Alldred, 2019). However, food

memories are also less likely less relevant to everyday life given their niche topic matter. Therefore, I hypothesized that food memories would be less frequently rehearsed (H1.1), less important (H1.2), and less emotionally intense (H1.3) than non-food memories, but more vivid (H1.4), arousing (H1.5), social (H1.6), and specific (H1.7) than non-food memories. I did not anticipate significant differences between memory type for emotional intensity ratings.

Second, I aimed to assess how memory valence interacts with memory topic. It is well established in the autobiographical memory literature that positive memories tend to be rated as more frequently rehearsed and more vivid than negative memories (Berntsen & Thomson, 2005; Rasmussen & Berntsen, 2009; Walk et al. 2009). Moreover, much of the extant literature on food-related memories is focused on positive memories, such as holidays or family gatherings, and there are few references to negative food memories throughout the memory literature. Therefore, I hypothesized that positive food and non-food memories would be rated as more frequently rehearsed than negative food memories (H2.1). I also expected positive food memories, positive non-food memories, and negative non-food memories to be rated as more vivid (H2.2) and intense (H2.3) than negative food memories. In addition, I expected positive food memories to be rated as more important (H2.4), more arousing (H2.5), and more social (H2.6) than negative food memories. However, I predicted that a higher proportion of negative food memories would be rated as specific, rather than general, compared to positive food memories (H2.7) based on the assumption that the majority of positive food memories would be about reoccurring events (e.g., annual holidays, family traditions).

Finally, a linguistic analysis was conducted to identify if and how the language used to describe food memories differed from the language used to describe non-food memories. The words used to describe an event or experience provide nuanced information about the speaker's

motivations, beliefs, and attitudes. For example, the presence of causal words indicates the speaker is in the process of actively reappraising the event being discussed, while the inclusion of more tentative language potentially suggests the speaker has spent limited time processing the event and developing a "gist" story of what occurred (Pasupathi, 2007). I hypothesized that food memories would contain more causal (H3.1), tentative (H3.2), perceptual (H3.3), and present focused (H3.4) words than non-food memories, and fewer insight (H3.5), and past focus (H3.6) word, suggesting less frequent rehearsal or rumination of the events. Given that food memories are often described as containing references to tradition and family, and in particular mothers (Fox & Alldred 2019; Piqueras-Fiszman & Jaeger, 2015), I expected positive food memories to contain more certainty words (H3.7) and references to family (H3.8) and female (H3.9) actors than the other three memories. I did not expect differences in the inclusion of friend or male terms.

Analytic Plan

Preliminary analyses were used to identify relevant covariates and check for data abnormalities and skewness. Regressions with generalized estimating equations (GEEs) were used to test all hypotheses in Study 1, and all analyses were conducted using IBM SPSS Statistics, Version 24 (IBM Corp, 2016). GEEs provide a viable alternative to generalized linear models (GLMs) when observations are correlated within person and allow for the analysis of nonlinear outcomes (Liang & Zeger, 1986). The present study contained two within-subjects variables (memory topic, memory valence) and outcomes that were continuous, zero-inflated, and binary. Continuous outcomes were analyzed using linear regressions with GEEs, an identity link, and a normal probability distribution. Outcomes that contained a high proportion of zero counts (>30%) were converted to count data by rounding to the nearest whole number and then

analyzed using a loglinear regression with GEEs, a log link, and a Poisson probability distribution. The Friend LIWC variable did not contain enough variability to be meaningfully transformed into a count variable (M = 0.31, Med = 0.00, SD = 1.02, $range$ = 0 to 13) and was therefore treated as a binary variable (0 = no use of friend words, 1 = at least one use of friend terms). Binary outcomes were analyzed using a logistic regression with GEEs, a logit link, and a binomial probability distribution. An unstructured covariance matrix was specified for all models to allow for freely varying variances and covariances.

Results

Preliminary Analyses

Chi-squared tests and independent t-tests revealed no significant differences in memory sociality or specificity ratings by gender, collection method, annual income, or participant sex. However, repeated measures MANOVAs revealed significant gender differences in memory arousal ratings, the proportion of insight words, family references, female references, and past tense references included in participants' memory descriptions, ps < .05. Bivariate correlations also revealed significant associations between participant age and the use of causal words (r = .14), male references (r = .15), and emotional tone (r = -.14) in memory descriptions, ps < .05, as well as participant annual income and the use of certainty words (r = -.14), family references (r = .15), and male references (r = .16) in memory descriptions, ps < .05. There were no significant differences in memory ratings or the semantic content of memory descriptions by data collection method (Prolific v. Cloud Research). Participant sex, parent age, and income were included as covariates when relevant in the subsequent analyses.

Study Aims 1 and 2: Phenomenology, Valence, and Memory Topic

As demonstrated in Table 4.5, non-food memories were rated as more important, vivid, emotionally intense, and arousing than food memories, *p*s < .05. These main effects were all subsumed by a valence × topic interaction, and there was an additional valence × topic interaction for memory rehearsal. Pairwise comparisons with a Bonferroni adjustment for multiple comparisons revealed that negative food memories were rated as less frequently rehearsed than positive food and positive non-food memories, less important and arousing than positive food, positive non-food, and negative non-food memories, and less emotionally intense than negative non-food memories. The pattern of estimated marginal means suggests that negative food memories were rated as less vivid than the other three memory types, but these comparisons were not significant following the Bonferroni adjustment.

Study Aim 3: Linguistic Analysis by Valence and Memory Topic

The values presented in Table 4.6 demonstrate that food memory descriptions were more likely than non-food memories to include references to causation, tentativeness, present focus, certainty, and friends, but less likely to include references to insight, past focus, and male actors. There were two valence × topic interactions for reference to family and female actors. Pairwise comparisons with a Bonferroni adjustment demonstrated that female references were more common in positive food memory descriptions compared to other memory types *p*s < .001. Family references were also more common in positive food memory descriptions compared to negative food memory descriptions, *p*s = <.001 to .032. See Table 4.7.

Table 4.5

Regressions with GEE for Memory Phenomenology

Variable	Rehearsal		Importance		Vividness		Intensity		Arousal	
Memory valence										
Positive	.14 (.10)*		.41 (.10)**		-.09 (.08)		-.54 (.09)**		.47 (.08)**	
Negative	-		-		-		-		-	
Memory topic										
Food	-.24 (.10)		-.62 (.09)**		-.17 (.08)*		-.56 (.10)**		-.42 (.11)**	
Non-food	-		-		-		-		-	
Valence × topic										
Positive food	.31 (.13)*		.65 (.13)**		.25 (.11)*		.45 (.12)**		.40 (.11)**	
Negative food	-		-		-		-		-	
Positive non-food	-		-		-		-		-	
Negative non-food	-		-		-		-		-	
QICC[b]	1280.79		1260.28		996.29		1233.59		834.26	
	EMM	*SE*	*EMM*	*SE*	*EMM*	*SE*	*EMM*	*SE*	*EMM*	*SE*
Positive food	3.35	.08	4.05	.07	4.13	.07	3.45	.08	4.53	.05
Negative food	2.90	.08	2.98	.08	3.98	.08	3.54	.09	3.67	.08
Positive non-food	3.28	.08	4.02	.07	4.05	.07	3.56	.08	4.56	.05
Negative non-food	3.14	.08	3.61	.09	4.14	.07	4.09	.07	4.08	.08

a. Data represent unstandardized coefficients, standard errors in parentheses.
b. QICC = corrected quasi-likelihood under the independence model criterion; EMM = estimated marginal means; SE = standard error
*$p < .05$, **$p < .01$

Table 4.6

Regression with GEE for Memory LIWC Categories by Memory Type

Variable	Generalized Equation Estimations		QICC	Food	Non-Food
	ExpB (SE)	*95% CI*		*EMM (SE)*	*EMM (SE)*
Causation	1.42 (.12)**	[1.12, 1.82]	2207.37	2.07 (.11)	1.26 (.08)
Tentativeness	1.44 (.10)**	[1.18, 1.75]	2064.31	1.73 (.12)	1.29 (.08)
Perceptual processes	1.14 (.10)	[0.94, 1.37]	2849.66	2.62 (.16)	2.50 (.14)
Present focus	3.42 (.28)**	[1.97, 5.93]	10392.36	4.63 (.18)	3.62 (.16)
Insight	0.95 (.09)*	[0.80, 1.13]	2124.58	1.86 (.11)	2.12 (.12)
Past focus	0.39 (.35)**	[0.20, 0.78]	16399.22	10.21 (.23)	11.12 (.20)
Certainty	1.39 (12)**	[1.09, 1.77]	2259.03	2.03 (.11)	1.34 (.09)
Family	0.62 (.24)	[0.39, 1.00]	7197. 77	2.93 (.14)	2.94 (.17)
Female	1.08 (.13)**	[0.84, 1.39]	3398.28	2.36 (.15)	1.68 (.15)
Friends	2.76 (.32)**	[1.47, 5.18]	678.33	-	-
Male	0.39 (.18)**	[0.28, 1.05]	2836.41	0.94 (.10)	1.92 (.15)

a. Data represent exponentiated coefficients, standard errors in parentheses, 95% Wald Confidence Interval for Exp(B) in brackets
b. Non-food memories as reference group
c. QICC = corrected quasi-likelihood under the independence model criterion; EMM = estimated marginal means; SE = standard error
*$p < .05$, **$p < .01$

Table 4.7

Regressions with GEE for Family and Female LIWC Categories

	Family		Female	
Variable	*ExpB (SE)*	*EMM (SE)*	*ExpB (SE)*	*EMM (SE)*
Memory valence				
Positive	0.62 (.24)**	3.30 (.18)	0.80 (.15)	2.03 (.17)
Negative	-	2.57 (.13)	-	1.95 (.14)
Memory topic				
Food	0.55 (.31)	2.93 (.14)	1.08 (.13)**	2.36 (.15)
Non-food	-	2.94 (.17)	-	1.68 (.15)
Valence × topic				
Positive food	2.55 (.37)*	3.53 (.22)	1.70 (.18)**	2.75 (.22)
Negative food	-	2.34 (.15)	-	2.03 (.17)
Positive non-food	-	3.06 (.25)	-	1.50 (.19)
Negative non-food	-	2.81 (.21)	-	1.88 (.20)

a. Data represent exponentiated coefficients, standard errors in parentheses.
*$p < .05$, **$p < .01$

Conclusions

This study is the first to directly compare the phenomenology and linguistic content of childhood food and non-food memories. My first set of hypotheses were generally unsupported by the analyses conducted for Study 1. I first hypothesized that food memories would be rehearsed less frequently than non-food memories (H1.1). However, I found that there was no significant difference in ratings. My second and third hypotheses that food memories would be rated as less important (H1.2) and less intense (H1.3) than non-food memories were confirmed. In contrast, my hypotheses that food memories would be more vivid (H1.4), more arousing (H1.5), more social (H1.6), and more specific (H1.7) than non-food memories were not

confirmed. Instead, I found that food memories were rated as less vivid and arousing than non-food memories, and I found no differences in memory sociality or specificity.

Many of these main effects were subsumed by interactions that partially supported my next set of hypotheses. As expected, positive food and positive non-food memories were rated as more frequently rehearsed than negative food memories (H1.1). I next hypothesized that negative food memories would be rated as less vivid (H2.2) and less intense (H2.3) than that the other three memory types. However, I found no significant difference in vividness and found that negative food memories were rated as less intense than negative non-food memories only. My hypotheses that positive food memories would be rated as more important (H2.4), arousing (H2.5), and social (H2.7) were partially supported. I found that positive food memories, plus positive non-food and negative non-food memories, were rated as more important and arousing than negative food memories. However, I found no difference in memory sociality or specificity, despite hypothesizing that negative food memories would be less specific than positive food memories (H2.6).

My third set of hypotheses was mostly supported by the present data. As hypothesized, food memory descriptions contained more causal (H3.1), tentative (H3.2), and present focused (H3.4) language than non-food memories, but less insight (H3.5) and past focused (H3.6) language. Contrary to my hypothesis that food memories would contain more perceptual words than non-food memories (H3.3), I found no difference by memory types. My hypotheses that positive food memories would contain more certainty (H3.7), family (H3.8), and female actor (H3.9) language were partially confirmed; food memories in general contained more certainty words, positive food memories contained more references to family than negative food memories and more references to female actors than the other three memory types. Although I did not

expect to find any differences in the use of friends or male actor language, I found that food memories contained more references to friends than non-food memories but fewer references to male actors (see Figure 4.1).

