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The Lived Experience of Individuals Thinking About Food and Coping With Stress

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Walden University
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Abstract

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M. Phil., Walden University, 2019

M.Sc., Loma Linda University, 2006

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Stress results in many people altering their eating patterns, often consuming food high in sugar and fat. Such behavior is a factor in the growing obesity epidemic and can potentially cause the development of chronic diseases, resulting in employment problems and billions of extra dollars spent on national health care programs. Researchers have focused on the concept of "emotional eating" while overlooking the overarching research question of this study, which was about exploring the experience of individuals using eating behavior as a coping mechanism to deal with stress. All responses were viewed through the lens of social cognitive theory. Interviews were conducted with eight participants recruited through Research and Me. Qualitative interview questions focused on cognitive aspects such as exploring learned patterns of eating behavior, beliefs regarding the use of food to cope with stress and understanding why they would choose eating behavior over other coping strategies. Themes emerged about the connections between food and family, how food as a coping skill is reinforced and encouraged due to it being a social and effective strategy, how it is often seen as an incentive or reward, and how it is most often a purposeful decision. Participants identified "healthier" coping strategies; however, they emphasized the effectiveness and ease of using food or eating behavior. These results differ from those highlighting food consumption as an impulsive action. Health care professionals and individuals who understand these results could create positive social change by learning and practicing alternative coping strategies in non-stressful times. This could reduce the consumption of excess calories due to stress, potentially limiting weight gain and the development of health conditions.

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Chapter 1: Introduction to the Study

Introduction

Stress will impact most people at some point in their lives. The World Health Organization (WHO) reported that over 90% of the world's population will be affected by stress (Dalmazo et al., 2019). Stress may come in the form of conflict with colleagues at work, problems in relationships, being stuck in traffic, or financial pressure. "Stress" is anything that causes one's biological, psychological, or social systems to become burdened or taxed by external demand (Lazarus, 1993). These demands may be minor and barely noticed by an individual, or they may be overwhelming, causing significant impact and forcing a change of behavior. Stress is often considered negatively or associated with undesirable events; however, stress can also occur with positive occasions such as marriage, a new baby, or graduation. These stressors can impact various areas of an individual's life.

Stress can be a daily occurrence for some and can result in changes to the individual. Researchers found that physically, stress can suppress the immune system, cause pain, and result in various illnesses (Janson & Rohleder, 2017; O'Connor et al., 2021). There is evidence that stress can cause changes in cognitive abilities. Individuals may have increased difficulty using self-control or engaging higher-level cognitive processes, thus acting more impulsively or relying on habitual behavior (O'Connor et al., 2021; Park et al., 2016; Plessow et al., 2017). Researchers also found that stress can lead to increased rates of depression and anxiety (Cohen et al., 2019; Green et al., 2014). Although individuals may experience the same stressor, they may not react similarly.

Changes in eating behavior due to stress are common, occurring in approximately 80% of people (Ruiz-Roso et al., 2020; Yau & Potenza, 2013). As a result of COVID-19 stress, almost half of participants in Italian (Di Renzo, et al., 2020a) and Polish (Sidor & Rzymski, 2020) studies indicated they increased overall food intake, specifically for comfort foods. A Peruvian study found 40% of overweight women gained weight during the pandemic, while 30% lost weight (Agurto et al., 2021). This is similar to seminal research by Yau and Potenza (2013) that found when reacting to stress, approximately 40% of people eat more than they typically would, 40% eat less, and about 20% do not alter their eating habits. When eating behaviors change under stress, it is common to see individuals turn to diets that are high in sugar and fat (Chee et al., 2020; Pidgeon et al., 2013; Ulrich-Lai, 2016). Using concepts from social cognitive theory (SCT), this study explored the experience of individuals using eating behavior to cope with stress.

Individuals may recognize the potentially harmful impacts of stress; however, they may not consider how they use eating behavior to manage stress. No research could be found to articulate the cognitive aspects that underlie the choice to use eating behavior as a coping skill. In this study, I explored that thought process. Interview questions focused on participants describing how they learned to use this behavior, how it was maintained, and what they thought about these choices. Eating in response to feelings has been studied in-depth, particularly the concept of "emotional eating;" however, there is a lack of research regarding the cognitive underpinnings of these choices. Numerous studies have been written on how eating patterns changed as a result of the COVID-19 pandemic (Ashby, 2020; Clemmensen et al., 2020; Pellegrini et al., 2020; Rolland et al.,

2020; Shah et al., 2020; Zachary et al., 2020); however, none explored the thought processes that may have led to the changed behavior. For this study, the COVID-19 pandemic was a source of stress but was not described as the sole source of stress for participants. The goal of this study was to add to the existing body of literature by exploring the cognitive precursors to eating behavior that may be habitual or stress driven. Understanding this behavior could have wide-ranging implications including assisting in slowing the growing obesity epidemic and increasing awareness and insight for individuals to recognize stress and select purposeful and healthy coping strategies.

This chapter will describe the current research on this topic along with the gap in knowledge that the study aimed to address. It will outline the problem statement and purpose of the study. It will go on to explain the research questions and identify the concepts used to frame the study. This chapter will provide definitions and describe assumptions, delimitations, and limitations. It will conclude by reviewing the significance of this study.

Background

The body of current literature lacked research specifically regarding the cognitive aspects of using food or eating behavior as a coping technique to deal with stress. When conducting a literature search, ample research was found on “emotional eating.” For example, searching the term “emotional eating” in Sage Journals and limiting results to articles published in 2019 produced 2,462 results, and for 2020 there were 3,346 results (February 22, 2021); however, when searching for articles regarding the thought process

or cognitive aspects of eating, there were no results. The primary topics discovered because of this search are described below.

Impact of Stress on Diet Changes

Researchers have reliably found diet changes due to stress (Born et al., 2010; Machado et al., 2013; Pidgeon et al., 2013; Pool et al., 2015a). These changes are not consistent among people, as approximately 40% show an increase in food consumption, 40% show a decrease in average consumption, and 20% do not have alterations in eating behavior when they are stressed (Yau & Potenza, 2013). A recent meta-analysis found that 35-40% of people under stress increase food intake, while the remaining participants either decreased food intake or showed no change (Hill et al., 2021). It was found that individuals who are under high levels of perceived stress tend to prefer diets high in sugar and fat (Chee et al., 2020; Pidgeon et al., 2013). They also show increased eating in the absence of hunger (Born et al., 2010; Stammers et al., 2020). These behaviors could be due to increased cortisol levels and alterations in the hypothalamic-pituitary-adrenocortical (HPA) axis, which can alter food cravings or desires (Machado et al., 2013; Onaka & Takayanagi, 2019). Activity in the HPA axis can induce feelings of anxiety and stress, which force an individual to respond (Dallman & Hellhammer, 2011; Klatzkin et al., 2018). It has been hypothesized that stress causes individuals to seek "comfort foods" or that they view food as a reward. The consumption of specific items can be a way to mitigate the symptoms of stress or as compensation for dealing with difficult issues (Agurto et al., 2021; Pool et al., 2015a; Wood et al., 2016). This behavior

can become habitual and reinforcing, potentially leading to weight gain and other negative health conditions.

Rationale for Diet Changes Due to Stress

Researchers have investigated reasons for the changes in food choice. Machado et al. (2013) suggested foods high in calories can be more palatable and provide a sense of comfort. They noted that consumption could be reinforcing and create habits. These findings were backed by studies during the COVID-19 pandemic, which suggested the rise of "pandemic baking" and marketing of "comfort foods" were due to the highly palatable nature of the foods (Chee et al., 2020; White et al., 2020). Dallman (2010) proposed a feedback loop related to elevated glucocorticoids due to stress, which was supported by O'Connor et al. (2021) and Ulrich-Lai (2016). Brogan and Hevey (2013) suggested that the selection of certain foods could be more related to external factors such as sight and smell. Pidgeon et al. (2013) concluded that consuming unhealthy foods could be used as a coping technique. Sharma et al. (2013) reported this behavior could be highly reinforcing and potentially lead to food addiction. Similarly, Ravichandran et al. (2021) found increased connectivity between areas associated with reward networks in those with food addictions indicating that the eating behavior may serve as a coping mechanism. Zeeni et al. (2013) found that stressed mice overeat high-calorie foods when they have the option between regular and more palatable food. Roberts et al. (2014) noted that individuals under stress typically reported a decreased appetite; however, foods high in carbohydrates and fats could be used as a distraction or comfort. These findings were supported in a meta-analysis by Hill et.al (2021). As noted, food choices due to stress are

not consistent. For example, during the COVID-19 pandemic, an Italian survey found increased adherence to the Mediterranean Diet (Di Renzo et al., 2020b), a Polish study found a 37% decrease in fast food consumption (Górnicka et al., 2020), and substantial increases in intake of salty foods were found in France (Rolland et al., 2020). The selection of specific foods could be tied to the availability of certain items and the option of making a choice. It was suggested that consumption patterns changed during the pandemic as fresh food was more limited due to lockdown rules, individuals wanting to make fewer trips to the grocery store, and fear of potential contamination (Pellegrini et al., 2020; Rodgers et al., 2020).

Sominsky and Spencer (2014) suggested that stress incites a fight-or-flight mode in the body causing an increased desire for high-calorie foods, which can allow the body to respond quickly to perceived threats. Born et al. (2010) provided evidence that stress increased both eating in the absence of hunger and preference for food high in proteins and carbohydrates. Similarly, Dallman (2010) found that individuals under stress showed an increased desire for "comfort foods"; often those high in sugar and/or fat. The reward-seeking behavior may increase over time due to reduced sensitivity to the dopamine produced by these actions (Ravichandran et al., 2021). Michels et al. (2015) reported that stressed children have poor overall diets, often high in sweeter foods with fewer fruits and vegetables. It was suggested by Pool et al. (2015a) that stress caused individuals to want specific items, typically those high in sugar and fat.

Impact of Awareness and Mindfulness on Food Choices

Weinstein et al. (2009) discussed the idea of mindfulness and mindful attention and how they impact overall psychological well-being. Through a series of studies, they concluded that being mindful results in less perceived stress, increased adaptive and approach coping (compared to avoidant coping), and higher levels of well-being. The authors determined that mindful individuals tend to perceive events as less threatening and stressful. It also seemed that mindful individuals were more likely to use positive problem-solving techniques (Weinstein et al., 2009). Similar research by Donald et al. (2016) found that having present-moment awareness seemed to allow individuals to manage daily stressors more effectively. They noted that increased awareness resulted in greater self-efficacy regarding the stressor. Mindful decision-making was found to reduce hedonically motivated eating, and individuals demonstrated increased self-controlled food choices (Forman et al., 2016; Hendrickson & Rasmussen, 2017); however, this literature did not describe any of the thought processes involved in being more mindful.

Impact of Mood on Eating Habits

One's mood may not be as influential on eating habits as stress is. Pidgeon et al. (2013) found that depression can lead to increased eating while anxiety did not. Ebstrup et al. (2011) noted that the perception of stress appeared related to self-efficacy and one's belief in their ability to manage stressful situations, rather than specific events surrounding the stressor.

Social Cognitive Theory and Eating Behavior

SCT has been used to explain health-promoting behaviors through the lens of observational learning (Oyibo et al., 2018). Researchers have found that behavior modeling was one of the most commonly used techniques in fitness apps and they noted that it worked because of the cognitive processes that underlie behavior (Oyibo et al., 2018). Researchers have used the concepts of SCT as a theoretical framework for understanding dietary behavior change in a qualitative study (Rankin et al., 2017a).