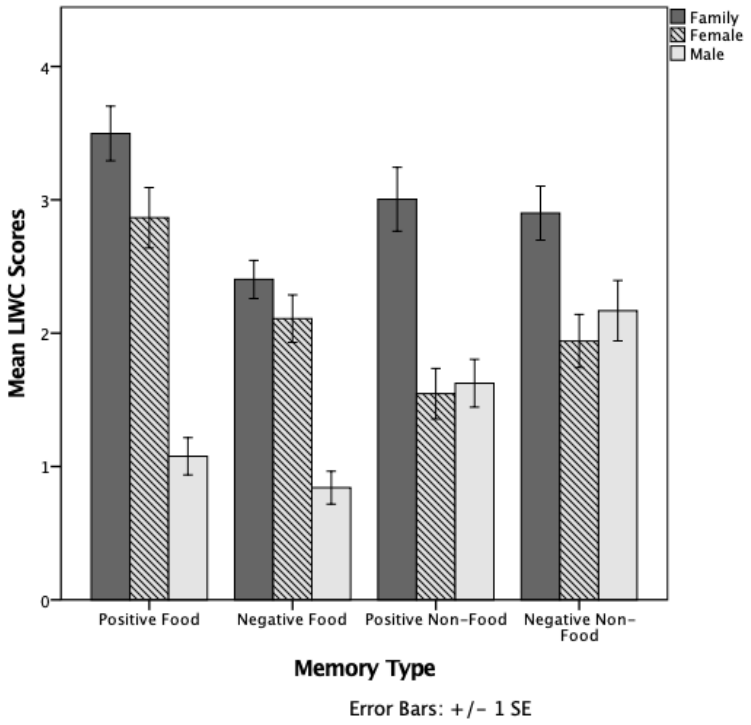

Figure 4.1. Mean family, female, and male LIWC scores by memory type.

Study 2: Subculture, Ideology, and Food Memories

Study 1 demonstrated that there are notable phenomenological and qualitative differences between food and non-food memories. The goal of Study 2 was to examine these findings from a cultural perspective. It is well established in the autobiographical memory literature that the entire memory process, ranging from encoding to retrieval, varies cross culturally (Wang, 2009, 2013). However, multiple gaps remain within this literature that will be addressed by the present study.

For example, far less is known about the cultural ideologies or autobiographical memories of Hispanic/Latino Americans and Black/African Americans. Nations usually have a majority cultural orientation that may or may not align with an individual's subgroup orientation (Gaines et al., 1997; Harrison et al., 1995; Markus & Kitayama, 1991). Within the United States, the mainstream structure of "American" culture is most often described as vertical individualism (e.g., Adams & Strother-Adams, 2001; Adler et al.,1992; Hofstede, 2001; Thompson & Hickey, 2005). However, many individuals within the U.S. possess additional values that are shaped by their subcultural group (Chao & Moon, 2005; Gaines et al., 1997; Harrison et al., 1995; Markus & Kitayama, 1991; Oyserman, 1993).

Many researchers suggest that Hispanic/Latino Americans and Black/African Americans identify as more collectivist than White Americans due to the prevalence of ancestral collectivist practices and unique experiences within the U.S. (Carson, 2008; Freeberg & Stein, 1996; Rhee et al., 1996). For example, community, kinship, and unity are common themes within West African culture (Komarraju & Cokley, 2008), and anemphasis on religious organizations in both Black/African American and Hispanic/Latino culture might serve to further emphasize concepts related to community and social interdependence (Carson, 2008). However, empirical research on cultural ideology with Hispanic/Latino and Black/African American subgroups is limited, and results are mixed, particularly for Black/African Americans. Some studies find that Black/African Americans identify more with individualism than collectivism (Jones, 1997; Komarraju & Cokley, 2008). Researchers posit that historical experiences of oppression, slavery, and marginalization have instilled an emphasis on independence, personal survival, and individual uniqueness (Jones, 1997; Komarraju & Cokley, 2008). However, others argue that Black/African Americans are high on both individualism and collectivism simultaneously (Coon

& Kemmelmeier, 2001). As mentioned at the beginning of Chapter 3, individualism and collectivism are frequently operationalized as mutually exclusive ideals despite compelling evidence that they are separate constructs. Thus, if they are viewed as separate constructs, it is feasible that Black/African Americans have internalized both highly collectivist and individualist ideologies.

The first aim of Study 2 was to compare participant ideology across the four American subcultural groups recruited for this study (White, Black/African American, Hispanic/Latino, and Asian). It should be noted that specifying hypotheses at the level of the subcultural group is an imperfect method – subcultural groups are not homogenous, and individuals within a single subgroup often vary widely in their identity, beliefs, experiences, and perceptions. However, it is undeniable that subgroup identity, along with majority and minority status, plays a crucial role in shaping the identity of many U.S. citizens. Subcultural group is also predictive of relevant health outcomes, like obesity, as well as health disparities within the U.S. (Bell & Lee, 2011; Smedley et al., 2008; Williams et al., 2010). Therefore, it seemed appropriate to include subcultural group as a between subjects predictor in this series of studies.

In line with previous literature, I hypothesized that Black/African American, Asian, and Hispanic/Latino participants would identify as more collectivist than White participants (H1.1), with Black/African American participants also identifying as more collectivist than Asian and Hispanic/Latino participants (H1.2). I expected Black/African American participants to identify as more individualist than the other three subgroups (H1.3) but expected White participants to identify as more individualistic than Asian participants (H1.4).

The second aim of Study 2 was to compare memory phenomenology across the subgroups. Based on prior literature (Jobson et al., 2019; Wang & Conway, 2004), I

hypothesized that Asian participants would rate their memories as less vivid (H2.1), emotionally intense (H2.2), and specific than White participants (H2.3). Given that some literature emphasizes the importance of storytelling within African American culture (Banks-Wallace, 2002), I predicted that Black/African American participants would rate their memories as more frequently rehearsed (H2.4), important (H2.5) and vivid (H2.6) than the other three subcultural groups. I did not specify hypotheses regarding memory arousal or sociality ratings.

The third aim of Study 2 was to identify subcultural differences in food memories and compare these trends to those found in non-food memories. Given the limited extant research on food memories, it is unknown whether the cultural differences commonly noted in non-food memories are also present in food memories. Food beliefs and behaviors are heavily influenced by cultural practices and ideologies (Axelson, 1996; Rozin, 2006). Therefore, it seems likely that cultural differences will be present in food memories as well. Moreover, the cultural significance of food may produce unique differences that are not found with non-food memories. Uncovering these nuances may facilitate a more inclusive understanding of food practices across a diverse set of subcultural groups. Based on research suggesting that certain foods are particularly meaningful within Black/African American and Hispanic/Latino communities (Airhihenbuwa et al., 1996; Fuster et al., 2019; James, 2004), I hypothesized that Black/African American and Hispanic/Latino participants would rate their positive food memories as more frequently rehearsed (H3.1), important (H3.2), and vivid (H3.3) than White and Asian participants.

Study 2 was also designed to assess the mechanisms underlying cultural differences in autobiographical memory. Although there are a variety of ways culture can impact autobiographical memory, many studies to date have focused on collectivist ideals as a key influence. However, questions remain regarding the way in which ideology and subcultural

group interact to influence autobiographical memories. Some argue that ideology is best described as a mediator that explains the association between subculture and cultural differences in autobiographical memory. However, others argue cultural ideology is most accurately conceptualized as a moderator, which interacts with subcultural group to produce autobiographical differences (Wang, 2018; Schwartz, 2012). Recent work supports the interpretation of ideology as a moderator and emphasizes the unique influence that subcultural group and ideology in combination might have on memory performance (Alea et al., 2021; Jobson et al., 2019). However, few studies have directly addressed this assumption and even fewer have included collectivism and individualism as separate constructs (Chang et al., 2011; Markus & Kitayama, 2010; Oyserman et al., 2002).

Therefore, the fourth aim of Study 2 was to directly test the unique contributions of ideological beliefs (i.e., collectivism, individualism) to memory phenomenology, both as an independent predictor and as a moderator. I hypothesized that collectivism would be negatively related to emotional intensity (H4.1) and vividness ratings (H4.2), whereas individualism would be positively related to emotional intensity (H4.3), vividness ratings (H4.4), and rehearsal (H4.5). I also predicted that high collectivism scores would increase the odds of reporting a general experience (H4.6), while high individualism scores would increase the odds of reporting a specific experience (H4.7). I further expected individualism to act as a moderator of the effects between subculture and memory phenomenology (H4.8)

Analytic Plan

All analyses were conducted using IBM SPSS Statistics, Version 24 (IBM Corp, 2016). Two one-way ANOVAs were specified to examine subcultural differences in collectivism and individualism scores as part of the first study aim. Seven stepwise regression models using GEEs

were used to test the remaining hypotheses. The baseline model (Step 1) in the stepwise regression included memory type as a four-level (positive food, negative food, positive non-food, negative non-food) within-subjects predictor and subcultural group (White, Black/African American, Hispanic/Latino, and Asian) as a between-subjects predictor. The main effect of subcultural group was examined to address the second study aim. The interaction between memory type and subcultural group was added to the model in the next step (Step 2), and significant interactions between memory type and subcultural group were probed using pairwise comparisons to address the third study aim. If the interaction was not significant ($p > .05$), it was excluded from subsequent models (Hanley et al., 2002). Collectivism and individualism scores were added as two additional predictors at Step 3. Collectivism and individualism scores were highly correlated ($r = .393$, $p < .001$) and therefore treated as within-subjects variables. Step 4 added the interaction between subculture, collectivism scores, and individualism scores, respectively. The last two steps were specified to address the fourth study aim.

For all GEEs, continuous outcomes (rehearsal, importance, vividness, intensity, arousal) were modeled using an identity link and normal probability distribution, while binary outcomes (sociality, specificity) were modeled using a logit link and binomial probability distribution. Given that GEE methods do not use likelihood theories, Akaike Information Criterion (AIC) statistics cannot be used to assess goodness of fit (Pan, 2002). Instead, the Corrected Quasi-Likelihood under the Independence Model Criterion (QICC) can be used to compare the fit of multiple GEE models, with lower values indicating a better fit (Pan, 2002). An unstructured covariance matrix was specified for the first two steps to allow for freely varying variances and covariances. However, convergence could not be achieved for Steps 3 and 4 with an unstructured covariance structure. Competing models were specified to compare the model fit parameters

associated with using an independent correlation matrix or an exchangeable correlation matrix. Comparison of Quasi-Likelihood under Independence Model Criterion (QIC) revealed that an exchangeable correlation structure provided a better fit for the data. Therefore, exchangeable covariance structures were used for Steps 3 and 4. Parent sex was included as a covariate in all arousal models.

Results

Study Aim 1: Subcultural Differences in Ideology Scores

Analyses revealed no subcultural differences in collectivism scores, $F(3, 238) = 2.00$, $p = .114$, or individualism scores, $F(3, 238) = 2.18$, $p = .092$, although descriptive trends matched the study hypotheses. See Figure 4.2.

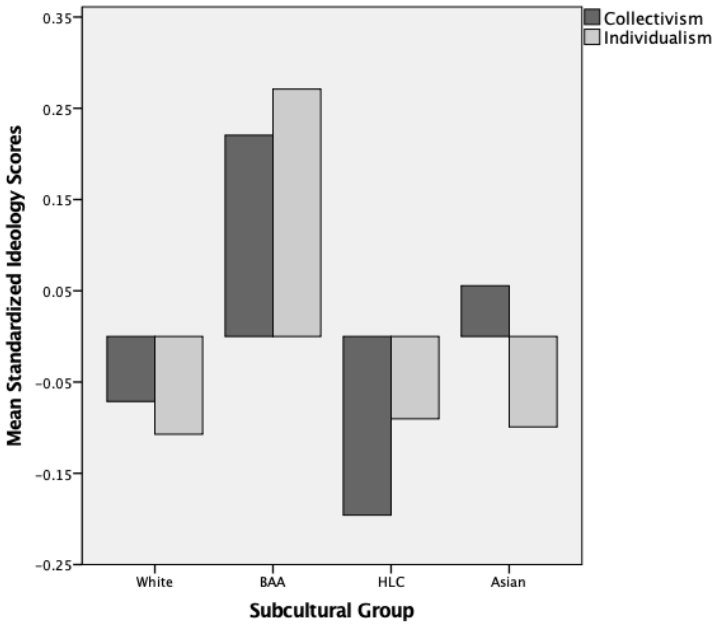

Figure 4.2. Ideology z-scores by subculture.

Study Aim 2: Subcultural Differences in Autobiographical Memories

As evident in Table 4.8 and Figure 4.3, subcultural group significantly predicted rehearsal, importance, and vividness memory ratings in the baseline regression models.

Parameter estimates revealed that Black/African American participants rated their memories as more frequently rehearsed than Asian and White participants and more important and vivid than the other three subcultural groups. Similarly, Hispanic/Latino participants rated their memories as more frequently rehearsed than Asian participants, and more important and vivid than Asian and White participants. There were no significant differences by subcultural group for emotional intensity, arousal ratings, sociality, or specificity.

Table 4.8

Significant Parameters from Phenomenology by Subculture Regressions with GEE

Outcome	Wald Chi-Square	Effect	*B*	*SE*	*p-value*	*CI*
Rehearsal	21.25**					
		Asian - BAA	0.70	.16	.000	(.376, 1.02)
		Asian - HLC	0.45	.15	.002	(.168, .736)
		White - BAA	0.47	.15	.002	(.175, .768)
Importance	24.92*					
		White - BAA	0.58	.13	.000	(.319, .847)
		White - HLC	0.28	.13	.032	(.023, .535)
		HLC - BAA	0.30	.13	.020	(.048, .559)
		White - BAA	0.58	.13	.000	(.319, .847)
Vividness	7.97*					
		Asian - BAA	0.61	.15	.000	(.319, .907)
		Asian - HLC	0.31	.15	.035	(.022, .597)
		White - BAA	0.58	.13	.000	(.319, .847)
		White - HLC	0.28	.13	.032	(.023, .535)
		HLC - BAA	0.30	.13	.020	(.048, .559)

Note. Reference category listed first
B = unstandardized coefficient; SE = standard error; CI = 95% Wald Confidence Interval
HLC = Hispanic/Latino; Black/AA = Black/African American
*$p < .05$, **$p < .01$

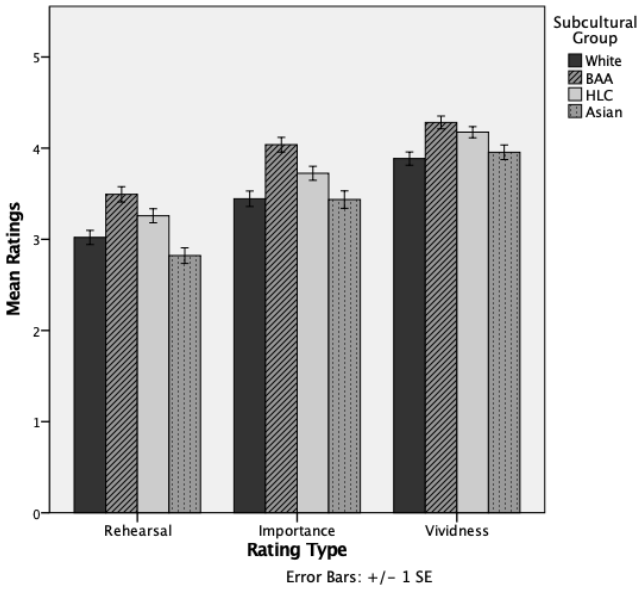

Figure 4.3. Mean ratings by subcultural group

Study Aim 3: Subcultural Differences between Food and Non-Food Memories

Step 2 revealed a significant memory × subcultural group interaction for rehearsal ratings and importance ratings, plus a marginal interaction for vividness. Pairwise comparisons with a Bonferroni adjustment demonstrated different patterns of rehearsal, importance, and vividness between food and non-food memories. See Table 4.9 for estimated marginal means. Black/African American participants rehearsed positive and negative non-food memories more frequently than Asian participants, while Hispanic/Latino and White participants also rehearsed negative non-food memories more frequently than Asian participants. In contrast, Black/African American participants rehearsed positive food memories more frequently than White participants, while Black/African American and Hispanic/Latino participants rehearsed negative food memories more frequently than White participants (Figure 4.4).

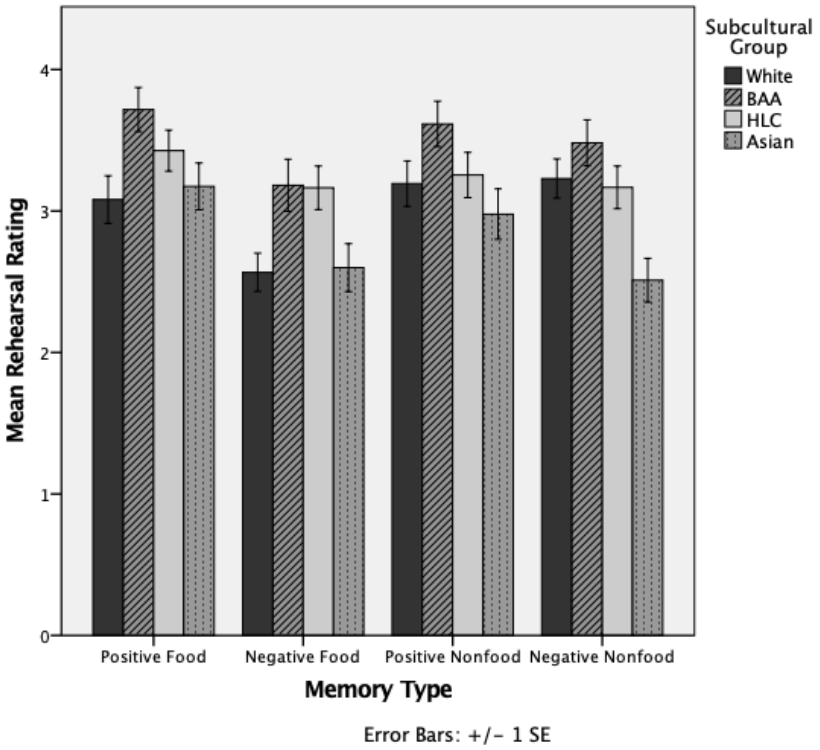

Figure 4.4. Mean rehearsal ratings by memory type and subcultural group

Black/African American participants provided higher importance ratings for negative food and non-food memories than White and Asian participants. While there were no significant subcultural differences in the importance ratings of positive non-food memories, Black/African American participants reported higher importance ratings than the other three subcultural groups (Figure 4.5).

Finally, there were no significant differences in vividness ratings between groups for either negative or positive non-food memories. However, White participants rated their negative food memories as less vivid than Hispanic/Latino participants did and positive food memories as less vivid than Black/African American participants did (Figure 4.6).

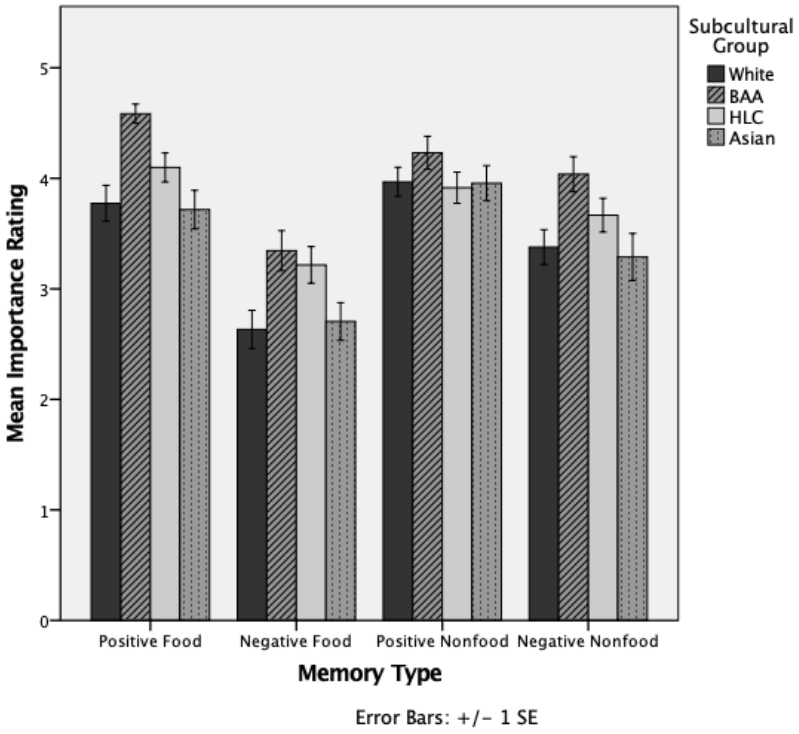

Figure 4.5. Mean importance ratings by memory type and subcultural group

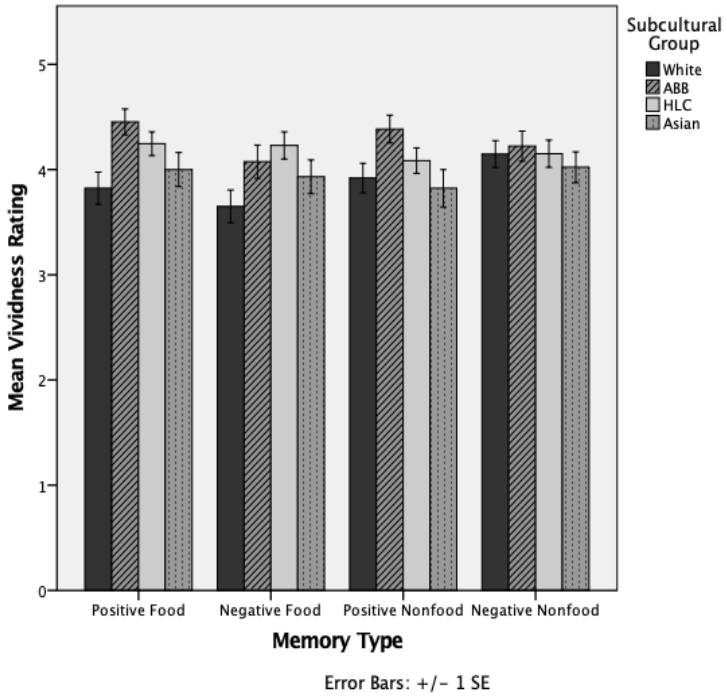

Figure 4.6. Mean vividness ratings by memory type and subcultural group

Table 4.9

Estimated Marginal Means for Phenomenology by Memory Topic and Subculture

	Rehearsal	Importance	Vividness	Intensity	Arousal
Positive Food					
BAA	**3.73 (.15)^{W}**	**4.59 (.09)^{A,H,W}**	**4.46 (.12)^{W}**	3.62 (.18)	4.56 (.09)
HLC	3.43 (.14)	4.10 (.13)	4.25 (.11)	3.49 (.14)	4.56 (.09)
Asian	3.16 (.16)	3.70 (.17)	4.00 (.16)	3.48 (.18)	4.45 (.13)
White	3.06 (.17)	3.77 (.16)	3.82 (.15)	3.22 (.15)	4.55 (.09)
Negative Food					
BAA	**3.20 (.18)^{W}**	**3.36 (.18)^{A,W}**	4.06 (.15)	3.81 (.18)	3.65 (.17)
HLC	**3.16 (.15)^{W}**	3.23 (.16)	**4.23 (.13)^{W}**	3.69 (.17)	3.82 (.14)
Asian	2.60 (.17)	2.67 (.17)	3.95 (.16)	3.36 (.17)	3.56 (.19)
White	2.58 (.13)	2.63 (.17)	3.65 (.15)	3.27 (.16)	3.82 (.17)
Positive Nonfood					
BAA	**3.61 (.16)^{A}**	4.22 (.15)	4.21 (.13)	3.80 (.16)	4.66 (.10)
HLC	3.26 (.16)	3.92 (.14)	4.09 (.12)	3.46 (.14)	4.55 (.09)
Asian	2.99 (.18)	3.96 (.16)	3.83 (.17)	3.56 (.17)	4.45 (.10)
White	3.22 (.16)	3.97 (.13)	3.95 (.14)	3.43 (.15)	4.56 (.08)
Negative Nonfood					
BAA	**3.49 (.16)^{A}**	**4.00 (.16)^{A,W}**	4.22 (.14)	4.14 (.14)	4.03 (.16)
HLC	**3.16 (.15)^{A}**	3.66 (.15)	4.14 (.13)	4.14 (.13)	4.28 (.13)
Asian	2.52 (.15)	3.30 (.21)	4.02 (.15)	3.89 (.15)	3.99 (.15)
White	**3.25 (.14)^{A}**	3.41 (.16)	4.16 (.13)	4.15 (.14)	4.01 (.15)

a. Data represent estimated marginal means, standard errors in parentheses
b. Bolded values with subscript notate significant difference between groups
c. HLC = Hispanic/Latino; BAA = Black/African American
d. Reference group listed as subscript: A = Asian; B = Black/African American; H = Hispanic/Latino; W = White

Study Aim 4: Investigating the Role of Cultural Ideology

Steps 3 and 4 tested the contributions of ideological values, both independently and in conjunction with subculture, to memory phenomenology. In Step 3, participants' collectivism and individualism scores were added as within-subjects predictors. In Step 4, two interactions were added to the model (subculture × collectivism, subculture × individualism).