Researchers have thoroughly investigated how stress is appraised by individuals and how the body automatically responds on a physical, cognitive, emotional level (Dallman & Hellhammer, 2011; Green et al., 2014; Janson & Rohleder, 2017; Machado et al., 2013; Sominsky & Spencer, 2014; Yau & Potenza, 2013). Despite this, there continues to be a lack of research focused on the underlying cognitive aspects related to participant responses.

Problem Statement

There is a recognition that experiencing stress can influence an individual's mood, thoughts, and behaviors, which includes their typical eating behaviors. Despite individuals potentially understanding the negative impacts of stress, they may remain at high risk of having their mental health affected negatively by stressors. Individuals may have been able to navigate the day-to-day stressors of their lives; however, that changed significantly with the onset of the worldwide COVID-19 pandemic. The pandemic forced individuals to alter most aspects of their lives often while attempting to maintain employment, support at-home learning for children, purchase food and other essential

items, and often caring for family or friends (Chee et al., 2020). The pandemic forced routines to change, which altered physical activity, eating patterns, social activities, and finances for many people (Zachary et al., 2020). The changes that occurred because of COVID-19 demonstrated that no one was immune to the impact of stress, and the tendency to use food as a way of coping occurred around the world (Ammar et al., 2020; Lamb & Cogan, 2016).

Despite increasing research documenting the propensity for individuals to use food to cope with stress, there remained little information on the cognitive aspects that underlie those choices. There was, however, ample literature on how specific types of coping skills can reduce overall distress (Christaki et al., 2013; Errisuriz et al., 2016; Khoury et al., 2015; Weinstein et al., 2009). Researchers have found that mindfulness, mindful eating techniques, and mindful decision-making training can reduce emotional or hedonic eating (Finkelstein-Fox et al., 2020; Forman et al., 2016; Hendrickson & Rasmussen, 2017; Pidgeon et al., 2013); however, literature was not found describing the thought process occurring before the eating behavior. A primary rationale for wanting to understand the cognitive underpinnings was to add to research that could impact trends in obesity. Obesity rates have nearly tripled since 1975, and it remains one of the most preventable medical issues (World Health Organization [WHO], 2020a). While eating behavior and food selection are not the only reasons for obesity, they are crucial factors and should be understood as thoroughly as possible.

Purpose of the Study

This qualitative study was designed to explore and describe the experience of individuals using eating behavior as a coping mechanism to deal with stress. The primary phenomenon of interest was the cognitive process that underlies the choice of eating behavior in response to stress. Individual interviews asked participants to describe their experience learning to use eating behaviors to cope with stress. They were asked about their beliefs and thoughts regarding the use of eating behaviors to cope with stress. For example, they were asked how eating helped or did not help with stress, and how that behavior was rewarded or punished. Participants were asked about their thoughts regarding using food to cope, and how they explained or rationalized this to themselves. Interview responses were themed using the concepts of SCT.

Research Questions

The overall research question for this study was: What is the experience of individuals using eating behavior as a coping mechanism to deal with stress?

The three research questions, which the interview questions were based upon, were:

1. What is the experience of individuals with learned patterns of eating behavior in response to stress?
2. What are the beliefs of individuals regarding the use of eating behavior to cope with stress?
3. What is the experience of individuals in choosing eating behavior over other ways of coping with stress?

Theoretical Framework for the Study

This study used SCT as developed by Albert Bandura (1989). SCT recognizes personal influence on behavior change while also identifying the environmental factors that impact that change. Personal factors included outcome expectations, self-efficacy, self-regulation, and moral disengagement, while environmental influences include reciprocal determinism and observational learning (Bandura, 1989; Glanz et al., 2008). Although it can be used to identify causation for behavior, that is not how this study used it. Instead, the concepts were used as a foundation for creating interview questions to help participants articulate their thoughts regarding the use of eating behavior to cope with stress. SCT provided a guideline for potential themes coming from the interviews as it was ideal for looking at the cognitive factors that can result in behaviors (Oyibo et al., 2018). A more thorough explanation of SCT will be provided in Chapter 2.

Nature of the Study

This study used an interpretative phenomenological analysis (IPA) approach to a qualitative study with a focus on an individual's cognitions related to the selection and consumption of food in reaction to stress. Although stress is a subjective concept, the study explored the individual participants' descriptions of times they used food as a coping technique for stress, rather than focusing on the stress itself. The phenomenological study invited participants to describe their experience with a particular phenomenon (Smith & Osborne, 2013). Through this study, I sought to describe the phenomenon of using eating behavior as a method to deal with stress with an emphasis on the cognitive aspects of that process.

IPA was ideal for this study as it focuses on how individuals make sense of and interpret their experiences (Larkin & Thompson, 2012), rather than attempting to quantify an experience or count how many times participants used eating behavior to cope with stress instead of using a different coping technique. IPA is designed to study the experiences of individuals, often using one-on-one interviews to explore the phenomena in question (Tuffour, 2017). It has been suggested that IPA may be best for topics that are cognitive or intellectual; however, it also recognizes how physiology and sensations are closely tied to thoughts (Tuffour, 2017). As this was the primary focus of this study, IPA was the most appropriate methodology. How IPA was used in the interpretation of the data is discussed in more detail in Chapter 3.

Definitions

The following describes some terms that are used throughout this dissertation:

Cognitive precursors to eating behavior: This refers to the cognitive therapy concept that an individual's perception of a situation leads to automatic thoughts, which results in emotions before leading to behaviors (Beck, 1995).

Coping techniques: These are actions or thought processes meant to help alleviate the unwanted effects of the stress reaction (Lazarus, 1993). It may be an attempt to return the body and mind to a state of homeostasis, either by behavior or by changing their interpretation of the stressful event (Goldstein & Kopin, 2007).

Eating behavior: Rather than only examining the consumption of food, this study explored the broader actions related to the behavior of eating. This included the selection

of specific foods, the choice to go out to a restaurant to eat, and the actions surrounding the preparation and consumption of certain foods.

Mindfulness: "The awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p.145). It is often associated with meditation and stress-reduction techniques, and researchers have shown that it can help improve both physical and mental health (Valley & Stallones, 2018).

Stress: This denotes adversity or strain that can overwhelm individuals' physical, social, or emotional systems (Lazarus, 1993). It may be the result of minor or day-to-day issues such as being stuck in traffic or forgetting to pick up a certain item at the grocery store. Stress may also be more severe or chronic such as dealing with the prolonged illness of a loved one. Although it may be attributed to a specific stressor (a certain event or incident that is believed to have caused the stress), it is more accurately about one's perception of the stressor and their belief that they can manage the repercussions of the stressor (Lazarus, 1993; Selye, 1959).

The concepts of SCT can be summarized into these categories:

Environmental determinants of behavior: This term refers to the ability of the environment, either formally or informally, to shape and influence one's behavior (Glanz et al., 2008).

Moral disengagement: This is when individuals set aside any moral beliefs or standards they would typically hold due to their current circumstance or context (Glanz et al., 2008).

Observational learning: This refers to how individuals can learn from watching the actions and behavioral patterns of others (Glanz et al., 2008). The observation can be in-person or through media and other virtual means.

Psychological determinants of behavior: These consist of outcome expectations and self-efficacy, meaning that an individual believes they are capable of taking actions that will lead to a certain outcome (Glanz et al., 2008).

Self-regulation: This term speaks to an individual's ability to set a goal, plan and execute any required actions while seeking support and rewarding themselves as needed (Glanz et al., 2008).

Assumptions

Several assumptions were necessary for this study. It was assumed that all individuals experience stress and participants would be agreeable to discuss this in a research setting. Similarly, it was assumed that participants would be truthful in their responses to interview questions. As this study was designed to explore the cognitive underpinnings of a chosen behavior, it was assumed that thoughts cause feelings that lead to actions. Based on this, it was presumed that participants would have adequate insight to identify and articulate those thoughts.

Scope and Delimitations

The scope of this study was limited to individuals, age 18 or over, who lived in the United States. The phenomenon of interest was the cognitive process that underlies the choice of eating behavior in response to stress. As such, interview questions did not focus on the emotional responses to stress, nor were participants asked about any

emotional reactions to food or eating behavior. These topics have been thoroughly researched, and it was not deemed to be feasible or beneficial to include them in this study. SCT was selected as the theoretical framework for this study. It was recognized that this theory predominantly examines the cognitive and behavioral aspects of behavior, rather than emphasizing emotional or affective aspects. The use of SCT was preferred for that reason as too much focus on emotions could have diluted the results of this study and take away from the phenomenon of interest.

Limitations

There were several limitations for this study, including the small sample size, which impacted overall generalizability. Similarly, selecting participants who lived in an urban American environment limited the applicability for those in rural settings or other countries. Convenience sampling may have resulted in a sample that was not fully representative of the entire urban American environment. Research questions were designed to reduce the likelihood of evoking a strong emotional reaction; however, some participants could have found the questions intrusive. My bias or views on the topic could have interfered with the study. To reduce this limitation, the interview process was semi-structured.

Significance

This research was designed to add to the existing body of literature related to the use of food and eating behavior to cope or manage stress. The aim was to focus on the underlying thought processes surrounding the selection and consumption of food in reaction to stress, rather than choosing a different coping technique. The cognitive

aspects of this behavior seemed overlooked in the existing literature despite vast amounts of literature examining the emotional use of food in response to stress. Individuals may not be attentive to how stress can alter their eating behavior, and they may not consider the automatic thoughts associated with their use of food to manage stress reactions as the thoughts may be subconscious or automatic. Researchers have found that stress can induce hormonal changes, which can bias individuals towards habitual or emotional eating (Dallman, 2010; O'Connor et al., 2021). This bias can result in less purposeful or goal-directed food choices and may encourage reliance on learned associations or habitual behavior (Dallman, 2010; Jentsch & Wolf, 2020). Understanding this process and exploring the possible cognitive precursors to these actions can assist those who experience stress and rely on food or eating behavior to cope with that stress.

Increased insight and understanding of this association may be helpful for individuals to make conscious food choices and encourage the development of non-food-related coping skills (Pidgeon et al., 2013). It may also benefit highly stressed individuals who report reflexive eating, or who put minimal thought into their food choices. These individuals may not recognize how stress can stimulate urges or cravings for specific types of foods (Benton & Donohoe, 1999). Individuals dealing with chronic stress may inadvertently be creating reward pathways that become reinforced over time with the consumption of certain foods (Ravichandran et al., 2021; Sinha, 2017). This can lead to additional cravings, increased food intake, weight gain, and obesity (Sinha, 2017; WHO, 2020a). This is particularly concerning, as individuals who tend to eat without being hungry may also select calorie-dense items that are often high in sugar and fat (Born et

al., 2010; Cotter & Kelly, 2018; Sominsky & Spencer, 2014). As noted, this may lead to obesity and could partially explain the rise in obesity rates that, according to the WHO (2020) have almost tripled since 1975, and rates continue to rise. It was reported that in 2014, 33% of adults (age 18 and over) were considered overweight, and 13% were obese (WHO, 2015). Only 2 years later, in 2016, they reported 39% of adults were overweight and 13% were obese (WHO, 2020a). Obese individuals are at higher risk of developing numerous health problems such as diabetes, cancer, and cardiovascular diseases (Public Health Agency of Canada [PHAC], 2011). This can have grave consequences on the day-to-day functioning of the individual as well as a significant cost to the economy due to missed work and high health care costs. It has been estimated that obesity and chronic diseases related to obesity cost the Canadian economy billions of dollars and cause significant strain on the healthcare system (PHAC, 2019). Understanding some of the factors influencing obesity could assist in slowing the epidemic.