Collectivism predicted sociality, with higher collectivism scores predicting higher odds of reporting a social rather than personal memory, and there was a marginal effect for memory intensity, $p = .067$. However, individualism predicted higher importance, vividness, and intensity ratings. In addition, the interaction between collectivism and subculture, as well as the interaction between individualism and subculture predicted memory vividness. The association between collectivism and memory vividness was significantly weaker for White participants relative to Hispanic/Latino and Black/African American participants, and Asian participants relative to Black/African American participants. In contrast, the association between individualism and memory vividness was significantly stronger for White participants relative to Hispanic/Latino and Black/African American participants. See full stepwise regression coefficients in Table 4.10 (continuous outcomes) and Table 4.11 (dichotomous outcomes).

Conclusions

The results of Study 2 provide additional evidence to extant work on cultural differences in memories and reveal for the first time unique cultural variations in memories for food. The first set of hypotheses was not supported by the data. I hypothesized that White participants would report lower levels of collectivism compared to the other three subcultural groups (H1.1), while Black/African American participants would report higher levels of collectivism compared to Asian participants and Hispanic/Latino participants (H1.2). Unexpectedly, there were no

Table 4.10

Stepwise Regressions with GEE for Continuous Outcomes

Step	*Predictor*	Rehearsal	Importance	Vividness	Intensity	Arousal
1	**Memory type**	22.50**	115.83**	5.74	58.08**	103.78**
	Positive Food	.21*	.48**	-.01	-.65**	.45**
	Negative Food	-.24*	-.62**	-.17*	-.56**	-.42**
	Positive Nonfood	.15	.42**	-.09	-.54**	.48**
	Subculture	21.25**	24.92**	7.97*	6.10	4.15
	BAA	.47**	.58**	.35*	.32*	.04
	HLC	.23†	.28*	.27*	.18	.12
	Asian	-.23	-.03	.05	.03	-.08
	QICC	*1233.88*	*1210.12*	*978.98*	*1223.90*	*852.14*
2	**Type x Subculture**	23.60**	16.87*	12.28†	8.74	3.75
	Positive Food					
	BAA	.83**	.22**	.58**	.41	-.03
	HLC	.45†	.08	.44*	.28	-.27
	Asian	.43	.04	.32	.52†	-.08
	Negative Food					
	BAA	.75**	.35*	.36	.54*	.02
	HLC	.68*	.14	.60**	.42	-.06
	Asian	.39	.15	.44†	.35	-.03
	Positive Nonfood					
	BAA	.16	-.35	.31	.38	.09
	HLC	.13	-.30	.16	.03	-.29
	Asian	.19	.10	.02	.39	-.09
	Δ QICC	*+3.20*	*+6.77*	*+7.51*	*+9.14*	*+15.34*
3	**Collectivism**	.06	.07	.13	.19†	.09
	Individualism	.10	.22**	.18*	.18*	.09
	Δ QICC	*-2.37*	*-26.68*	*-26.45*	*-40.38*	*-19.32*
4	**Collect. × Subculture**	1.86	0.50	11.05*	6.20	1.05
	BAA	.26	.09	.66**	.53*	-.13
	HLC	.06	.04	.47*	.29	.06
	Asian	-.25	-.15	.03	-.12	.04
	Indiv. × Subculture	0.87	1.14	16.87**	2.88	6.14
	BAA	.22	.02	-.63**	-.26	-.18
	HLC	.07	-.16	-.60**	-28	-.32*
	Asian	.08	.05	-.24	-.05	-.26*
	Δ QICC	*-3.65*	*+7.79*	*-23.99*	*-6.39*	*+3.85*

Data represent unstandardized coefficients for predictors, Wald chi-square for model effects
Reference group: White, Negative Nonfood Memory
HLC = Hispanic/Latino; BAA = Black/African American
QICC = corrected quasi-likelihood under the independence model criterion
Δ QICC = change in QICC from previous model
†$p < .10$, *$p < .05$, **$p < .01$

Table 4.11

Stepwise Regressions with GEE for Dichotomous Outcomes

Step	*Predictor*	Sociality	Specificity
1	**Memory type**	64.86**	55.25**
	Positive Food	3.18**	3.80**
	Negative Food	1.00	1.45†
	Positive Nonfood	2.71**	2.29**
	Subculture	1.08	3.93
	BAA	0.86	1.19
	HLC	0.95	1.39
	Asian	0.79	1.61†
	QICC	*1164.09*	*1042.00*
2	**Type x Subculture**	7.76	9.51
	Positive Food		
	BAA	0.75	0.39
	HLC	1.27	0.45
	Asian	0.96	1.05
	Negative Food		
	BAA	1.27	1.20
	HLC	1.62	1.39
	Asian	1.58	2.67
	Positive Nonfood		
	BAA	2.10	0.80
	HLC	2.00	0.62
	Asian	1.29	1.39
	Δ QICC	*+12.83*	*+10.37*
3	**Collectivism**	1.47*	0.92
	Individualism	0.93	0.80
	Δ QICC	*-19.30*	*-12.01*
4	**Collectivism. × Subculture**	0.91	3.22
	BAA	0.99	1.18
	HLC	0.73	0.61
	Asian	1.02	1.37
	Individualism × Subculture	5.72	2.63
	BAA	0.62	0.66
	HLC	1.24	0.84
	Asian	0.56†	1.35
	Δ QICC	*+2.05*	*+1.21*

Data represent exponentiated coefficients; Reference group: White, Negative Nonfood Memory
QICC = corrected quasi-likelihood under the independence model criterion
Δ QICC = change in QICC from previous model
†$p < .10$, *$p < .05$, **$p < .01$

significant differences in collectivism scores between subcultural groups. Similarly, I hypothesized that Black/African American participants would report higher levels of individualism compared to the other three subcultural groups (H1.3) and White participants would report higher rates of individualism compared to Asian participants (H1.4). However, there were again no significant differences in individualism scores between subcultural groups.

The second set of hypotheses was partially supported by the study data. The predictions that Asian Americans would report less vivid (H2.1), intense (H2.2), and specific (H2.3) memories relative to White participants were not supported. However, as hypothesized, Black/African American participants reported higher rehearsal (H2.4), importance (H2.5), and vividness (H2.6) ratings compared to White and Asian participants. Hispanic/Latino participants also supported higher rehearsal ratings compared to Asian participants, and higher importance and vividness ratings compared to Asian and White participants, although these differences were not hypothesized.

The third set of hypotheses was also partially supported. I predicted that Black/African American and Hispanic/Latino participants would rate their positive food memories as more frequently rehearsed (H3.1), important (H3.2), and vivid (H3.3) than Asian or White participants. I found that Black/African American participants did rate their positive food memories as more frequently rehearsed and vivid than White participants. In addition, I found that Black/African American participants rated their positive food memories as more important than the other three subcultural groups. However, I did not find the hypothesized differences for Hispanic/Latino or Asian participants. There were multiple unexpected subcultural differences in participants' negative food ratings as well. Black/African American and Hispanic/Latino participants rated their negative food memories as more frequently rehearsed than White participants, with

Black/African American participants also rating their negative food memories as more important than White participants, and Hispanic/Latino participants rating them as more vivid than White participants. In addition, Black/African American participants rated their negative food experiences as more important than Asian participants.

My final set of hypotheses was partially supported. I hypothesized that collectivism would predict lower intensity (H4.1) and vividness ratings (H4.2), and individualism would predict higher intensity (H4.3), vividness (H4.4), and rehearsal (H4.5). As hypothesized, individualism predicted higher intensity and vividness. However, individualism did not predict rehearsal, and collectivism did not predict intensity or vividness. Unexpectedly, collectivism predicted higher importance ratings. I did not find, as hypothesized, that an increase in collectivism increased the odds of providing a general memory (H4.6) or that an increase in individualism increased the odds of providing a specific memory (H4.7). However, I did find that an increase in collectivism increased the odds of providing a social rather than personal memory.

In addition, I found a significant interaction between subculture and collectivism, as well as subculture and individualism for vividness ratings. Specifically, I found that the association between collectivism and memory vividness was significantly weaker for White participants relative to Hispanic/Latino and Black/African American participants, and Asian participants relative to Black/African American participants. In contrast, the association between individualism and memory vividness was significantly weaker for Hispanic/Latino and Black/African American participants relative to White participants.

Study 3: Memories, Eating Motivations, and Family Health

The results of Studies 1 and 2 confirmed the unique nature of food memories both in comparison to non-food memories and across subcultural groups. Study 3 was designed to further extend and apply these findings to eating motivations and family physical health measures. As with the other topics included in this dissertation, extant literature on these topics is scarce. According to a 2017 systematic interdisciplinary mapping review of publications across 10 disciplines, there were a total of 19 articles that examine cultural predictors of food choice, and none of those publications were categorized as psychological publications (Symmank et al., 2017). Similarly, a more recent review of food choices cited only nine articles that assessed the role of "previous experiences and/or habits" in dictating food choices (Chen & Antonelli, 2020, p. 9) and the authors pointed out that "cross-cultural studies are needed to address factors influencing cultural-specific choices" (Chen & Antonelli, 2020, p. 12). Additionally, a thorough review of the articles cited in both papers revealed that few were relevant to the autobiographical memory system or populations of interest in the present study. As a result, many of the aims in Study 3 were more exploratory and inductive in nature than those outlined for Study 1 or 2.

Prior to data processing, a decision was made to focus on positive food memories exclusively for Study 3. I originally planned to assess both positive and negative food memories – this would require the specification of 27 different models per memory type, 54 models in total.[5] Based on committee feedback during the proposal stages, I decided to limit my analyses to a single memory type. Research suggests that the affective experiences associated with positive memories are usually more uniform than those associated with negative memories. Whereas positive events tend to be associated with a single discrete emotion (i.e., happiness),

[5] As described below, the planned analyses for each memory type included 12 multivariate regressions (Aims 1 and 2), three mediation models (Aim 3), and 12 moderated mediation models (Aim 4).

negative events are associated with a variety of discrete emotions, including anger, disgust, fear, or sadness (Harmon-Jones et al., 2016). Given the preliminary nature of the study, I decided that the positive event prompts may have produced events that were more uniform in content and valence and would offer a cleaner picture of the effects of interest (see Alea & Bluck, 2007 and Alea et al., 2021 for similar approach).

The first aim of Study 3 was to examine whether positive food memory phenomenology predicted eating motivations. A small collection of anecdotal, qualitative, and theoretical work suggests that childhood food memories have the potential to impact adult eating behavior and beliefs. For example, Malhotra and colleagues (2013) found that caregivers report actively trying to either mimic or avoid their childhood food environments depending on whether they were remembered as pleasant or unpleasant. Thus, in line with the Food Choice Process Model (Furst et al., 1996), it seems possible that events experienced over the lifespan are internalized through memories and used to inform current food choices. I hypothesized that the rehearsal frequency (H1.1), importance (H1.2), and vividness (H1.3) of participants' positive food memories would predict their current eating motivations. Given the paucity of work on this topic, I did not specify unique hypotheses for each type of eating motivation measured in the study (Affect Regulation, Health, Tradition).

Next, I aimed to examine whether subculture, collectivism, and individualism directly predicted eating motivations. It has long been theorized that culture plays a crucial role in determining our eating behaviors and beliefs (Axelson, 1986; Rozin, 1990). However, empirical evidence is limited. A study comparing consumer food choice habits across Taiwan, Malaysia, Japan, and New Zealand found that Taiwanese and Malaysian consumers rated health as one of the most important factors when making food decisions; the authors suggested this may be due to

an emphasis in Eastern society on holistic healthcare and the medicinal properties of food (Prescott et al., 2002). In a qualitative study by Fuster and colleagues (2019), Latino parents and adolescents reported culture as a particularly salient motivator in food choice. Many of the participants who were interviewed reported feeling motivated to serve cultural dishes or dishes that reflected their childhood. Therefore, I hypothesized that Asian participants would report the highest endorsement of health-related eating motivations (H2.1), while Hispanic/Latino participants would report the highest endorsement of tradition-related eating motivations (H2.2). I also hypothesized that collectivism would predict higher endorsement of tradition-related eating motivations (H2.3).

The third aim of Study 3 was to examine if food memory phenomenology, represented as a composite score of overall memory saliency, both directly and indirectly predicted multiple measures of physical health, with eating motivations as a mediator. I hypothesized that endorsement of health-related eating motivations would be negatively related to parent BMI (H3.1), under the assumption that a higher focus on healthy eating would equate with a lower height/weight ratio. In contrast, I expected endorsement of health-related eating motivations to be positively related to caregivers' concerns about their child's health (H3.2). This was based on the belief that caregivers who are highly motivated to be healthy might be either overly vigilant in assessing their child's health or may be motivated to model healthier eating due to concerns for their child's health. Finally, I hypothesized that memory saliency would be indirectly related to parent BMI through affect regulation (H3.3) and health related (H3.4) eating motivations.