Although the changes described above focus on the individual, they can lead to a greater positive change in the community and society. Assisting individuals to manage stress levels and increase healthier eating can improve their physical and mental health (Sominsky & Spencer, 2014). Effectively managing stress can also be a beneficial example for younger generations, as children tend to learn eating habits from their parents (Michels et al., 2015). One person who alters their eating behavior can have a far-reaching impact, even more so when they share their knowledge with those around them. Each individual can then influence their children, parents, siblings, friends, colleagues, and neighbors. They can impact their social circles, which can continue to spread

throughout communities. It is hoped that the results of this study will aid in helping develop positive social change through healthier individuals and communities, starting with one individual at a time.

Summary

Stress is a common issue impacting many people daily. Although it may be instigated by certain events or situations, it is the perception and interpretation of an event as stressful that causes physiological and psychological changes. In reaction to these changes, coping techniques are used in an attempt to mitigate the physical or mental strain and to return to a feeling of balance. Eating behavior is often used as a coping technique to manage stress. There is ample literature on the behavior of eating in response to stress and the concept of "emotional eating;" however, there is a lack of research describing the thought processes that may lead to those actions. This qualitative research study explored the underlying cognitive aspects of using eating behavior in response to stress. The following chapter provides a review of the literature on the biopsychosocial response to stress, how eating is used in response to stress, why this is concerning given increasing obesity levels, and how mindfulness is used to manage stress. Chapter 2 also reviews SCT and the health beliefs model and describes how they were used in this study

Chapter 2: Literature Review

Introduction

It can be common for people to use eating as a strategy to deal with stress (Kim & Jang, 2017; Ravichandran et al., 2021; Rutters et al., 2009); however, there is a lack of literature describing the underlying cognitive process for these actions. In general, many people struggle with their ability to understand and control their day-to-day eating behavior. This may be particularly true when examining the use of food to moderate or help deal with stress, although this behavior is common (Dalmazo et al., 2019; Finch et al., 2019; Ruiz-Roso et al., 2020). This chapter will provide the strategy used to gather literature for this study and review the conceptual framework used in the study. It will also provide a review of the current literature regarding key concepts in the study such as the impact of stress on an individual's cognitive processes, behavior, and mood; changes in eating behavior in response to stress; the overall impact of obesity; and how mindfulness influences stress and eating.

Literature Search Strategy

The primary source of information for this study was peer-reviewed journal articles accessed through the Walden University library. Several databases were searched including Academic Search Complete, PsychINFO, PsycARTICLES, Thoreau, and SAGE Journals. Google Scholar was also used. Key search terms included: *stress*, *stress reaction*, *nutrition*, *food*, *food choice*, *eating*, *appetite*, *cognition*, *thinking*, *coping*, *food consumption*, *Social Cognitive Theory, Health Belief Model,* and *eating behavior*.

Combinations of these terms were also used such as stress and food, stress and eating, cognition and eating along with various truncated versions (i.e., eat* or stres*).

The initial search of stress and food resulted in a plethora of articles regarding emotional eating, comfort eating, and how food choices tend to change when individuals are under stress (Born et al., 2010; Klatzkin et al., 2019; Rutters et al., 2009; van Strien et al., 2013; Yau & Potenza, 2013). When using the search terms *food and cognition*, most articles were about the impact certain foods can have on one's cognitive abilities (Strasser et al., 2016). The terms *food and thinking* or *food and thought* provided no useful results. *Eating and stress* resulted in articles on a variety of topics including how symptoms of eating disorders are impacted by psychosocial stress, the effect of social stress on eating, and how mindfulness has been used to manage eating behavior (Crescentini et al., 2016; Sproesser et al., 2014; Zysberg & Tell, 2013). Overall, most literature focused on the emotional components of eating, either how food was used to manage emotions or how emotions triggered the desire for specific foods (Benton & Donohoe, 1999; Born et al., 2010; Cardi et al., 2015; Remus et al., 2015).

In response to the COVID-19 pandemic, many countries issued lockdowns or stay-at-home orders to stop the spread of the virus and to avoid the collapse of the health care system (Ruiz-Roso et al., 2020). These measures provided researchers an opportunity to study how stress impacted eating behaviors. It was believed that stress levels went up significantly as many lockdowns came quickly without much time for preparation and these changes resulted in economic uncertainty. Researchers found the pandemic increased insomnia and negative emotions, including anxiety, depression, and

loneliness (Ashby, 2020; Shah et al., 2020). This could also have been due to the need to remain physically distant from people thus reducing social interactions that were previously a primary means of coping with stress (Clemmensen et al., 2020; Rolland et al., 2020).

Several studies were focused on weight gain, which was attributed to increased unstructured time, a requirement to stay home, and increased stress (Pellegrini et al., 2020; Zachary et al., 2020). Researchers found an increase in habitual behavior such as screen time, substance use, and the consumption of salty foods (Rolland et al., 2020). The typical ways people ate also changed with more individuals reporting snacking throughout the day and after dinner, eating in response to sight or smell, eating when bored, or eating in response to a craving (Zachary et al., 2020). Researchers attributed these changes to increased overall stress levels and decreased mental well-being (Rolland et al., 2020; Zachary et al., 2020).

No articles were found regarding how stress impacted an individual's thought processes regarding the desire, selection, or consumption of specific foods. The most beneficial articles on this topic were studies that included the use of SCT and the health belief model (Lohse et al., 2017; Rankin et al., 2017b; Valley & Stallones, 2018). Although the focus of this research was not directly on the cognitive aspects of food choice for coping, the use of the theory and model meant the authors discussed it more than previously seen. Other researchers alluded to this in the introduction or discussion sections of the article; however, it was not the primary topic of the study. This

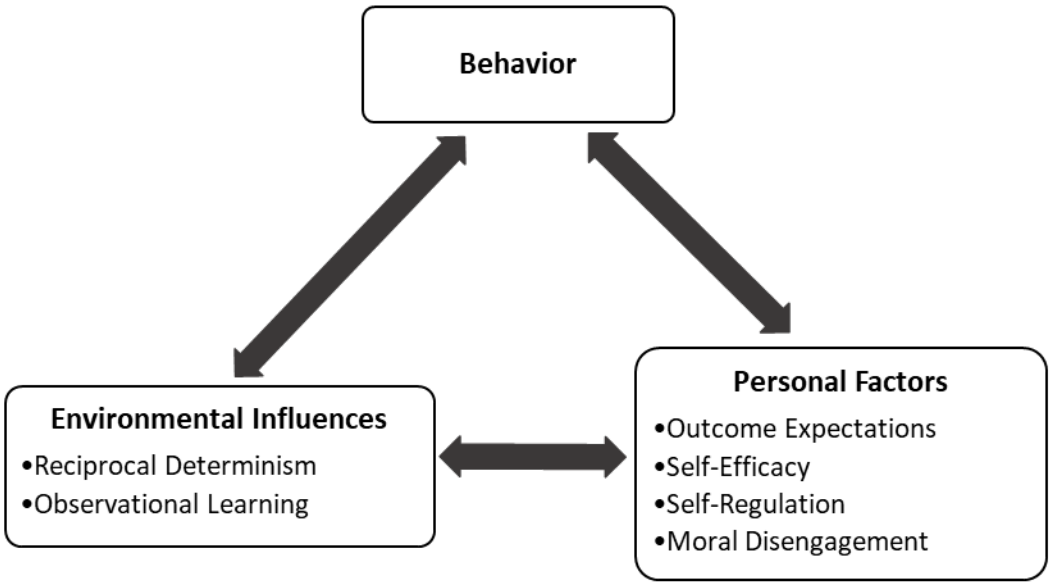
highlighted the need for research specifically on the cognitive process as it remained a gap in the literature.

Theoretical Framework

The key phenomenon of this study was the cognitive process associated with the use of eating behavior to cope with stress. This phenomenon was examined using SCT (Bandura, 1989). SCT was initially developed by Bandura (1989), and it suggests that behavior change occurs due to an interaction between environmental influences, cognitive and other personal factors, and behavior. These factors interact bidirectionally, and some may have more influence than others, depending on the situation (see Figure 1). The theory accounts for the numerous external and internal influences that shape thoughts, feelings, and behaviors while also allowing for the dynamic interactions that occur in an ever-changing environment (Bandura, 1989).

Figure 1

Social Cognitive Theory



SCT benefited this study, as it describes the complexity of the relationships between individuals and their environment. SCT considers many factors while also demonstrating how the three primary elements (behavior, environmental influences, and personal factors) both influence, and are influenced by, others (Bandura, 1989). Bandura (1999) wrote in-depth about his belief that humans are agents in their lives, that they deliberately interact with and interpret their environment and various complex settings. SCT does not consider individuals to be only capable of automatic responses that are dictated by firing neurons instead, it recognizes that individuals make meaning, predict outcomes, and engage in self-reflection (Bandura, 1999). Together, these actions shape what behavior individuals choose to engage in.

The concepts of SCT can be grouped into the following five categories:

1. Psychological determinants of behavior

One of the primary psychological determinants is *outcome expectations*, which explains an individual's belief in the outcome of a proposed behavior (Glanz et al., 2008). For example, one may believe that eating a brownie may improve their mood. Another determinant is *self-efficacy*, the individual's belief in their ability to perform the behavior. For example, an individual may not participate in yoga as they do not believe they will be successful at mastering the skills.

2. Observational learning

Humans can learn by watching others or from mass communication, which is often through media such as advertisements or journalism (Glanz et al., 2008). Observational learning is very important in families and communities, as it describes how

individuals learn from watching the actions of others (Glanz et al., 2008). The models may be in-person or not, as individuals can learn from watching sports figures or media personalities. For example, a child may learn to associate pizza with winning a sporting event.

3. Environmental determinants of behavior

In addition to observing models and learning from them, individuals are also influenced by their environment. This may be viewed as rewards or punishments, and include laws or sanctions meant to modify behavior as well as free exercise classes or lower prices on fresh fruits and vegetables (Glanz et al., 2008).

4. Self-regulation

The concept of self-regulation refers to one's ability to manage their actions, set goals, provide rewards, and instruct themselves while also seeking additional support when needed (Glanz et al., 2008). These are considered skills that one must learn and master over time, and they can provide self-satisfaction (Bandura, 1989).

5. Moral disengagement

Although individuals may learn self-control and moral standards, they may act in ways that violate those values, known as moral disengagement. When this occurs, they seek to justify their actions or make the actions appear less heinous or harmful (Bandura, 1989). For example, when individuals are stressed, they may increase consumption of more highly palatable foods, including more frequent snacking (Chee et al., 2020). They could justify this as they believe that eating these foods will provide comfort and reduce

stress. Believing this helps reduce potential feelings of guilt tied to eating unhealthy food (Shen et al., 2020).

SCT was used to explain how individuals learned to use eating behavior to moderate the effects of stress. SCT also provided a lens to understand how the behavior was maintained and reinforced over time. The concepts of SCT were used in the development of the interview questions and provided a framework for the interpretation of the resulting data.

Literature Review

Stress

Stress has been written about for many years although the current concept of stress can most likely be attributed to Hans Selye. Selye (1950) argued that, while the source of stress may differ, most organisms react to stress in a patterned fashion. He focused on the inherent ability to adapt and resist stress that preserved life and allowed for learning. Through this work, he developed the General Adaptation Syndrome, which had three phases: the Alarm Reaction; the Stage of Resistance, and the Stage of Exhaustion. He noted that how individuals react to stress can be influenced by their genetics, personality, and conditioning. Additionally, the same stressor may result in differing responses among individuals and for one person experiencing the same stressor more than once. Selye (1976) also noted that some stressors can have therapeutic results such as cold showers, exercise, or saunas. These stressors tend to be acute and can increase adaptive responses; however, there are also extended or chronic stressors that

often result in increased physical illness and psychiatric disorders due to the wear and tear on the individual (Goldstein & Kopin, 2007; Yau & Potenza, 2013).

Some of Selye's work was based on Cannon's concept of "homeostasis", which is the desire to maintain equilibrium particularly in physiological variables (Goldstein & Kopin, 2007). Individuals respond in numerous ways to regain equilibrium after a stressor. Some of this may be based on their perception of the stressor as well as the belief in their ability to cope with that stressor. Coping skills are used to regulate the system and return it to a stable state. This is often done through feedback loops that provide information about the effectiveness of the coping skill.

Biopsychosocial Response to Stress

As noted, stress can impact individuals in a variety of ways and can influence biological, psychological, and social responses. When an individual appraises a situation to be stressful, their body reacts; typically preparing them for a "fight" or "flight" response (Onaka & Takayanagi, 2019). This involves changes to the cardiovascular and musculoskeletal systems that will allow individuals to react quickly to the stressor (Dhabhar, 2011). This response typically begins with the activation of the sympathetic adrenal medullary system, which releases adrenaline and noradrenaline into the bloodstream (Yau & Potenza, 2013). This can result in an increased heart rate and a decreased blood flow to specific organs, such as the skin (Gutman & Nemeroff, 2011). Next, the HPA axis is activated. The HPA releases inhibitory hormones that will reduce appetite, sleep, and libido. The result of this may be why it is common to see individuals under acute stress forgetting to eat or insisting they are not hungry. This biological

process is centered around the hypothalamus, which has a direct impact on the pituitary gland (O'Connor et al., 2021; Yau & Potenza, 2013). Under conditions of chronic stress, the HPA may become dysregulated, which can change how glucose is metabolized and may increase insulin resistance and appetite. Increased cortisol secretion may stimulate the appetite while other glucocorticoids can lead to the development of abdominal fat (Chee et al., 2020; Sominsky & Spencer, 2014; Yau & Potenza, 2013). Chronic stress can result in immunosuppression, causing increased healing time and an increased likelihood of developing infections or illnesses (Cohen et al., 2019; Dhabhar, 2011). Individuals may complain of increased neck or back pain, gastrointestinal issues, or headaches (Janson & Rohleder, 2017). The body may not be capable of managing this increased stress response for prolonged periods of time without negative repercussions.

When experiencing stress, individuals may turn to "comfort" foods that are often high in sugar or fat. Researchers have found that both humans and animals prefer these calorically dense foods during times of stress (Hill et al., 2021; Sominsky & Spencer, 2014). It has been suggested that this could be due to the brain requiring increased calories to manage stress. This can be problematic, as individuals may have decreased appetite, but be eating calorie-dense food. While this may help them manage some stress, it can result in weight gain and obesity as the body attempts to conserve energy for a stress response (Sominsky & Spencer, 2014).

Managing stress reactions may be more challenging as individuals are more likely to rely on habitual behavior and more primitive parts of the brain (Jentsch & Wolf, 2020; Plessow et al., 2017). They engage in less complex cognitive processes as their energy

and resources are diverted to other areas of the body. This can result in more impulsive actions or behaviors as individuals have less self-control or a decreased inhibition or ability to stop themselves from engaging in addictive behavior such as emotional eating or substance use (Groesz et al., 2012; Park et al., 2016).

Although some may attempt to avoid others and become less social during times of stress, researchers have found that social support can reduce the impact of stress. Those who spend time with others may reduce the development of some illnesses and often show improved overall wellbeing (Nabi et al., 2013). Similar research found that individuals involved in Facebook-based social support reported improved physical and mental health and general wellbeing (Gilmour et al., 2020). Stress has also been found to cause increased levels of depression and anxiety, which may result in less social activity (Green et al., 2014). It has been suggested that social supports assist by providing a distraction, allowing individuals to share their concerns with others, reducing the seriousness of a situation, and potentially encouraging other healthy behaviors such as walking, laughing, or attending an exercise class together (Rook et al., 2011; Sliter et al., 2014).

Eating in Response to Stress

Going out to eat, cooking together, and sharing food are central to social events in our society. Changes in eating behavior have been closely tied to both chronic and acute stress (Chee et al., 2020). Research exists on both sides of the argument, some indicating that there is a stress-relieving quality to eating certain foods, while other researchers report no difference when compared to control groups (Finch et al., 2019; Groesz et al.,

2012; Qi & Cui, 2019; Shen et al., 2020). For those who do find a break from stress, it tends to be a short-term solution (Groesz et al., 2012). Eating in response to stress, either consciously or not, is very common and researchers have reliably found diet changes due to stress (Born et al., 2010; Machado et al., 2013; Pidgeon et al., 2013; Pool et al., 2015b). These changes are not consistent among people as approximately 40% show an increase in food consumption, 40% show a decrease in average consumption, and 20% do not have alterations in eating behavior when they are stressed (Yau & Potenza, 2013).

Not only does stress impact the amount of food consumed, but it can also influence the type of foods that are consumed. Individuals under high levels of stress often select diets that are high in sugar and fat (Finch et al., 2019; Pidgeon et al., 2013; South et al., 2012; Stammers et al., 2020). They also tend to show increased eating even though hunger is absent (Born et al., 2010; Di Renzo, et al., 2020a). These changes occur both in and outside of laboratory settings as individuals consume more snack foods (Groesz et al., 2012). Researchers used the COVID-19 quarantine and lock-down policies of many countries to study these behaviors closely, and also found behavioral changes (Shen et al., 2020). These behaviors may be related to the body seeking additional calories to manage the neurochemical adaptations to stress or as a direct result of increased cortisol levels and changes in the HPA axis (Klatzkin et al., 2019; Machado et al., 2013; Stammers et al., 2020). Researchers have also found a greater consumption of highly palatable and non-nutritious foods, which would indicate the body is not seeking certain nutrients to help in managing the stressor; however, it has also been reported that

sugar and fat may influence the brain in a similar fashion to opiates, thus providing some relief from stress (Chee et al., 2020; Groesz et al., 2012; Schepers & Bouton, 2019).

As noted in the literature search strategy section, eating in response to mood has been well researched and documented. For example, individuals may seek out friends and indulge in ice cream or pizza after a break-up, and people often bring food to a home after the death of a loved one. Most individuals can recall a time when specific food items brought them feelings of happiness or joy or how food can be tied to memories (Dallman, 2010). Although individuals may prefer comfort, familiarity, or traditional foods, they also may view food as a reward, feeling that they have earned it (Bracale & Vaccaro, 2020; Pool et al., 2015b). Similarly, they may seek out specific items as a method to mitigate the symptoms of stress, to distract themselves from the stressor, or they may use them as compensation for dealing with difficult circumstances (Pool et al., 2015a; Qi & Cui, 2019). This behavior can become reinforcing and turn into a habit over time. Stress biases the brain towards an emotional reaction as the prefrontal cortex is limited, leaving more habitual and emotional responses from the amygdala and basal ganglia (Dallman, 2010). When individuals consume foods that, even temporarily, lessen their stress, associations are created and continue to be reinforced over years of similar behavior (Dallman, 2010; Ravichandran et al., 2021).

Influence of Obesity

The WHO has estimated that worldwide obesity rates have almost tripled since 1975 (WHO, 2020a). They reported that, in 2016, this equated to over 1.9 billion adults (over age 18) and over 340 million children (under age 18) who would be considered

overweight or obese. This included approximately 41 million children under the age of 5 who were obese or overweight (WHO, 2020a). Obesity is typically determined by measuring an individual's body mass index (BMI), which calculates weight divided by height (Mayo Clinic, 2019). Although this is not always a precise measurement, particularly for highly muscled individuals, it is the benchmark scale used globally.

There are numerous potential causes for obesity; however, it is considered a preventable health issue. Some factors may be difficult to modify such as individual metabolism, genetics, and hormones (Mayo Clinic, 2019). Some diseases or medical conditions (i.e. Prader-Willi or Cushing syndrome) may also cause weight gain as can certain prescribed medications (Mayo Clinic, 2019). One of the primary controllable factors leading to obesity is the tendency to overeat, ingesting more calories than an individual burns through day-to-day activities and exercise. This is a worldwide issue due to increased sedentary lifestyles including modes of transportation and types of employment (WHO, 2020b). It has also been influenced by busier schedules, which can lead to increased fast or packaged food consumption. These foods tend to be very calorie-dense and high in fat, leading to an overconsumption of calories (WHO, 2020b). Some communities may also have restricted access to fresh or nutritious foods, or these foods may be cost-prohibitive (PHAC, 2019).

There can be grave physical consequences resulting from obesity including several non-communicable diseases. Cardiovascular diseases, specifically heart disease and stroke have been closely linked to obesity (Mayo Clinic, 2018). Statistics Canada (2019) lists "diseases of the heart" as the second leading cause of death yearly from 2014

to 2018, with cancer being the leading cause. Excess weight can also lead to other physical ailments and has been found to worsen most existing health conditions (Centers for Disease Control and Prevention [CDC], 2019). Obesity has been implicated in the development of diabetes, high blood pressure, high cholesterol, sleep apnea, osteoarthritis, some types of cancer, and gallbladder disease (CDC, 2019; PHAC, 2011).

In addition to the physical ailments related to obesity, researchers have found obesity can also lead to psychological issues (PHAC, 2011). Although this can be somewhat controversial as it is difficult to determine clear causation, researchers have found evidence that obesity can be linked to increased mental health issues, particularly in women (da Luz et al., 2018). Research can be challenging due to the complex relationship between obesity and mood. For example, obesity could result in an individual being unhappy with their physical appearance, leading to anxiety or depression. These individuals may also be treated differently by others and this discrimination could lead to an increase in mental health concerns (da Luz et al., 2018). Individuals with obesity may exhibit different behaviors, for example, during the COVID-19 lockdown in Italy, clients of an obesity unit were found to have increased consumption of food (Pellegrini et al., 2020). In the United States, researchers found that those with unhealthy patterns of eating before the pandemic maintained those during the pandemic (Ashby, 2020).

Obesity can result in various medical conditions that can greatly impact an individual's mental health (Romain et al., 2018). Alternatively, individuals struggling with mental health problems could be using food as a coping technique, resulting in

eating without hunger or ingesting significantly more calories than required in a day (Born et al., 2010; Park et al., 2016). Researchers have found that those diagnosed with certain mood disorders such as bipolar disorder or major depressive disorder are at increased risk of developing obesity (Romain et al., 2018). The authors of a recent study found evidence that a higher BMI caused decreased well-being and increased depressive symptoms (Broek et al., 2018). They attribute this to inflammation and dysregulation in the HPA due to increased weight, which then caused depressive symptoms (Broek et al., 2018). As noted previously, certain medications can also cause weight gain, and this is true for many psychotropic medications. Individuals with mental health concerns may also be less physically active, which can lead to increasing weight (Romain et al., 2018).