The final aim of Study 3 was to examine whether culture moderated the direct and indirect pathways between memory phenomenology, eating motivations, and health outcomes. Research suggests that many Black/African American individuals perceive food as playing a

central role in shaping their culture and transmitting their culture across generations (Airhihenbuwa et al., 1996; Anderson-Loftin et al., 2005). Therefore, I hypothesized that the effects between memory phenomenology and health outcomes would be most pronounced for Black/African American American individuals (H4.1).

Analytic Plan

A confirmatory factor analysis was conducted in Stata 16 (StataCorp, 2019) to create a single latent variable representing the overall salience of participants' positive food memory ratings. This created a global measure of memory saliency that could be assessed in addition to more nuanced measures. All continuous predictors and moderators were mean centered prior to analysis. To address the first study aim, a series of multivariate regressions were specified in Stata16 (StataCorp, 2019). Food motivations (Affect Regulation, Health, Tradition) were predicted from participants' five phenomenology ratings of their positive food memories. A second series of multivariate regressions assessed the same outcomes of interest, with subculture, collectivism, and individualism included as predictors.

To assess the third aim of the study, mediation models were specified using Andrew Hayes's PROCESS macro in SPSS (Hayes, 2013; IBM Corp, 2016). The mediation models estimated the direct path between the phenomenology composite score and three health outcomes (caregiver BMI, caregivers' perceptions of their child's health, child BMI percentile), as well as an indirect path mediated by health-related eating motivations. Each model generated percentile 95% bootstrap confidence intervals for the indirect effect using 10,000 bootstrap samples. According to Hayes and Scharkow (2013), percentile bootstrap confidence intervals provide an ideal balance between power and Type I error inflation when conducting mediation models with smaller samples. Finally, to assess the fourth aim of the study, a series of moderated mediation

models were specified, with health motivations mediating the association between memory phenomenology and health outcomes. Two competing models (Model 1, Model 2) were specified for each moderator of interest (participant subculture, collectivism, individualism). The moderator was specified to the a and c' paths for Model 1 and the b and c' paths for Model 2. All predictors and continuous moderators were mean centered. See Figure 4.7.

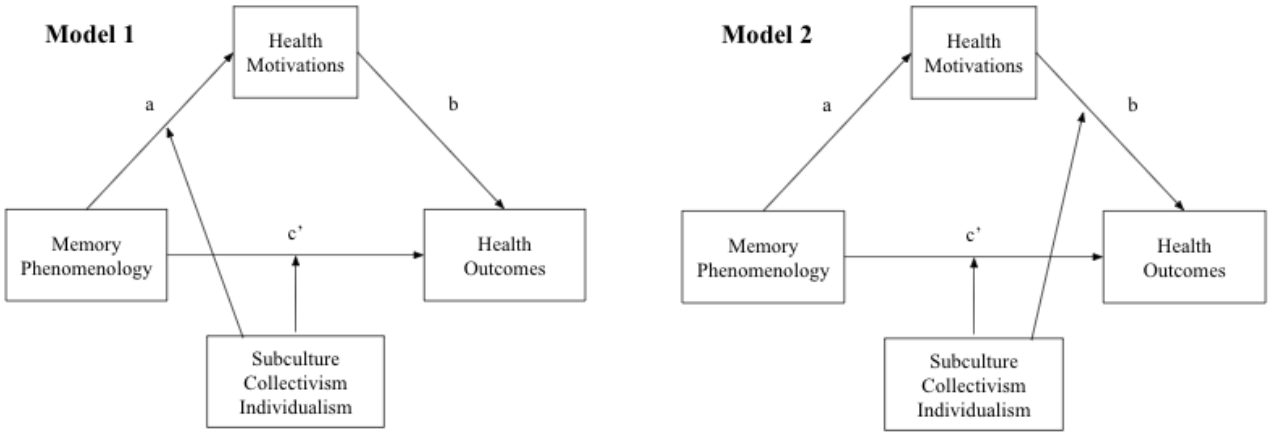

Figure 4.7. Moderated mediation models for phenomenology, eating motivations, and health, moderated by subculture, collectivism, and individualism

Results

Confirmatory Factor Analysis

Positive food memory rehearsal, importance, vividness, emotional intensity, and arousal ratings were specified as observation variables onto a single latent factor. Model fit was assessed using the $\chi 2/df$ ratio, comparative fit index (CFI) and the root-mean-square error of approximation (RMSEA; Kline, 2011). All factor loadings were significant ($p < .001$), with standardized coefficients ranging from .60 to .85. Overall model statistics were indicative of an

adequate to good fit, $\chi 2/df$ ratio = 2.15, CFI = .985, RMSEA = .072, 90% CI = .000-.132. Therefore, a composite score was calculated by averaging across the five items.

Study Aim 1: Phenomenology Predicting Eating Motivations

Multivariate regressions revealed that the memory phenomenology of participants' positive food memories significantly predicted multiple eating motivations. Rehearsal ratings predicted eating motivations related to affect regulation (e.g., "I eat what I eat because I feel lonely"), while arousal ratings predicted eating motivated related to health (e.g., "I eat what I eat because I want to maintain a balanced diet"). Importance, vividness, and emotional intensity ratings, as well as the rating composite score, predicted both health-related motivations and tradition-related motivations (e.g., "I eat what I eat because I grew up with it"). See Table 4.12.

Study Aim 2: Subculture and Ideology Predicting Eating Motivations

As demonstrated in Table 4.13, subculture predicted affect-related and health-related eating motivations, such that Hispanic/Latino participants endorsed eating for affect regulation at a higher rate than Black/African American participants, and Black/African American participants endorsed eating for health reasons at a higher rate than White and Hispanic/Latino participants. There were no subcultural differences in endorsement of tradition-related eating motivations. Higher collectivism scores predicted stronger endorsement for tradition-related eating motivations, while higher individualism scores predicted stronger endorsement for health-related eating motivations (Figure 4.8).

Table 4.12

Multivariate Regressions Predicting Eating Motivations from Memory Phenomenology

Variable	*B*	*SE*	*t*	*95% CI*	*F*	*df*
Rehearsal					3.24*	3, 220
Affect	**0.18***	**.08**	**2.19**	**(.018, .338)**		
Health	0.07	.06	1.13	(-.054, .200)		
Tradition	0.08	.05	0.10	(-.014, .170)		
Importance					4.46**	3, 220
Affect	0.07	.09	0.74	(-.110, .241)		
Health	**0.18***	**.07**	**2.57**	**(.041, .313)**		
Tradition	**0.13***	**.05**	**2.50**	**(.026, .224)**		
Vividness					4.39**	3, 220
Affect	-0.15	.09	-1.60	(-.334, .035)		
Health	**0.21****	**.07**	**2.86**	**(.064, .350)**		
Tradition	**0.11***	**.05**	**2.07**	**(.005, .215)**		
Intensity					6.00**	3, 220
Affect	0.13	.08	1.63	(-.027, .289)		
Health	**0.13***	**.06**	**2.02**	**(.003, .251)**		
Tradition	**0.15****	**.05**	**3.40**	**(.064, .241)**		
Arousal					2.87*	3, 219
Affect	-0.08	.14	-0.58	(-.347, .190)		
Health	**0.25***	**.11**	**2.41**	**(.056, .463)**		
Tradition	0.14	.08	1.87	(-.008, .297)		
Composite score					5.83**	3, 220
Affect	0.09	.12	0.81	(-.139, .332)		
Health	**0.26****	**.09**	**2.79**	**(.076, .440)**		
Tradition	**0.20****	**.07**	**3.04**	**(.072, .336)**		

B = standardized coefficients; SE = standard error

*$p < .05$, **$p < .01$

Table 4.13

Multivariate Regressions Predicting Eating Motivations from Subculture and Ideology

	Affect		Health		Tradition	
Variables	B(SE)	95% CI	B(SE)	95% CI	B(SE)	95% CI
Subculture						
White	0.40 (.26)	-.112, .910	**-0.51(.20)***	**-.907, -.115**	0.06 (.15)	-.231, .349
HLC	**0.66 (.27)***	**.131, 1.18**	**-0.49 (.21)***	**-.900, -.087**	0.01(.15)	-.291, .305
Asian	0.09 (.28)	-.473, .646	-0.13 (.22)	-.561, .306	-0.01 (.16)	-.328, .307
Collectivism	-0.16 (.16)	-.430, .199	0.19 (.12)	-.051, .436	**0.27 (.09)****	**.095, .452**
Individualism	0.77 (.15)	-.614, 2.15	**0.25 (.12)***	**.023, .477**	-0.07 (.08)	-.234, .099

B = standardized coefficients; SE = standard error
Subculture reference group: Black/African American
*$p < .05$, **$p < .01$

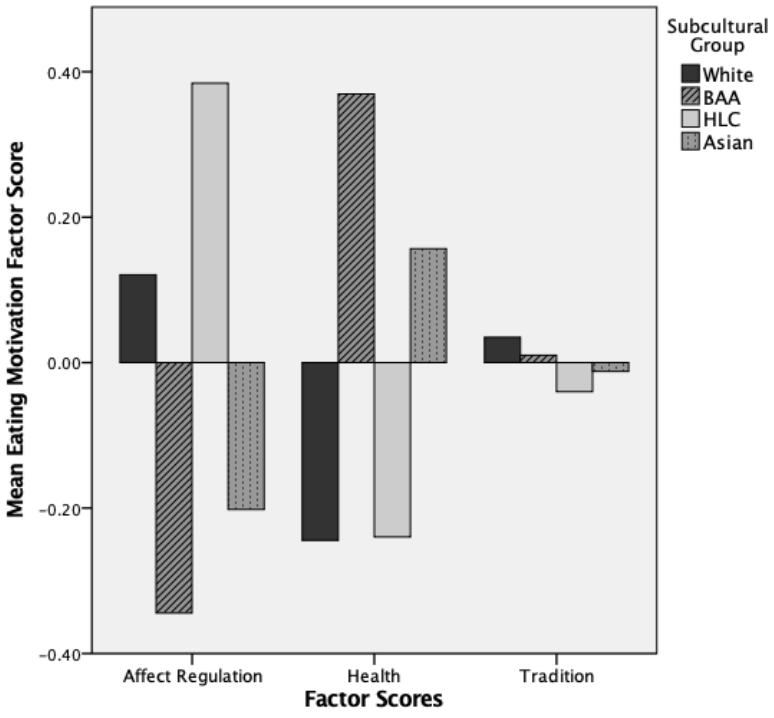

Figure 4.8. Average eating motivation factor scores by subcultural group.

Study Aim 3: Direct and Indirect Effects of Phenomenology and Health Outcomes

Three mediation models tested the direct and indirect effects of memory phenomenology on caregiver BMI, child BMI percentile, and caregivers' concerns about their child's health, respectively, with health eating motivations mediating the indirect effect. As illustrated in Figure 4.9, there was a significant indirect effect of phenomenology on caregiver BMI, B = -.04, CI [-.68, -.03]. Although the total effect of phenomenology on parent BMI was not significant, p = .35, contemporary statistical theory suggests that mediation is possible without a significant total effect, particularly when a priori hypotheses point to competing indirect effects (Agler & De Boeck, 2017; Hayes, 2018; MacKinnon et al., 2000). There were no significant direct or indirect effects for the mediation model predicting child BMI percentile. However, the third model demonstrated that the effect of phenomenology on caregiver concerns about child health, B = .17, CI [.301, .165] was fully mediated by health motivations, B =.04, CI [.009, .087]. See Figure 4.10.