The economic costs of obesity can influence individuals, families, communities, and countries. Like the potential causes of obesity, the costs can be varied and either directly or indirectly related to obesity. For example, there is a direct cost to the health care system related to assisting those with obesity. These costs could be due to obesity-related health problems as well as the numerous chronic diseases directly related to obesity such as diabetes and cardiovascular disease (PHAC, 2011). Although it can be challenging to determine actual dollar amounts, results from one meta-analysis and systematic review estimated annual medical costs attributed to obesity in the United States in 2014 to be approximately $149.4 billion nationally (Kim & Basu, 2016). It should be noted that this only accounts for direct medical costs, not other associated costs such as missed work. Researchers have found that obesity can impact employment, more specifically, they noted that overweight men were most likely to be employed while

obese women were least (Feigl et al., 2019). They noted that obese women were 5.8% less likely to be employed compared to average-weight women. Some consideration should also be placed on lower productivity for those who are obese; however, exact costs vary considerably (Dee et al., 2014). Researchers have examined how various chronic conditions impact employment, and they found that many diseases (including hypertension, heart disease, and diabetes) reduced an individual's chance of being employed (Feigl et al., 2019). They did not find a correlation between obesity and days of work missed; however, they did note that individuals with two or more chronic health conditions have higher rates of absenteeism (Feigl et al., 2019). Overall, it appears that as individuals become more obese, the costs associated with their weight also increase. These costs are not seen with average weight or even overweight individuals (Dee et al., 2014). These findings should be concerning for any national government as obesity rates continue to increase.

Eating in the absence of hunger, in response to stress, or as a coping mechanism to manage mental health issues can lead to the consumption of excess calories (Born et al., 2010; Chee et al., 2020; Park et al., 2016). The ensuing weight gain can result in an individual becoming obese or maintaining obesity. The literature review regarding the implications of obesity highlights the importance of understanding the cognitive aspects of using eating behavior as a coping technique for stress.

Mindfulness

Slowing down and paying attention to the present moment can feel difficult in a hectic, multi-tasking world; however, the concept of mindfulness has been used for

centuries as a way of bringing peace and well-being to an individual's life. Although definitions can differ, it is commonly accepted that mindfulness is a way of paying attention, or a purposeful awareness of one's thoughts and actions (Nezlek et al., 2016). It is a technique that can reduce the likelihood of automatic or subconscious responses. Mindfulness does require training to assist individuals in learning to pay attention to their thoughts and actions (Forman et al., 2016).

Various researchers have examined how mindfulness can influence substance use disorders, mental health issues, and behavioral disorders. It was found that those who practiced mindfulness interpreted events as less stressful compared to others. Also, when stressful events occurred, they used mindfulness skills to mitigate the impact of stress (Hicks et al., 2020; Nezlek et al., 2016). Mindfulness was found to reduce levels of anxiety, depression, distress, and decrease physiological arousal including heart rate (Crescentini et al., 2016; Khoury et al., 2015).

It was suggested that mindfulness could be used in relation to eating because of stress. In general, people tend to pay little attention to what they eat as they are often focused on other tasks while eating. Food choices are also highly susceptible to various emotions, including stress (Kidwell et al., 2015). Researchers reported that those who have been trained in mindful decision-making were less likely to consume servings of snacks compared to those trained in inhibitory control (i.e. stop-signal in response to stimuli) (Forman et al., 2016). These findings were interpreted to mean that individuals were no longer engaging in automatic behavior and less focused on hedonically eating. The authors suggested that mindfulness could be particularly beneficial for individuals

attempting to reduce unnecessary or optional food consumption as they learned to make purposeful choices and pay attention to the thoughts and feelings driving their desire to eat (Forman et al., 2016). Researchers have noted similar findings, reporting decreased impulsive eating when individuals have participated in mindfulness training (Gidugu & Jacobs, 2019; Hendrickson & Rasmussen, 2017).

Mindfulness techniques can be used to examine eating patterns, particularly in regards to stress as individuals can consider the potential sources of the stress (Bahl et al., 2013). This can be challenging as it takes time and energy to act in a purposeful, deliberate manner. One must be open to challenging habits and patterns and have the persistence to continue, even when the behavior becomes hard; however, this new behavior can be reinforced and turned into a new pattern (Bahl et al., 2013). Despite the research demonstrating the potential benefits of mindfulness on eating behavior, it remained silent regarding the underlying thought processes that mindfulness training targets.

Health Beliefs Model

The Health Beliefs Model (HBM) has been widely used since the 1950s to understand individual actions and to develop interventions to assist with changing health behavior (Glanz et al., 2008). The primary purpose of the model was to explain why individuals would not engage in behaviors that could improve their health, typically by preventing disease. Although compliance with alternative behaviors appeared to be a clear and logical option, many people did not participate in these actions (i.e. mammograms to screen for breast cancer or condom use to avoid sexually transmitted

infections) (Glanz et al., 2008). The model was developed to explain how individuals may have come to these conclusions.

The HBM uses six primary constructs to predict health behavior (Glanz et al., 2008). The definitions of each are described below.

1. Perceived Susceptibility – the likelihood that an individual will be impacted by a threat (i.e., disease, condition, or illness)
2. Perceived Severity – the seriousness of the consequences of not preventing or managing the threat
3. Perceived Benefits – the belief that certain actions will stop or alleviate the threat from occurring or minimize the impact it may have
4. Perceived Barriers – the costs or negative aspects of engaging in the beneficial behavior
5. Cues to Action – various internal and external triggers that influence behavior
6. Self-Efficacy – the belief that the individual can carry out the behavior they feel will lessen the threat

Although the model has been used to predict the implementation of behavior, it can also assist in describing why certain behaviors are put into practice. Valley and Stallones (2018) used the HBM to understand a range of factors that may have influenced health care workers using mindfulness practices. Using open-ended questions and surveys, they found that participants readily spoke about the perceived benefits, perceived barriers, cues to action, and self-efficacy (Valley & Stallones, 2018).

Summary and Conclusions

Although significant research has been done explaining the overall impact of stress on an individual, and how people typically respond and react to stress, there continues to be a lack of research describing the underlying thought process that could lead to these behaviors. The physiological reactions include activation of the HPA axis, the release of various hormones that can impact metabolism and appetite, immunosuppression, and various physical complaints. These changes can cause individuals to rely on habitual or impulsive actions as there are fewer resources available for more complicated cognitive processes. Individuals are also influenced by past behavior, memories, and feelings of times when food helped reduce the impact of stress. These associations can lead to increased reliance on food as a coping technique. This may be partially to blame for the rising rates of obesity worldwide.

Obesity can have devastating repercussions on individuals, communities, and countries. It can result in numerous physical health concerns that can be costly to national health care systems, companies, and individuals as they may have personal expenses and issues with employment. Obesity can also reduce overall wellbeing, mood, and functioning. One method of counteracting the behavior of mindless eating or eating in response to stress is the practice of mindfulness. This technique encourages individuals to be in the moment, having an awareness of their thoughts and actions. This may result in more purposeful and planned eating. Despite the existing research on mindfulness, there continues to be a gap in the literature regarding the thought processes of those who use food as a coping technique to deal with stress. This study applied a qualitative approach

with interviews focused on exploring those underlying thoughts. This is explained further in the following chapter.

Chapter 3: Research Method

Introduction

This qualitative study explored and described the experience of individuals using eating behavior as a coping technique to deal with stress. This chapter provides information about the research design used and provides a rationale for why that design was chosen. It explains the role of the researcher in the study and describes the methodology including how participants were recruited and selected, and how data were collected and analyzed. Finally, the chapter reviews issues of trustworthiness.

Research Design and Rationale

The overall research question for the study was: What is the experience of individuals using eating behavior as a coping mechanism to deal with stress?

The three research questions, which the interview questions were based upon, were:

1. What is the experience of individuals with learned patterns of eating behavior in response to stress?
2. What are the beliefs of individuals regarding the use of eating behavior to cope with stress?
3. What is the experience of individuals in choosing eating behavior over other ways of coping with stress?

Qualitative research was selected for this study, as it can be used to focus on the meaning that participants give to an experience or phenomenon (Pietkiewicz & Smith, 2014). The central phenomenon of the study was the cognitive process that underlies the

choice of using eating behavior to respond to stress. The study used an IPA approach, which focuses on how participants make sense of and interpret their experiences (Tuffour, 2017).

Role of the Researcher

In qualitative research, the researcher is an observer, gathering information in a neutral yet facilitative manner (Larkin & Thompson, 2012). The semi-structured interview provided guidelines to focus the conversation, attempting to gather meaning from participants. It was not the goal of this study to prove a theory or validate the experiences of others; the goal was to explore the experiences of participants. Although it was impossible to completely set aside all bias or personal feelings, I endeavored to remain neutral, curious, and open-minded (Biggerstaff & Thompson, 2008). This was done by considering my experiences with the topic and how that could influence the analysis of data. As recommended by the Canadian Psychological Association (2017), I identified what personal values and cultural influences could have influence. Considering these factors in advance and being prepared to listen openly allowed me to gather participants' perceptions and interpretations of events in their lives. Any follow-up or prompting questions used were for clarification purposes only, not meant to question how the participant has interpreted the event (Tuffour, 2017).

Participants of this study were adults, over age 18, from the United States, and recruited through Researchandme.com. Recruitment was inclusive of all genders, ethnicities, religions, education levels, etc. Due to the use of this method, I did not know any of the participants, helping to reduce the likelihood of researcher bias.

Methodology

Participant Selection Logic

Participants were recruited online using Researchandme.com. They came from the Unites States, were over age 18, and were employed full or part-time in a variety of professions. As part of the screening questions, participants were asked to rate their level of stress over the past 2 weeks. Age, employment, and stress levels were the only exclusion criteria, recruitment was inclusive of all other demographics.

It was aimed to have eight to 10 participants. This was a small number of overall participants, but studies using IPA do not require large numbers of participants (Callary et al., 2015; Larkin & Thompson, 2012; Pietkiewicz & Smith, 2014; Tuffour, 2017). Determining sample size typically relies on the concept of "data saturation", meaning that additional interviews will not provide any new information and it is not possible to add more coding (Bradshaw et al., 2017). Several guidelines have been suggested for how to set sample size in advance, including using a "rule of thumb" (number of participants range from five to 35), using conceptual models (based on research questions, the aim of the study, and the nature of the topic), and numerical guidelines (Sim et al., 2018). Numerical guidelines have recommended 10, 12, and 15 participants, while 91% of codes were identified by the sixth interview. There is always the possibility of a perspective being missed; however, the quality of the data may rely more on the effectiveness of the interview and the insights provided by the participants (Sim et al., 2018). Having less than 10 participants allowed me to look in-depth at the phenomenon in question. It has been suggested that using five or six participants is acceptable, and it is recommended

that the sample be homogeneous and have common characteristics (Smith & Osborne, 2013). More participants would have resulted in significantly more time and energy invested in interviews, transcription, and analysis. The goal of IPA is to have a rich, descriptive account of the primary phenomenon, not to be widely generalizable (Pietkiewicz & Smith, 2014). As such, many authors recommend purposeful sampling to ensure the homogeneity of the participants (Alase, 2017; Callary et al., 2015; Larkin & Thompson, 2012; Pietkiewicz & Smith, 2014). Over 10 participants were initially selected; however, only eight were interviewed as data saturation was reached. After completing the eight interviews and analyzing the data, I consulted with the dissertation chairperson to confirm that data saturation had been satisfactorily reached and additional participants did not need to be added.