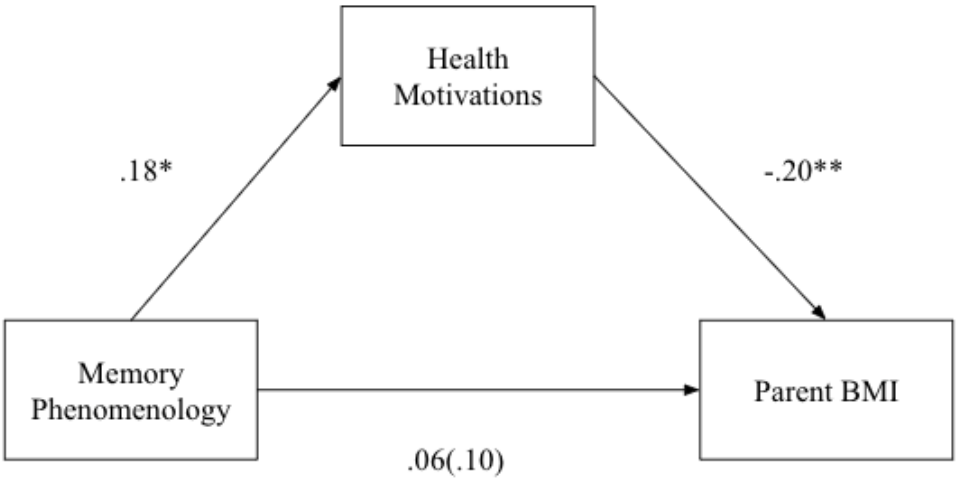

Figure 4.9. The standardized regression coefficients for the effect between memory phenomenology and parent BMI, mediated by health motivations. Direct effect coefficient controlling for health motivations notated in parentheses. *p < .05, **p < .01

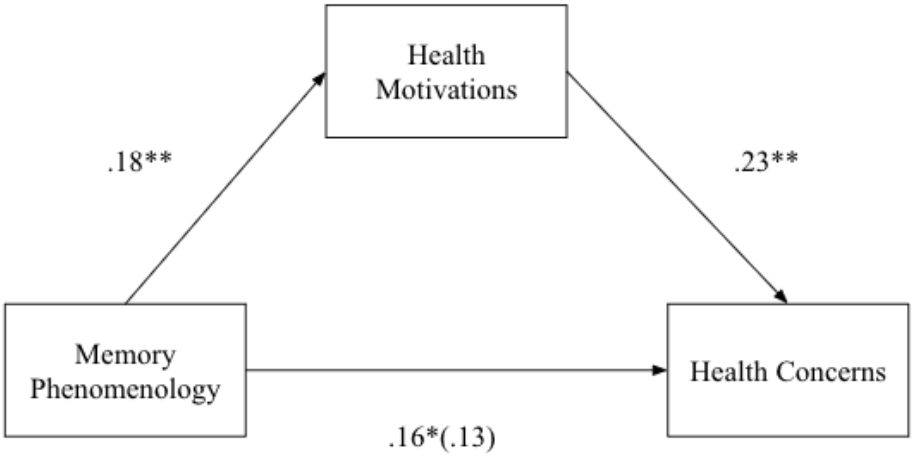

Figure 4.10. The standardized regression coefficients for the effect between memory phenomenology and parent health concerns, mediated by health motivations. Direct effect coefficient controlling for health motivations notated in parentheses. *$p < .05$, **$p < .01$

Study Aim 4: Moderated Mediation of Phenomenology and Health Concerns

A series of moderated mediation models tested the direct and indirect effect of memory phenomenology and health (parent BMI, concerns about child health), mediated by health eating motivations, and moderated by either participant subculture, collectivism, or individualism. Child BMI was not included as an outcome of interest given there was no evidence of mediation in prior models. For each moderator of interest, two models were tested – Model 1 specified the moderator on the a path (effect between phenomenology and health motivations) and the c' path (direct effect between phenomenology and health outcome); Model 2 specified the moderator on the b path (effect between health motivations and health outcome) and the c' path.

The results revealed no evidence of a moderated mediation for any models with parent BMI as an outcome. There was also no evidence of moderated mediation for Model 1s with health concerns as an outcome. However, all three Model 2s with health concerns as an outcome demonstrated moderated mediation. Subcultural group moderated the indirect effect between

phenomenology and child health concerns through health motivations, *B* = .085, CI [.006, .202], and the magnitude of the effect was significantly higher for Black/African American participants compared to White participants, *B* = .12, CI [.029, .234].

Collectivism also moderated the indirect effect between phenomenology and child health concerns through health motivations, as well as the direct effect between phenomenology and child health concerns, *B* = .05, CI [.006, .131]. Conditional effects were examined by dividing participants into three groups using a mean split and one standard deviation above and below the mean value. Examination of the direct conditional effects revealed that the moderation effect was significant at medium, *B* = .14, CI [.007, .278], and high, *B* = .20, CI [.011, .390] levels of collectivism (i.e., values at the mean value of collectivism and one standard deviation above the mean), but not low levels of collectivism (i.e., one standard deviation below the mean), *B* = .05, CI [-.122, .232]. The same conditional effects were noted for the indirect effect, with the moderation effect significant at medium, *B* = .05, CI [.010, .091], and high, *B* = .07, CI [.016, .143], levels of collectivism only.

The final model revealed that individualism also moderated the indirect effect between phenomenology and caregiver health concerns through health motivations, *B* = .05, CI [.005, .114]. Examination of the indirect conditional effects again revealed that the moderation effect was significant at medium, *B* = .04, CI [.009, .089], and high, *B* = .08, CI [.015, .156] levels of individualism, but not low levels of individualism, *B* = .003, CI [-.035, .038].

Conclusions

Study 3 provides the first empirical evidence for a culturally moderated pathway between adults' early childhood food memories and multiple health outcomes. For the first study aim, I did not provide specific hypotheses beyond speculating that the rehearsal, importance, and

vividness of positive food memories would predict participants' eating motivations. Analyses demonstrated a surprisingly consistent link between eating motivations and memory rehearsal (H1.1), importance (H1.2), and vividness (H1.3), as well as arousal, intensity, and overall saliency. Rehearsal predicted endorsement of eating for affect regulation, while arousal predicted endorsement of eating for health purposes. The remaining memory measures predicted both endorsement of eating for health purposes and endorsement of eating for tradition.

The second set of hypotheses were partially confirmed. In contrast to my hypothesis that Asian participants would report the highest endorsement of health-related eating motivations (H2.1), Black/African American participants reported the highest, with Asian participants reporting the second highest. In addition, Hispanic/Latino participants reported the lowest endorsement for traditional eating motivations, which contradicts my hypothesis that they would report the highest (H2.2). However, Hispanic/Latino participants did report substantially higher levels of endorsement for eating as a form of affect regulation. As hypothesized, higher collectivism scores predicted higher endorsement of traditional eating motivations (H2.3). Unexpectedly, higher individualism scores predicted higher endorsement of healthy eating motivations.

The third set of hypotheses was mostly confirmed. As expected, endorsement of healthy eating motivations predicted lower parent BMI (H3.1), but greater concern about child health (H3.2). While affect regulation did not mediate the effect between memory saliency and parent BMI (H3.3), there was an indirect effect of memory saliency on parent BMI, mediated by healthy eating motivations (H3.4). The effect of memory saliency on caregiver health concerns was also fully mediated by healthy eating motivations.

For the final aim of Study 3, I did not provide specific hypotheses beyond predicting that associations between memory saliency and health outcomes would be stronger for Black/African American participants. This hypothesis was generally supported. There was no evidence of moderated mediation for models with parent BMI as an outcome. Similarly, there was no evidence of moderation on the pathway between memory phenomenology and healthy eating motivations with caregiver health concerns as an outcome. However, subculture moderated the indirect effect between memory saliency and caregiver health concerns, such that the magnitude of the effect between healthy eating motivations and health concerns was stronger for Black/African American participants compared to White participants. Moreover, collectivism moderated the direct and indirect effect of memory saliency on caregiver concerns, while individualism moderated the indirect effect only. High and medium levels of collectivism and individualism, respectively, were associated with an increase in the magnitude of the effect between healthy eating motivations and health concerns. High and medium levels of collectivism also predicted the magnitude of the direct effect between memory saliency and health concerns.

CHAPTER 5: DISCUSSION

The three studies presented in this dissertation demonstrated that childhood autobiographical food memories are unique, culturally bound, and potentially linked to health behaviors, beliefs, and status later in life. The primary aims of this dissertation were to provide a systematic comparison of food and non-food memories using mixed methods (Study 1), examine food memories from a cultural perspective (Study 2), and identify potential pathways between food memories, eating motivations, and health (Study 3). This dissertation provides the first known evidence of a culturally moderated pathway between the autobiographical memory system, eating beliefs, health perceptions, and caregiver BMI.

Summary of Findings

As described in detail below, Study 1 revealed that food memories are more phenomenologically similar to non-food memories than previously thought. However, food memory descriptions contained unique qualitative themes and linguistic markers that were not found in non-food memories. Study 2 demonstrated that subculture and cultural ideology play a pronounced role in the perception of food memories, beyond the differences noted in non-food memories. The results of Study 3 provided preliminary evidence of a link between food memory phenomenology, eating motivations, and health. Moreover, the moderating role of subculture and cultural ideology was identified.

Food v. Non-Food Memories

Food memories are anecdotally described throughout the literature as uniquely vivid, robust, and meaningful, and references regarding the staying power of food memories abound in research, pop culture, and everyday life. However, empirical documentation of these characteristics is sparse and mostly contained to qualitative interviews. Moreover, despite well-established methods for quantitatively comparing memory perceptions, the literature did not appear to contain a systematic comparison of food and non-food memories from early childhood. The results of Study 1 revealed that perceptions of early food memories did not differ much from perceptions of early non-food memories. While there were significant differences in phenomenology ratings between the two memory types, most of them were driven by negative food memories.

I speculate this is due to differences in the interpretation and meaning tied to negative food experiences. Most of the negative food memory descriptions were about events that caused feelings of disgust, discomfort, or illness (e.g., getting food poisoning, being forced to eat a

disliked food). While they may have been intense moments, they did not seem to be moments that one would particularly reflect on frequently or consider to be important in the broader life story. And indeed, negative food memories were assigned the lowest rates in all categories except intensity. In contrast, the positive food memories appeared thematically much more similar to the positive, and even negative, non-food memories. All three events had an air of familiarity and rehearsal to them, and the positive food memories in particular seemed like nostalgic caricatures of what actually happened, memories rubbed smooth from constant revisiting and revising. Although the positive food memories did not differ significantly in their ratings from the positive non-food memories, I did find it noteworthy that they were reported as having the highest rehearsal and importance ratings of all four memories, despite being about a relatively niche topic. It is possible these distinctions would be more pronounced if participants had been given an equally specific subject to focus on when recalling their non-food memories.

While the phenomenology of food memories was not particularly noteworthy, there were distinct differences in the language used to describe the memories. Food memories included more causal language, tentativeness, and present focus than non-food memories. As posited earlier in this dissertation, this may be due to limited rehearsal and retrieval. Although positive food memories had the highest rehearsal rating, negative food memories had the lowest, and when combined, the average rehearsal rating for food memories was lower than non-food memories. If participants were less familiar with retrieving the food memories, then it seems reasonable that their descriptions would include more tentative language or references to the present. However, it is interesting to note that many references to the present were within the context of emphasizing the durability of the memory or applying the lesson or principle of the food memory to present day. Multiple memories included phrases like “I can still

remember/smell/taste…" or "To this day, I still miss/think about...". One person mentioned it was the only memory that still evoked their great grandmother's voice:

> *My great grandmother loved ice cream and one of her favorite flavors was teaberry. My grandmother bought some at the grocery store and told me to ride my bike as fast as I could to my great grandmother's house so that it wouldn't melt in the summer heat. I was super proud that she trusted me enough to take what my young mind thought was a great treasure. I arrived at my great grandmother's house out of breath and sweaty from my ride. Although she couldn't get around very well, my great grandmother instructed me where to find the ice cream cones and scoop and told me to make three ice cream cones. One for me, one for her, and one for her cocker spaniel. The ice cream was kind of melty but it tasted so good and I remember her laughing at her dog as it lapped the ice cream from the cone. It's probably the only memory of her that I have that I can actually hear her voice still.*

It was also common for participants explicitly express the transference of food practices from their childhood to their present. For example, one participant was describing memories of going to Chuck E Cheese and said that "even now as an adult when I take my kids, we have to order the cardboard pizza, because the food makes it more fun." Similarly, another person described watching her Great Nan make chocolate steamed pudding and described it as "a recipe I still make today for my own family." Therefore, it is possible food memories contain more references to the present because they are perceived as more applicable to the participants' present life. This interpretation would align with the Food Choice Process Model and the broader assumption that people actively reference previous memories for food experiences when making food choices in the present.

Subculture, Cultural Ideology, and Memories

In a review article aptly titled "Food and Memory," anthropologist Jon Holtzman describes the study of food as feeding "on Western epicurean sensibilities" (Holtzman, 2006, p. 364). Unfortunately, there is little evidence to suggest a concerted effort has been made to correct course over the past 15 years. While limited consideration of cultural perspectives is not necessarily unique within the field of psychology (Wang 2016), it is surprising given the wealth of knowledge collected in the past two decades on cross cultural differences in autobiographical memory (Wang, 2021). The pairing seems an obvious one, especially considering the well-established cultural significance of food and eating practices (Axelson, 1986; Douglas, 1981). However, the present dissertation represents the first known quantitative comparison of food memory ratings across multiple subcultural groups.

The results of Study 2 revealed seemingly limited variation among the sample in cultural values but noted cultural differences in food memory phenomenology. Surprisingly, there were no significant differences in collectivism or individualism scores among the four subcultural groups included in the study, although some of the descriptive patterns were in the hypothesized direction. Given that the participants in the present study all lived in the United States, it is possible that having a shared majority culture dampened ideological differences among subgroups. However, it is interesting to note that the association between collectivism and individualism did vary by subcultural group. Exploratory analyses revealed that collectivism and individualism scores were highly correlated for White ($r = .421$, $p < .001$) and Black/African American ($r = .630$, $p < .001$) participants, but were not significantly correlated for Hispanic/Latino ($r = .117$, $p = .368$) or Asian ($r = .243$, $p = .100$) participants. While the implications of these findings within the present context is unclear, they do emphasize the

importance of treating collectivism and individualism as separate constructs. They also support the suggestion that Black/African American individuals are strongly aligned with both individualistic and collectivist values (e.g., Coon & Kemmelmeier, 2001).

Similarly, the phenomenological comparisons in Study 2 did not reveal the expected Western/Eastern divide that is commonly found in the cross-cultural literature. Instead, White and Asian participants were far more similar than different compared to Black/African American and Hispanic/Latino participants. It is well established in the literature that storytelling and intergenerational narratives play a key role in Black/African American culture (Banks-Wallace, 2002). Thus, it is not necessarily unsurprising to find that Black/African American participants provided the highest ratings across most measures and memory types. However, it is interesting to note that Hispanic/Latino participants also provided consistently high ratings for most measures. While the memory literature has theorized that Hispanic/Latino and Black/African American communities share common cultural beliefs that may result in similar mnemonic patterns (Coon & Kemmelmeier, 2001; Phinney, 1996), evidence so far has been limited. Notably, the current results point to a similar profile between the two groups, particularly when rating food memories. Both Hispanic/Latino and Black/African American participants on average rated their positive food memories as the most important of the memories recalled. This may be explained by the combined significance of storytelling and food within both communities.

Study 2 also provided unique insight regarding the mechanisms behind subcultural differences in memories. Surprisingly, collectivism had limited predictive power. It predicted the odds of reporting a social rather than personal memory, which aligns with broader work on collectivist self-orientation (e.g., Wang, 2001, 2006), but it did not independently predict any

other memory ratings. In contrast, individualism predicted importance, vividness, and intensity ratings. It is possible that individualism, when operationalized as a separate entity from collectivism, is more relevant to the way we perceive memories of the self. Equally intriguing are the interactions between both collectivism and individualism and subculture. As mentioned previously, recent work supports the interpretation of cultural ideology as a moderator rather than mediator of the association between subculture and memory phenomenology (Alea et al., 2021; Jobson et al., 2019). Theoretically, this would suggest that it is not only the presence of an ideological belief that matters, but the strength of the belief and its alignment with the group-level beliefs of the subcultural group (Schwartz, 2012). Similar to work by Alea and colleagues (2021), the results of Study 2 suggest that cultural ideology interacts with subcultural group to predict phenomenology.

Memories, Eating Motivations, and Health

The overarching goal of Study 3 was to identify, for the first time, a culturally moderated pathway between childhood food memories and health outcomes. While such a pathway has been speculated, theorized, and even assumed, the present studies provide preliminary empirical evidence of a potential pathway and lays the groundwork for multiple future lines of inquiry regarding the role of the autobiographical memory system in predicting health behaviors.

The analyses revealed surprisingly robust associations between memory phenomenology and eating motivations. At present, it is difficult to ascertain the exact mechanism underlying these effects. All significant effects were positive in nature, regardless of eating motivation, meaning that an increase in the saliency of the memory was related to a higher endorsement of the eating motivation. It is possible that some people have a more "food focused" mindset, meaning that their food memories are more salient, and they are more aware of their eating

motivations. It could also be related to family meal habits. Frequent family meals are associated with healthier eating habits and tradition keeping (Burgess-Champoux et al., 2009; Gillman et al., 2000; Haapalahti et al., 2003; Neumark-Sztainer et al., 2003) and caregivers who frequently ate family meals as a child are also more likely to eat meals with their own children (Friend et al., 2015; Berge et al., 2018). Therefore, family meals may explain the association between eating motivations and phenomenology – family meals as a child and adult mean healthier eating habits and more tradition keeping across the lifespan plus more opportunities to either create salient food memories as a child or to rehearse childhood food memories as an adult.

Likewise, it is difficult to disentangle the identified subcultural differences in eating motivations. In the present study, Black/African American participants reported the highest rates of health eating motivations. To date, there are few direction comparisons of eating motivations or food choices among the subcultural groups included in this study. Therefore, there is little precedent for interpreting the present findings. Large-scale nutritional datasets suggest that Black/African American adults, on average, consume diets that are higher in fat compared to other subcultural groups (Gary et al., 2004; Satia & Galanko, 2007). However, those data do not necessarily speak to the underlying motivation of eating. For example, there is also work with Black/African American adults and other populations demonstrating that health can be a highly motivating factor but not the ultimate deciding factor in food decisions (Franchi, 2012). Moreover, there are cultural differences in perceptions regarding the broader concept of health and in particular what foods qualify as healthy (Wilson, 2009). For example, many Black/African American adults expressed skepticism about the nutritional benefits of substitutes like artificial sweeteners or low-fat dairy during qualitative interviews about health perceptions (James, 2004).

In contrast, His Hispanic/Latino participants reported the highest rates of affect regulation motivations. While work on the topic is limited, there is a growing interest in the role of "emotional eating" within the Hispanic/Latino community (e.g., Bell et al., 2021; Lopez-Cepero et al., 2019; Power et al., 2020). This work suggests that higher rates of obesity within the Hispanic/Latino community may be partially explained by higher rates of stress, and therefore overeating to cope with stress, within the population. Relatedly, many Hispanic/Latino patients with type 2 diabetes mentioned "coping with emotions" as a major factor in controlling their weight when discussing health plans in a focus group (Amirehsani et al., 2018), and an ethnographic pilot study with Mexican American women produced common themes of stress triggering bad eating habits (Benavides-Vaello & Brown, 2010). Thus, our data fit with this expanding body of work.

Initial mediation analyses revealed, for the first time, an indirect effect between memory phenomenology and health outcomes, mediated by endorsement of health-related eating motivations. The model examining parent BMI revealed an inconsistent mediation (David, 1985; MacKinnon et al., 2000) in which the mediating effect between phenomenology and eating motivations (+) had a different sign than the mediating effect between eating motivations and parent BMI (-). In such instances, it is common for the association between X (phenomenology) and Y (parent BMI) to be nonsignificant in the presence of a true mediation (e.g., Paulhus et al., 2004; Sheets & Braver, 1999). The model examining caregiver health concerns represented a full mediation, in which the association between memory phenomenology and health concerns was fully mediated by health-related eating motivations. Notably, caregivers who had higher endorsements of health-related eating motivations also expressed more concern over their child's weight and diet. There are, again, multiple potential mechanisms that might explain this

association. Caregivers frequently try to model eating behavior they want their child to adopt meaning that a caregiver who is concerned about their child's health might be more likely to model health eating (Vandeweghe et al., 2016). Conversely, a caregiver who is particularly enthusiastic about maintaining a healthy diet might be overly vigilant in monitoring their child's diet. Further still, family meal habits could again be related to the mechanism; caregivers who eat with their families tend to have healthier eating habits (Burgess-Champoux et al., 2009; Gillman et al., 2000; Haapalahti et al., 2003; Neumark-Sztainer et al., 2003) and might be more aware of their child's health status. The exact mechanism remains an open question.

Unfortunately, there was no direct or indirect pathway between memory phenomenology and child BMI percentile. It makes sense that a caregiver's perspectives on eating would be more closely tied to their own BMI and beliefs than those of their child. However, it seems possible that a link may still exist, given that caregiver BMI and child BMI tend to be highly correlated (Lee et al., 2022). For example, a serial mediation model with caregiver BMI specified as a second mediator may demonstrate a more noteworthy effect.

The final series of models demonstrated that culture moderated the mediation effect between health-related eating motivations and caregiver concerns about child health. Interestingly, while cultural differences in memory phenomenology and health-related eating motivations were noted in the present data, there was no evidence that cultural moderated the link between the two variables. While the present data are preliminary, this finding suggests that cultural differences in health-related eating motivations may be better explained by inherent cultural variations in the autobiographical memory system rather than variations in the way mnemonic information is applied or related to eating motivations.

In contrast, culture did moderate the mediation effect between health-related eating motivations and caregiver concerns about child health. Specifically, the magnitude of the effect appeared stronger for Black/African American caregivers (relative to White caregivers), caregivers with medium to high levels of collectivism, and caregivers with medium to high levels of individualism. While there is little precedent for the connection between cultural ideology and concerns about child health, there is extant literature on subcultural differences in caregivers' perceptions of their child's health. Overall, caregivers tend to overestimate their child's health status and perceive their child as a normal weight, even if they are obese (Pocock et al., 2010). However, some studies suggest this tendency may be more pronounced in Black/African American and Hispanic/Latino caregivers (Anderson et al., 2005; Baughcum et al., 2000; Jain et al., 2001; Myers & Vargas, 2000), and study by Young-Hyman and colleagues (2000) found that 44% of caregivers of obese Black/African American children did not perceive their child's weight as a health issue.

It is possible that the present results are related to broader perceptions about health and diet within the Black/African American community. Focus group research with members of the Black/African American community suggest a pervasive concern about the cultural perceptions of healthy eating. Some identify extended family, friends, and communities as barriers that discourage the adoption of healthier habits and say they do not feel their immediate and extended community is receptive of dietary changes (James, 2004). Therefore, Black/African American caregivers who are intrinsically motivated to prioritize healthy eating may see the broader community as working against, rather than with, them in maintaining their child's health, thereby encouraging increased concern and monitoring.

Study Strengths

The primary strength of this dissertation is the application of mixed methods approach to a topic area that primarily consists of ethnographic fieldwork or qualitative focus interviews. The assertation that childhood food memories might be connected to present day eating behaviors is not exactly a novel one – both researchers and laypersons have long suggested this pathway exists. However, a viable interdisciplinary perspective has been lacking from the empirical exploration of said pathway. The present studies incorporated theories and practices from the domains of anthropology, public health, sociology, nutritional science, cross cultural psychology, linguistics, child development, and cognitive science, into a cohesive framework that allowed for a more systematic exploration of the phenomenon and provides the groundwork for future inquiry.

The current studies are also novel for their cross-cultural perspective and inclusion of a diverse sample. Despite recent efforts to infuse culture into all domains of psychological study, many populations remain underrepresented in the broader literature. Research on food memories seemingly oscillates between an understanding of food as a culturally bound object and the exploration of food from a generally Eurocentric perspective (Horowitz, 2006). That is, although the role culture plays within the adoption and perception of eating habits is well documented and referenced throughout the literature, few studies are designed to empirically address such nuances. In contrast, the present studies included culturally specific research questions, the use of cross-cultural theoretical frameworks, and data from a racially diverse array of caregivers within the United States. Understanding and exploring cultural mechanisms was a primary goal of this dissertation and care was taken to be as inclusive as possible within the constraints of the planned studies.

Limitations and Future Directions

There were also multiple limitations to the present studies and multiple potential directions for future inquiry. One of the primary limitations of the present study was a lack of verifiable health data collected from participants. Participants self-reported their height and weight, along with the height and weight of their child. This meant that I could not verify the accuracy of their report or conclusively identify data entry errors. As mentioned previously, a large proportion of the resulting BMIs were flagged as biological invalid values and had to be excluded, resulting in a high rate of missing data. Future work should include more reliable methods of collecting height/weight data, as well as additional biomarkers that allow for the development of additional health indices. For example, future work should consider measures of hippocampal functioning. Comparative studies suggest that obesity and hypercaloric diets cause impaired functioning within the dorsal hippocampus (dHC), as well as changes in synaptic plasticity and neural structures (Clasen et al., 2020; Hao et al., 2016; Porter et al., 2012). Given that the dHC is frequently implicated in the ability to consolidate episodic memory (Barbosa et al., 2012; Drieskens et al., 2017; Panoz-Brown et al., 2018), these deficits may play a key role in uncovering the link between obesity and memory.