For Researcher-Developed Instruments

Interviews required approximately one hour and were scheduled at a time convenient for the participant. Interviews were initially booked over Zoom due to physical distancing regulations during the COVID-19 pandemic. Although regional public health measures were loosened during the data collection process, it was already determined that interviews would occur over Zoom. Recruitment occurred via Researchandme.com, and all participants resided in the United States, as the company does not currently recruit outside of the United States. I reside in Canada, making face-to-face interviews impractical. Participants were asked to select a location that provided privacy and ensured minimal interruptions (Alase, 2017). I also selected a location free from distraction and where participant identity could remain confidential.

The semi-structured interviews were based on researcher-developed questions (Appendix). The interview included the use of prompts to assist participants in sharing their experiences or to provide clarity to their responses (Smith & Osborne, 2013). Content validity was established by reviewing interview questions with the dissertation committee and conducting informal pilot interviews with non-participants of the study (Frankfort-Nachmias & Nachmias, 2008). Practice interviews occurred prior to scheduling interviews with participants. These were informal interviews and were not transcribed. Following these, questions were reworded slightly to improve flow and ensure clarity. Practice interviews allowed me to be better prepared, as I was more familiar with the questions and the order of questions. The practice interviews improved ease of answering for participants as I was prepared with prompts or alternate explanations for questions, which potentially increased the meaningfulness of the study. Interview questions were developed using the concepts of SCT to ensure that all areas of the theory were addressed. A researcher-developed demographic questionnaire was initially developed to gather information about the participants including their perceived stress levels; however, it was determined that this information was not required, as it did not provide additional benefit to the study, and it was not used. The information gathered from the screening questions as part of ResearchandMe.com in conjunction with the semi-structured interview questions were adequate to answer the research questions and ensured that unnecessary information was not gathered from participants.

Procedures for Recruitment, Participation, and Data Collection

This study used a convenience sample, and participants were recruited online through Researchandme.com. Data were collected solely by me. When participants signed up for the study online, I contacted them by email and included a copy of the consent form. Participants were asked, after reading the consent, to respond to the email and include the words "I consent." Twenty-four participants received initial contact, three of them declined participation, one did not show for the scheduled interview and did not respond to subsequent emails, two expressed initial interest but an interview could not be scheduled, 10 did not respond to my repeated emails, and eight were successfully interviewed. After receiving the consent, we scheduled the interview at a time convenient for them and I sent a Zoom link. At the beginning of the interview, I confirmed that participants had read and understood the consent form and provided time for any questions. This served as a second check of consent and provided verbal confirmation to the written consent received previously (Canadian Psychological Association, 2017). The electronic authorization was substituted for a signed consent form due to the inability to physically be in the same room. As part of the information collected and provided by ResearchandMe.com, I received the participants name, gender, age, phone number, geographical location, and email address. The email addresses were used to contact participants and phone numbers were confirmed in case anything urgent arose and I needed to contact them with short notice. I also ensured that participants had my email and phone contact information should they need to contact me.

As part of the screening questions, each participant was asked about their perceived level of stress and how much they work (none, part-, or full-time). There were no answers that would automatically disqualify or eliminate participation; however, I selected participants who said their stress was a three or four. The first interview question asked participants to rate their level of stress over the past 2 weeks. Although these numbers were slightly different than what was reported during online recruitment, it did not substantially alter the average score. I also selected participants who were working part-time (20-30 hours per week) or full-time (30-40 hours per week). No other demographic information was requested from participants. Each was assigned an alphanumeric code for the interviews, subsequent transcriptions, and any tracking or notes (College of Alberta Psychologists, 2019). A digital audio recording of the interview was done through Zoom. I used the audio recording to transcribe the interviews, and I completed all transcriptions myself (Alase, 2017).

During the 1-hour interviews, participants were asked the interview questions including some prompting and/or follow-up questions to clarify or gather more information. To increase participant comfort during the interview, questions were posed informally (Bradshaw et al., 2017). Each interview had a fairly relaxed atmosphere, hopefully making the experience enjoyable for participants (Frankfort-Nachmias & Nachmias, 2008). Several participants thanked me at the end of the interview and said it had been an interesting or thought-provoking experience. Before ending the call, I asked participants if they had any questions and encouraged them to contact me as needed or if anything came up for them in the days following the interview. No follow-up interviews

were planned. I used some field notes during the interviews, which accompanied the recordings (Alase, 2017).

Data Analysis Plan

I maintained field notes and wrote down anything that stood out from the interviews, including any observations or highlights (The Pell Institute, 2021). This immediate reflection began the process of data analysis as I started to notice and consider themes and patterns right away. When I transcribed the interviews, I had a second opportunity to review and become familiar with the data and continued identifying patterns and themes (Bradshaw et al., 2017). I was the only person who transcribed the interviews. Central to analyzing IPA data is the need to read the transcriptions or listen to the recordings several times, which is also why I choose to transcribe the interviews myself (Pietkiewicz & Smith, 2014). I followed the recommendation that transcriptions be precise and include any pauses, laughs, or changes in patterns of speech (Biggerstaff & Thompson, 2008).

After transcribing the interviews, I read them over slowly and carefully to understand the participants meaning in response to the questions. Interviews were read and listened to several times, which allowed me to have a complete understanding of what each participant said (Pietkiewicz & Smith, 2014). During the coding phase, responses were broken down into units to allow me to identify patterns, both within-interview and across all participants. These units consisted of words, common phrases, repeated statements, and other patterned responses, all recognized while keeping the research questions in mind (The Pell Institute, 2021). Once identified, transcripts were

reread for clarity and to ensure the accuracy of theming (Alase, 2017). Duplicate and extraneous data were removed to clean the responses and allow for all units to be compared equally (Moustakas, 1994). The units of data were organized and grouped into overarching themes related to the research questions. Data were hand-coded using Microsoft Word and Excel rather than any data analyzing software.

The intent of this phenomenological study was to describe the experience of participants, not to explain or analyze their behavior. The themes identified in the steps above were used to describe, in as much detail as possible, the phenomenon of using food to cope with stress. Additionally, themes were used to describe the structure, how the phenomenon came to be (Moustakas, 1994). Due to the descriptive nature of this study, all responses were considered equally. All participant descriptions were considered meaningful until coding was completed as only then was discrepant data identified. Discrepant data were removed with other extraneous data and will be discussed in Chapter 5. Once themes were grouped in a way to help answer the research questions, conclusions were drawn (The Pell Institute, 2021).

Issues of Trustworthiness

To establish trustworthiness in this study, the following criteria were reviewed: credibility, transferability, dependability, and confirmability.

Credibility

Credibility is important to a study as it demonstrates that the interview questions are directly related to the overall research questions. It demonstrates that this study did explore the intended phenomenon (Shenton, 2004). To demonstrate credibility, I selected

the use of IPA, a well-researched, accepted methodological framework. Research and interview questions were based on SCT and were reviewed by the dissertation committee.

Member checking can be used to verify accuracy thus increasing the credibility of the results (Birt et al., 2016). This means of participant validation was done by sending the transcribed interviews to the participants for their review. Participants were given the ability to correct any errors and ensure they agreed with what was recorded. It was believed that this practice could reduce the potential for researcher bias (College of Alberta Psychologists, 2019). There was potential concern that participants could feel embarrassed by their responses or ask that sections be removed from the data (Birt et al., 2016). Given the nature of this study, it was believed that this would not be a prominent issue; however, it would have been addressed with the committee if it had arisen, which it did not. Transcripts were sent to participants electronically. Each participant was asked if they wanted the data encrypted to ensure safety and all declined (American Psychological Association, 2010). Participants were asked to respond, either with corrections or agreement within one week of having received the transcript. No participants asked that anything be changed although two did not respond.

I have ten years of experience doing single session therapy and have worked in the mental health field for over 18 years. As a psychologist who is familiar with conducting single session therapy and working in crisis mental health, I was comfortable completing initial interviews and eliciting more descriptive information from participants while maintaining focus on the research questions. I built rapport quickly, which appeared to help increase participant comfort and openness to the interview process and

hopefully increased honesty in responses. Participants presented as relaxed and willing to engage in the interview process.

Transferability

Although this study was focused on a general population, the findings could apply to specific populations. This study provided a thick description of the research process and participants' experiences. This could allow readers to determine how applicable the findings are for themselves (Korstjens & Moser, 2018). Readers can understand the context and boundaries of the study, allowing them to determine the value of the results for their situation (Shenton, 2004).

Dependability

Dependability refers to the repeatability of the study, using the same methods as those described by the researcher, and getting similar results (Shenton, 2004). To ensure this ability, this study outlined the steps of the research design and process in a transparent way that could be followed by a different researcher.

Confirmability

Confirmability is closely tied to dependability. While dependability is about consistency within the process of the study, confirmability is about how closely the data supports the findings and conclusions of the study. It has been suggested that some researcher bias is inevitable (Shenton, 2004); however, that does not mean that there cannot be procedures in place to reduce bias. True objectivity may be challenging; however, bias can be reduced by the researcher taking time to consider and admit any personal biases. This was done in conversations with the dissertation chair before

participant interviews as well as using a journal throughout the research process to document personal experiences and reactions. Understanding researcher values and preconceptions can limit bias in data interpretation (Canadian Psychological Association, 2017; Korstjens & Moser, 2018). An audit trail could be conducted using this document and my notes to describe this research process. This trail would provide a transparent look at the step-by-step research process from start to finish.

Ethical Procedures

Data collection for this study only began after approval (number 11-15-21-0527343, expiry November 14, 2022) was granted from Walden University's Institutional Review Board (IRB). Participants were provided with information about the study and provided a written informed consent document. They replied via email to provide their consent to continue. All interviews were virtual, allowing participants to select a comfortable location; however, there was a consideration for privacy (College of Alberta Psychologists, 2019). An incentive was used in this study as participants who completed the interview were provided with an electronic $10 USD gift card to Amazon.Com. Participants were free to withdraw from the study at any time and there were no known or anticipated risks associated with participation in the study (American Psychological Association, 2010; Canadian Psychological Association, 2017).

Interviews were audio recorded using Zoom and transferred to an encrypted external hard drive that remained in a locked safe, accessible only to me when needed. The collected data will be safeguarded for a minimum of five years. Transcriptions of the interviews were kept on a different encrypted external hard drive and participants were

only be identified by alphanumeric code (Canadian Psychological Association, 2017). Interviews were transcribed by me, and no other ethical issues arose during the data collection process.

Summary

This qualitative study explored and described the experience of individuals using eating behavior to cope with stress. In this study, I used IPA to explore the cognitive process that underlies the choice of eating behavior in response to stress. IPA was selected as it focuses on participants' experience with that phenomenon. Data were collected through semi-structured interviews, which were transcribed and analyzed by me. Many steps were taken to ensure the trustworthiness of the study, including how participants were recruited, and how data were stored and analyzed.

Chapter 4: Results

Introduction

The purpose of this study was to explore and describe the experience of individuals using eating behavior as a coping mechanism to deal with stress. The overall research question for the study was: What is the experience of individuals using eating behavior as a coping mechanism to deal with stress? Three research questions informed the semi-structured interview questions. The research questions were focused on describing the cognitive process that underlies the choice of eating behavior in response to stress. They were: RQ1: What is the experience of individuals with learned patterns of eating behavior in response to stress? RQ2: What are the beliefs of individuals regarding the use of eating behavior to cope with stress? RQ3: What is the experience of individuals in choosing eating behavior over other ways of coping with stress?

In this chapter, I will provide demographic information about the participants involved in the study and explain how data were collected and analyzed. I will review evidence of trustworthiness and conclude by providing the results of the data analysis.

Setting and Demographics

There were no organizational issues or concerns during the time frame of data collection. It did occur over the winter holiday season, which may have stalled participation slightly. It did not seem to have any other influence, and this did not alter the interpretation of the study results.

All participants were recruited via Research And Me. Participants were required to complete two screening questions:

1. Are you currently working?
    a. Yes, full-time (approx. 30-40 hours per week)
    b. Yes, part-time (approx. 20-30 hours per week)
    c. No
2. How would you rate your level of stress over the past 2 weeks?
    a. 5 – Very High
    b. 4
    c. 3 – Moderate
    d. 2
    e. 1 – Very low / None

Although all answers were accepted and did not automatically eliminate participant involvement, it provided some general information. Participants who were not working or who reported low or very low levels of stress (1 or 2) were not selected. Eight participants were interviewed; two identified themselves as male and six as female. They ranged in age from 20 to 53 with an average age of 35 (median 34). Reported levels of stress ranged from 3 to 4.9 with an average of 3.8 (median 4). All participants were assigned an alphanumeric code to replace their name in documentation and no identifying information was left in the transcripts.

Data Collection

All interviews were conducted using Zoom and were under an hour in duration. During initial contact, all participants indicated their familiarity and comfort using the platform; therefore, no other methods were used. Zoom was used to record the interviews

and only the audio portion was retained. Participants were reminded of this before the interview commenced. These were saved on an encrypted external hard drive that was kept in a locked safe unless it was being used. I was the only one with access to the safe. Data were also backed-up on a separate hard drive that remained in the locked safe. There were no variations to the data collection process that was described in Chapter 3. All contact with participants was conducted through my Walden email account and the email address they provided to Research and Me.

Interviews were semi-structured, and I asked all questions to all participants. Some additional prompting questions were added to provide clarification, get further detail, or prompt the participants to expand on their responses. Before beginning the interview, I introduced myself, reviewed the general purpose of the study and the process for the interview, and confirmed that participants had reviewed the consent form. I allowed time for any questions or clarifications. Eight interviews were completed, and data were collected between December 10, 2021, and February 26, 2022. At the end of the interview, I reminded each participant of my contact information and encouraged them to reach out if they had questions or concerns. Thank you gifts ($10 USD Amazon gift cards) were sent after the completion of the interviews.

Data Analysis

Shortly after the interviews were completed, I transcribed the audio recordings. All transcripts were emailed to participants for validation; two were not returned. None of the other six participants requested to have anything added or changed to the transcripts. I became familiar with the data while transcribing the recordings and began to recognize

themes and repeated statements. Once all interviews and transcripts were completed, I reviewed each one to understand the participants' responses to the individual interview questions, noticing differences and similarities. Then I summarized participant answers and created common categories based on those responses. The themes were put into a spreadsheet along with short statements from each participant. This process allowed for both inductive and deductive analysis as themes were created from responses and responses were categorized according to research questions.

The initial analysis highlighted various themes occurring in the interviews as a whole; however, it was not clearly focused on the three research questions. To provide further analysis, I returned to each transcript and highlighted responses that directly aligned with the research questions, regardless of where that information was in the interview. Combining both methods provided additional clarity of themes and emphasized common responses to the research questions. All coding was done by hand using Microsoft Word or Excel. Data analyzing software was not used.

Evidence of Trustworthiness

Credibility

Credibility was established by ensuring interview questions were aligned with the overall research questions of the study. The questions were approved by the dissertation committee before beginning the interviews. Each transcript was sent via email to the participant who had the opportunity to review them for accuracy. Transcripts were created verbatim, and no participant requested any changes. I reviewed transcripts at least three times while coding and theming, allowing me to become very familiar with the

content of each interview. I was able to develop rapport with each participant, and none appeared overly nervous or reluctant about the interview procedure. Participants answered questions openly and easily and I believe they were honest in their responses.

Transferability

The study focused on the general population; however, I believe that the results could apply to anyone interested in this topic. The results section will include numerous quotes from participants to reinforce my conclusions. The descriptions and statements from participants could resonate with a variety of individuals. The same interview process and data collection method were used for each participant.

Dependability

As the participants were unknown to me, I did not have preconceived ideas about them as individuals. I was able to go into interviews open to whatever the participants were willing to discuss. Themes or common topics from previous interviews did stand out when they were repeated by new participants. I would ask some additional clarifying questions or probe slightly more to gather more information about that topic before moving to the next question. Each interview ended with me asking participants if they had any other thoughts about the idea of using food to cope with stress, if they had anything to add, and if I had missed asking them anything. Most participants used this time to summarize their overall beliefs or add some concluding thoughts.

Confirmability

At the end of each interview and while transcribing, I considered how the described experience was similar or dissimilar to my own. Taking this time allowed me

to recognize any potential biases or preconceived beliefs and focus solely on what participants were saying. Although all questions in the semi-structured interview were asked to each participant, there was also flexibility in allowing participants to interpret the questions themselves and discuss topics they felt were important. I did not need to interrupt or redirect any participants apart from asking for clarification or additional information at times.

Results

The purpose of this qualitative study was to explore and describe the experience of individuals using food and eating behavior as a coping mechanism to deal with stress. The results of the study will be organized by research question and further subdivided into themes.

RQ1: What is the experience of individuals with learned patterns of eating behavior in response to stress?

The predominant overall response from participants was that they did not feel that anyone had specifically taught them this behavior. Instead, they learned by watching those around them and by developing their own habits and patterns, which were reinforced over time and repeated actions.

Theme 1: Family History

Participants overwhelmingly said they did not feel that anyone in their life, presently or in the past, specifically or purposefully taught them to use eating behavior or food to cope with stress. They did not feel it was an overt message; however, many noted more subtle cues or insinuations. GT3 and PA7 talked about how their cultural

backgrounds (Italian, Greek, and Filipino) resulted in increased pressure to eat more often or in larger amounts. Both said parents or grandparents "push food on you" or how the message was to "eat, eat, eat." The theme of family and learning from those around you will reemerge in numerous areas throughout the study.

Theme 2: Memories of People Using Food to Cope With Stress

When directly asked to describe their first memory of someone using food or eating behavior to cope with stress, many participants spoke about individuals currently in their lives. For example, GT3 talked about a friend who uses beer and "drinks too much" when she is stressed. She also recalled her best friend in high school who was anorexic. Similarly, CB1 and FV2 also talked about friends in difficult relationships who use food to help manage stress.

In other parts of the interview, many participants talked about how they or their family members associated food with difficult situations or emotions. For example, PA7's mother took her to fast food restaurants to have difficult conversations (i.e., parents getting divorced or discussing bad school grades), OA5 said her mother and grandmother often went out to eat when they were stressed, NN4 said his parents always took him out to dinner when they'd had busy or stressful days, and SB8 said her mother typically made fried chicken when she'd had a bad day, saying:

> I think that was her way of letting off steam after coming home from work. And even though she was tired, she'd make that meal, I guess because it made her feel a certain type of way. Maybe it made her relieve her stress or it was her way to decompress.

CB1 recalled her mother often taking her for sushi when she was young, which she believed is why she prefers it now. She said it was typical for them to go out to eat approximately once per week, which she described as a "mother-daughter" day. NN4 assumed his parents went to restaurants when they were "mentally or physically exhausted and just don't want to put in the effort." He also recalled his dad having a beer when he came home from bad days at work, even though he did not drink alcohol often on weekends.

Participants talked about how food was tied to specific memories of events or people. PA7 said she likes "to eat cheese and crackers in bed while reading a book. That's like a comforting, hiding situation, and it is like part of a childhood memory." However, she noted that she has graduated from reading Babysitters Club and eating American cheese and saltines. SB8 also talked about making food that reminded her of people who were not present over the holidays or who had passed away.

Theme 3: People Encouraging the Use of Food to Cope With Stress

Food was described as a "love language" for SB8 and OA5. It was something that could be shared and brought people together. OA5 said her dad grew up in a home without a lot of physical or verbal affection, and she believed that he shows his love for her by offering to bring her treats or to get her food when she had a bad day. Making food for others was seen as a caring gesture, such as SB8's grandmother always making her favorite food when she would visit and ensuring she had leftovers to bring home. PA7 talked about a boss who would treat them to bakery items when they finished a project. She also said she has found herself doing the same with her son. For example, she would

offer him ice cream when he was sad or ask if he wanted to have friends over for pizza after getting good grades. PS4 also recalled his parents taking him out to a restaurant to reward him for getting good grades.

When asked specifically if there were individuals in their lives who encouraged the use of food to cope with stress, participants listed several people, as noted in Table 1 (some participants listed more than one). As with other questions, it did not seem that the encouragers were specifically telling participants to eat; rather, they would suggest food items seeming to know that could improve the participants' mood or reduce stress. SB8 said it was not overt encouragement; rather, it was her boyfriend suggesting that they go out to eat or pick up certain foods when he knew she had a "rough day." She said he seemed to use this as a reward or de-stressor when she had a bad day. OA5 recalled a similar story with her mother who had said, "You know, if you want to talk about it instead, we can. But we can also go get that [food item] and talk about it."

Table 1

Who Encourages the Use of Food to Cope With Stress

Who encourages	*n*
Friends	5
Family	5
Social media / society	2
Work colleagues	2

Theme 4: Learned and Reinforced Behavior

The original intent of the research question was to determine when in their lives participants may have witnessed or learned to use eating behavior to cope with stress. Through their responses, participants demonstrated that they had learned what works for

them, and they continued to act accordingly. CB1 described the tendency to develop habits and repeating patterns: “It’s like your brain kind of likes AI [artificial intelligence].” GT3 said she uses chocolate to signal to her body that the meal is over. OA5 remarked that her behavior seemed automatic or as if she were “running on autopilot.” CB1 said when work meetings were ending for the day, she would place an online food order so it would be delivered as soon as the meeting was over.

Several participants talked about having favorite foods or regular orders at specific restaurants. They appreciated knowing exactly what they would be getting and remarked upon how that consistency was important. There was also comfort in going to familiar locations, where they would be considered a “regular” and restaurant staff got to know them (SB8, FV2). CB1, GT3, and PS6 talked about always eating certain foods while studying or having specific snacks available when at work. They discussed how they would intentionally have these items prepared in advance, as if knowing they would “need” them.

RQ2: What are the beliefs of individuals regarding the use of eating behavior to cope with stress?

The responses to interview questions seemed to center on common beliefs: that food is a reward, the food choice could be worse, and that it works to manage stress.

Theme 1: Food as a Reward or Incentive

Three participants stated food was a “reward,” one said yes and no, and another referred to it as an “incentive.” Other participants felt that a trip or vacation, shopping, or watching TV would more likely be considered a reward. The idea that “you deserve this”

was mentioned several times during interviews. CB1 said that certain foods were the "highlight of my day", and on difficult days, she could manage by saying "you know what? I had enough and I'm just going to treat myself to this." PA7 said there were times when she felt "accomplished…in that pride I was like 'you should get food from one of your favorite restaurants', and that felt like a reward."

The idea of having something to look forward to was prevalent in responses. OA5 described how food:

> Makes it easier to get through [difficult situations] because I have something to look forward to. But most of that pleasure comes after everything is over, and I finally get there. It just makes it 1,000 times better than if I had nothing, and I had to just keep focusing on that feeling of stress.