A second limitation of the present study was the exploratory nature of some analyses. This dissertation attempted to bridge multiple disconnected bodies of research and unrelated theories into a cohesive framework. As a result, extant literature on the effects explored within the studies was limited. While the analytic plans were developed prior to data collection, specific hypotheses were challenging to specify a priori due to a lack of background information. It is possible some of the effects found in the present studies are not substantial and will not be

replicable. All of the current results should be considered preliminary until they can be replicated with a separate dataset.

It is also worth mentioning that I was unable to recruit an equal number of participants from each subcultural group. Although multiple efforts were made to recruit Asian American participants, their submissions consistently lagged behind the other three subcultural groups. Asian Americans make up only 5.9% of the total U.S. population (U.S. Census, 2020), so it is not surprisingly they were underrepresented during recruitment of a nationally representative sample relative to the other three subcultural groups.[6]

I was able to collect the planned subsamples of White, Black/African American, and Hispanic/Latino participants within the projected timeline of the study. However, data collection was extended one month past the planned termination data for Asian American participants only. When two weeks passed with no new submission from Asian American participants on either Prolific or Cloud Research, the decision was made to stop data collection. Having experienced similar issues while recruiting for an online study with caregivers (Klemfuss, Slonecker et al., 2020), the complication was not unexpected. However, the imbalance among subcultural groups limited the types of analyses that could be used, as well as the reliability of certain test statistics.

On a similar note, the role of caregiver and child gender was not fully probed within the present studies. Men are commonly underrepresented within research on caregivers, with most study samples consisting of mothers (Cabrera et al., 2018). However, our sample was surprisingly balanced – while the majority of caregivers were women, 41.4% of the sample were men. This unexpected diversity represented both a promising future avenue and a challenging for the present studies. All analytic plans were designed under the assumption that men would make

[6] Percentage of U.S. population represented by other subcultural groups: WA (57.8%), Hispanic/Latino (18.7%), Black/African American (12.1%)

up a much smaller proportion of the sample. Preliminary analyses were conducted to identify significant sex differences in the primary variables of interest, and participant sex was included as a covariate when relevant. Targeted analyses related to participant sex were beyond the scope of this dissertation. However, sex-specific research questions will be explored with the present data in the future, and additional projects focused specifically on participant sex should be developed.

Implications

The most immediate implication of the present work is the evidence of a culturally moderated network between food memories and eating beliefs and outcomes. Therefore, if properly utilized, the autobiographical memory system may be an additional tool that clinicians can use to better understand their patients motivations. Many clinicians and researchers have long argued that contemporary nutritional interventions would be more effective if they incorporated a life history perspective (Warin et al., 2008). Similarly, there is growing concern that we may never be able to successfully lower, let alone eliminate, health disparities without a full acknowledgement and integration of cultural perspectives into our healthcare systems and practices (Parker & Grinter, 2014).

For example, many nutritional interventions are rooted in neoliberal perspectives that emphasize the importance of individual responsibility and frame individual success as the primary outcomes (Madden & Chamberlain, 2010). However, these goals may not be as motivating for someone who identifies more with collectivist values. Instead, they may be better motivated by messages regarding the role their health plays in the helping the broader community or the connection they feel with their family over food. Through the examination of personal memories, clinicians may be able to ascertain how their patient perceives food and what

they find most valuable and/or rewardable about food, even if the patient themselves cannot consciously provide this insight. By viewing current meal practices, eating behaviors, and nutritional goals within the context of previous experiences, clinicians may inherently create more salient and culturally sensitive health programs that acknowledge, incorporate, and utilize the social determinants of their patient's current health behaviors.

Conclusion

While you might not spend your day ruminating on the turkey sandwich you ate for lunch, food memories matter. These three studies revealed unique cultural variations in the way we remember past food experiences and the role our memories play in predicting current health outcomes. The framework outlined in this dissertation lays the groundwork for identifying how the autobiographical memory system can be used to create nutritional interventions that are efficacious and culturally sensitive. Future work should explore the role of intergenerational narratives within the family food system and consider how this ubiquitous skill can be utilized to combat child obesity.

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APPENDIX A

The term "origin" can be viewed as the heritage, nationality group, lineage, or country of birth of the person, or the person's parents or ancestors, before their arrival in the United States.

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa. Ancestry groups include German, Irish, English, Italian, Lebanese, Egyptian, etc.

Black or African American: A person having origins in any of the native peoples of sub-Saharan Africa. Ancestry groups include African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc.

Hispanic, Latino, or Spanish origin: A person having origins in Spanish-speaking nations, Latin American, or Spain. Ancestry groups include Mexican, Mexican, American, Chicano, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc.

Asian: A person having origins in any of the original people of the Far East, Southeast Asian, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

APPENDIX B

Positive Food Memory Prompt: Take a moment and think about a POSITIVE memory from your early childhood that is RELATED TO FOOD. This means your memory should be about an enjoyable experience that is related to the consumption, preparation, or presence of food

Negative Food Memory Prompt: Take a moment and think about a NEGATIVE memory from your early childhood that is RELATED TO FOOD. This means your memory should be about an unenjoyable experience that is related to the consumption, preparation, or presence of food.

Positive Non-Food Memory Prompt: Take a moment and think about a POSITIVE memory from your early childhood that is UNRELATED TO FOOD. This means your memory should be about an enjoyable experience that has nothing to do with the consumption, preparation, or presence of food.

Negative Non-Food Memory Prompt: Take a moment and think about a NEGATIVE memory from your early childhood that is UNRELATED TO FOOD. This means your memory should be about an unenjoyable experience that has nothing to do with the consumption, preparation, or presence of food.

APPENDIX C

1. **Sociality:** Which of the following best describes your [NICKNAME] memory?

    a. My memory was personal. It was focused on myself and not particularly related to other people, or it was associated with physical objects or events in the environment. Examples of personal memories include events experienced alone, injuries, success, frustration, etc.

    b. My memory was social. It was focused on social interactions or group activities with others. Examples of social memories include family gatherings, outings to a park, celebrating a holiday, etc.

2. **Specificity:** Which of the following best describes how specific your [NICKNAME] memory was?

    a. My memory was specific. It was about a one-time event that happened at a particular point in time (e.g., celebrating a friend's 5th birthday at the zoo).

    b. My memory was general. It was about an event that took place regularly or on multiple occasions (e.g., softball practice during the summer).

3. **Rehearsal:** Rate on a 5-point scale how often you have thought and/or talked about your [NICKNAME] memory before

4. **Importance:** Rate on a 5-point scale how personally important your [NICKNAME] memory is to you

5. **Vividness:** Rate on a 5-point scale how detailed and clear your [NICKNAME] memory is

6. **Emotional Intensity:** Rate on a 5-point scale the emotional intensity of your [NICKNAME] memory

7. **Arousal:** Rate on a 5-point scale how [positive/negative][7] your [NICKNAME] memory was for you

[7] Valence displayed to participant question matched valence of memory type

APPENDIX D

1	2	3	4	5	6	7
Never						Always

I eat what I eat…

Health

…to maintain a balanced diet

…because it is healthy

…because it keeps me in shape (e.g., energetic, motivated)

Traditional Eating

…because it belongs to certain situations

…out of tradition (e.g., family traditions, special occasions)

…because I grew up with it

Affect Regulation

…because I am sad

…because I am frustrated

…because I feel lonely

APPENDIX E

Representative examples of memory descriptions by memory type

Memory Type	Example
Positive food memories	The one time I remember me and my dad went around together before he passed away. He took me in his truck to go get ice cream. He got rocky road as usual and I got mint chocolate chip. I wanted to be like him, so I got a cherry on top. We sat in the truck and I tasted the cherry. I didn't like it but he ate it for me and it made me happy that we sat there and he took me out one on one That's why I always get mint chocolate chip. It makes me happy in a way, it's comforting. I was about 6 the first time I helped my grandma make tortillas. She let me roll out the masa and the tortillas were more ovals than circles, but she said they were perfect and heated them anyway. I felt special. When I was 5 I remember eating name brand cereal for maybe the first time. We were very poor, so we never had named brand food. I remember asking my sister what were "Honeycombs" and she said a named brand cereal that was "expensive" and that this was a treat. Since my parents divorced, I hadn't seen my mom in over a year. She picked me up and bought me a happy meal. It was the best meal I have ever had. I helped my Mom make Thanksgiving dinner one year because my Aunt who usually does it was sick with Breast Cancer. I assisted my Mom in making all of my Aunt's favorite food and I worked really hard to make sure everything tasted good by being the official taste tester. When the time for dinner came, my Aunt gushed about how good the food was. She passed away shortly after that, but I always remember that dinner and how much we all enjoyed it together one last time.
Negative food memories	My dad took me to Tin Sing restaurant and I ate food even though I was not hungry only so I could prolong the time I had with him. My parents had divorced and my world was crushed. He picked me up for dinner and I stuffed myself with food just so I could spend more time with him. After he dropped me off at my moms house I threw up all the food because I over ate. I hated my life at that time.

	I am Indian but growing up I never liked Indian food. It was extremely hard to eat my mother's cooking everyday which would result in my parents being disappointed that I didn't like to eat our own cultural foods. I remember I would go to the bathroom and would throw everything up. Or I would keep a bite in my mouth and go to the bathroom to spit it out in the toilet. I remember being so hungry at my dad's house sometimes, I'd dream about food so vividly I could taste it. I remember my mom packing me lunch for a field trip, because on regular school days, I just ate the lunch at the school cafeteria. My mom packed me xoi with cha lua, which is a mung bean rice dish with some Vietnamese style ham. It is a pretty traditional dish, but not super known here in the United States. I do remember being embarrassed eating it and seeing what my classmates had brought (sandwiches, chips), I got really jealous of what their moms had packed them. During the summer of my 8th birthday I spent the summer with a cousin who liked eating mayonnaise on her pizza. I tried it and I liked it. After returning back home at one point my parents ordered pizza and I put mayo on it. My father yelled at me and told me how fat and disgusting I was and how putting mayo on my pizza is the reason I am that way.
Positive non-food memories	I remember when my Dad taught me how to ride a bike. We went the parking lot of the local park. He was very patient with me till I got the hang of it. I can still remember the exact bike When I was a kid, my school participated in a spelling bee. I thought it was just for my class, but it turned out to be a statewide thing, and I won out of my whole school and got to go to the championships! I got to miss school to attend, and it was a fun, new experience. I didn't win that round, but it was just exciting to be there and I felt proud of myself. When I was around 8 years old, my best friend and I would eat our lunches very quickly so we can spend extra time at the library. It was my favorite memory because we'd both be the only students at the library, reading and checking out new books. I still think about those days today.

	I remember driving to cape cod. We left early in the morning and the kids would sleep in the car. I remember waking up and seeing sand and pine trees and smelling salt and knowing I was somewhere I loved to be When I was 8 I had a huge birthday party at my home, we had a swimming pool, and ordered probably 10 different pizzas from Pizza hut for family and friends. It was an enjoyable time.
Negative non-food memories	I was sleeping at night and then my mom came into my room crying. She just sat on my bed for a while and then asked if I would return to India with her. I said yes, but internally I didn't know if I wanted to do that but I just wanted her to feel better. I kept asking her over and over why she was crying but she wouldn't tell me. My parents fought a good amount as I was growing up, and now that I think back about it I'm fairly certain my parents had had a fight before this memory. The death of my grandma was a painful and hurtful time in my life. We had a special bond which sometimes made my parent's jealous because i would always tell her anything that happens to me in school before informing my parent when i was young. I felt empty when i heard the news of her death. I cried for weeks because of her death When I was in first grade, we had a spelling test on vocabulary words. I studied hard and my grandfather even quizzed me to make sure I knew how to spell the words. When the actual day of the test came, I froze. I was unable to remember how to correctly spell anything. I ended up doing really poorly on the test and I felt awful. I thought everyone was disappointed in me. I remember playing with a camera, which I wasn’t supposed to do, then accidentally dropping it on the floor, damaging the lens/lens assembly. My dad was very, very mad at me. I was in elementary school and was playing on the playground. I was just standing there on the wooden ramp and a ton of kids came running and accidentally knocked me onto the ground where the rocks were. I ended up hurting one of my eyes and had to go to the hospital.

APPENDIX F

Examples of content terms from memory descriptions

LIWC Variable	Example
Insight	I think that they felt so proud they could give me that experience
Causation	My 8th year was memorable because I helped my mom bake
Tentativeness	My aunt said maybe she needed to make like around 800 tamales
Certainty	I remember always traveling to different cities with my dad
Family	Christmas was a time where the whole family comes together
Friends	We instantly became best friends
Female	My mom had the attitude of I must eat everything on my plate
Male	My dad started to get really sick
Past focus	It happened many years ago
Present focus	I am a vegetarian now.
Perceptual processes	I felt weird watching it with my mom in the room