PA7 described some situations occurring over the past year, and noted:

> Shit was hard. So, having like a piece of chocolate peanut butter pie to look forward to, that I was like, intentional that I bought it on the weekend with apple pie. Like literally was like, you deserve this. Life is hard. It's ok to do nice things for yourself. And if you don't do nice things for yourself when you get out there, you're going to be like all battered and bruised, and not ready to deal with other people, or whatever I have to deal with, you know, so…I don't want to say it's…not confidence isn't the right word…but it was like coaching myself into being ok.

Several participants described how they used food as an incentive for finishing an unpleasant task. Participants often described chores they did not want to do (i.e., "I'm

going to dread doing that," "I know it's going to be terrible," "as soon as I'm done," "if you do this hard thing") and how they would remind themselves that when it is done, they will be able to eat certain items. PA7 said she always got Indian food when she was doing laundry or would reward herself with sushi when helping her mom or dad. GT3 said she automatically ate chocolate or crunchy snacks when she had accomplished a task. NN4 recalled his friends taking him to a bar after he completed the MCAT.

Theme 2: The Food Choice Could Be Worse

Participants expressed common beliefs about their food choices, specifically comparing them to "bad" foods. When asked how he would react in the middle of a difficult day, NN4 responded "usually chips. Get a salty snack. A really bad day? Have ice cream in the middle of the day, which…whatever, to each their own. Nothing wrong with that. Moderation, right?" CB1 said something similar: "It doesn't feel like I'm eating junk food, you know? It doesn't feel like junk food at all." FV2 said she would typically pick ice cream or pizza noting that "ice cream isn't junk food. I don't consider ice cream junk food."

There were similar comments about how the food chosen to deal with stress was different, unique, or typically not a regular food item. OA5 said she would pick foods that she would not have every single day, instead, having them once per week. PA7 said that "dessert feels like spoiling myself and it feels indulgent." She compared this to cooking meals, which she viewed as a method of taking care of herself. She described meals as satisfying and said there are moments of pride in the meals, but they do not feel indulgent. She said it was: "taking care of yourself in a smart way."

Theme 3: It Works

A consistent message coming from participants was that using food to cope with stress was effective. Participants had clear descriptions of how food or eating behavior helped in relation to stress. NN4 said he had a "calmer demeanor after eating ice cream." He described it as "more mellowing…soothing," and that eating helped "ease the burden" of work. CB1 said that after eating while watching a tv show, she felt "sort of complete," and went on to describe it:

> You know those bars? Like when your phone is going to die? And it's on low? It's like I felt supercharged up after I've eaten. And it's not because I was starving. You see, that's where I see like, the discrepancy, because it's not like I'm starving. It's something else…getting that charge.

She said she would not have the same result if she ate food that was in her home. PS6 had a similar description, saying that a Big Mac or fries "feeds you, [and gives] that sense of energy or positivity that you need to get through the situation." He said it can be like a "light at the end of the tunnel." PS6 said food could relieve stress and provide comfort "so that you don't think of the situation as bad as it actually is." He said it removed pressure for about 30 minutes. After that, he said the stress would only come back if something unexpected were to happen to reintroduce it. OA5 said by the end of a long week, "I need to have something because I'm tired, I'm exhausted, I'm stressed out, and I need to wind down."

Participants mused about why certain foods had the intended results. CB1 said the interview had caused her to wonder why it was that eating certain foods helped manage

stress. She said, “I’m kind of thinking about like, why, after I’m done eating, it’s like everything is…all the stress is gone.” SB8 said about eating certain items: “you’re like a kid again. You’re like all happy and you know, it makes you feel good.” She said that you know “it’s going to make you feel better,” which she presumed was why she would continue to use it as a stress reducer.

There were some mixed results when participants were asked how consistently food or eating behavior worked to alleviate stress. OA5 said she could not remember a time when eating behavior did not work to help reduce stress. SB8 said eating something to manage stress worked about 50-60% of the time. She noted it was a “short little reward ‘cause I’ll have it, and then once I have it and it’s done, I’m like: oh I feel the same as I did before I had it.” PS6 said, “I feel relieved but at the same time…I kinda feel like I ate something bad…a combination of a treat and something that tastes good, but at the same time, I don’t feel good about it.” NN4 said something similar: “It’s not…reducing the work-related stresses coming through. But it’s kind of like…let me go do something that’s not work-related to ease the day somewhat.” As this makes it “more tolerable, easier to navigate.”

The speed that food can help reduce stress was noted by some participants. OA5 said:

> There have even been a couple of times that I’ve had trouble breathing because of anxiety [and so she would tell herself] I’m going to get through this because I’m going to have this Bundt cake at the end of today. Or I’m going to go home and

> I'm going to have all my strawberries and chocolate dip. It's like I immediately plan it, as soon as that stress comes.

NN4 also noted that if he was having a very stressful day, he would "go for a beer 'cause that's more…immediate."

Participants also highlighted the availability and reliability of using food to cope with stress. SB8 noted "food always makes you happy," while other techniques may not have the same effectiveness. PA7 said "I have some memories of attempting to reach out to people, but people not being available, and getting frustrated and being like well it looks like it's you and cheese and crackers and a bottle of wine again." FV2 described a similar story of a friend who did not come to her for support saying: "she respected that I might not have had the mental capacity to take in what she would have disclosed to me." She later said that there are times when she does not "want to be a bother, I don't want to burden someone else with this, because, at the end of the day, this is what I'm dealing with." She said the person she would be talking with cannot "physically jump in my body and heal it for me."

R3: What is the experience of individuals in choosing eating behavior over other ways of coping with stress?

When asked what coping skills they used to deal with stress, five of eight participants included food or eating. The food and/or eating behavior mentioned by participants is noted below in Table 2. The other common coping skills are listed in Table 3 below. Although eating was not the primary method of coping discussed, based on the responses to interview questions, it may be used more regularly than other coping skills.

Table 2

What Eating Behavior or Food Is Picked

Eating or food choice	*n*
Eating out (dine in or take out)	7
Ice cream	4
Chocolate	3
Alcohol	2

** Of note, participants were not specifically asked to name individual items; however, certain choices were mentioned during the interview.*

Table 3

Coping Skills Used by Participants

Coping skill	*n*
Exercise	6
Talking with friends / family	6
TV / video games / playing on phone	5
Nap	2

Theme 1: Intensity and Type of Stressor Determines the Coping Strategy

Several participants noted that the coping skill depended on the intensity and/or type of stressor. The stressor also influenced their desire to connect with others to reduce stress. PA7 noted she liked "funny memes" or shared "goofy text threads" with her friends. She said that friends and family were also supportive when she needed to vent about certain stressful situations. She tended to prefer to talk problems out and that it was helpful to "hear someone else to calm down my anxiety, my anger, or whatever I'm feeling." OA5 said when issues are "very complex and deep" that she would not want to eat. Instead, she wanted to "talk about it and I want to cry, and I want to feel everything and get it out." FV2 said that "just having someone to share that with you kind of relieves the stress a little bit, especially if it's someone that you're comfortable around." CB1 said

it was helpful to “feel like I’m not alone.” She also said that when she spent time with friends, it was most often together at a restaurant.

Alternatively, there were times when participants recognized the desire to avoid others. FV2 said she would “put my phone on silent, DND [do not disturb], turn it off. I think if I know I have negative energy in me, I don't want to text…or return a phone call.” She said taking a nap also helped with those feelings, particularly when she felt like a lot of stress was due to lack of sleep. PS6 also felt sleeping was very helpful.

The COVID-19 pandemic changed how participants used some of their typical coping skills. NN4 said that before the pandemic, he would use his commute to help relax after work. He would listen to music or sports radio and decompress from the day. Working from home removed the opportunity and time to transition from work to home. He also noticed that stressors that popped up throughout a workday could not be alleviated through coffee breaks or 10-minute chats with colleagues.

The pandemic also changed the availability of some coping skills. For example, OA5 said she used to teach dance classes that had to be canceled due to COVID restrictions. She said it had been a primary coping skill for years and dancing in her home did not have the same effect. PS6 said he has not felt comfortable going back to the gym yet although he used to exercise regularly pre-pandemic.

Theme 2: Why Pick Food Over Other Coping Skills?

When considering why participants choose food over other coping skills, most responses were similar, see Table 4.

Table 4

Why Choosing Food or Eating Behavior Over Other Coping Skills

Why pick food	*n*
Easy, available, reliable	6
It works	6
Saves time	5
It is an indulgence	3
Social aspects connected to food	3

Convenience was the most frequently discussed reason (*n*=7), which included how it saved time to get fast food or delivery and how it took less thought and planning. Although this behavior was not specifically done to remove the stress of the day, it was a method of providing nourishment and comfort without additional effort and therefore, no additional stress. As noted in RQ2, participants reported that food and eating behavior did reduce stress. The certainty of this made it a preferred method.

When considering why food would be picked over other coping strategies, FV2 pointed out that, when stressed, you may be "in a space where you feel like you're going to be judged or criticized" and that with food, "you're in your own safe space." She went on to say:

> You just see it, it's there. It doesn't talk. It's not going to, you know, potentially judge you. It's not going to crack jokes at you. It's all…it's just more concerned about going in your mouth and being in your stomach, being digested.

She said she views food as something that can help deal with stress, can make you feel fulfilled, but how "later on down the line, you do feel a little guilty because you're like well instead of that, I could have done A, B, C, D. But at that moment, you're not thinking about alternatives."

Theme 3: Mental Fatigue as a Factor

The influence of mental fatigue was an aspect that many participants discussed. They described how it resulted in them wanting to reduce stress by engaging in something that required no (or minimal) thought, such as eating or watching a certain television show. NN4 noted that:

> Not that working out requires a lot of thought, but there's, you know, mental fatigue leads to a lot of physical exhaustion, so I just, you know, in those moments, I'm just not in the mood to walk a dog or get on the treadmill.

He added that these would seem like chores, not a method of self-care or relaxation. He said there were times when he would use exercise to deal with stress; however, it was not with the same regularity as ice cream or beer. He said working out could help channel and release anger and stress, something food cannot do. CB1 said she would typically turn to her favorite meals when her day had taken "a mental toll on me." She said she knew she was not physically tired, but she was mentally tired, and food will help alleviate that. Several participants said they seemed to automatically reach for food, without a lot of forethought. SB8 said: "maybe 75-85% [of the time] that I wouldn't think about it." Although, OA5 thought for her: "75% of the time it's planned."

CB1 said ordering food had become faster and easier, making it a subconscious action. She described how her previous orders were saved in an app on her phone and it only took one click to complete the purchase. She said there was no searching or thinking, leaving her no time to reconsider. CB1 said this can make food a more impulsive choice than other means of coping.

Summary

This qualitative study focused on the experience of thinking about food and coping with stress. Semi-structured interviews with eight participants described their experience using food and eating behavior. This chapter reviewed the data collection and analysis process. The themes of each research question were summarized and the results of this will be interpreted in the following chapter. Chapter 5 will also include a discussion of limitations, recommendations, and implications for social change.

Chapter 5: Conclusion

Introduction

The purpose of this study was to explore and describe the experience of using food to cope with stress. The qualitative study consisted of eight interviews, and the results of this were described in Chapter 4. The primary reason for this study was to help fill the lack of literature on the subject. Although there was an abundance of research about the emotional aspects of eating or using food to cope with stress, no literature could be found regarding the underlying cognitive aspects.

The key findings of this study were organized by research question and will be discussed below. In the rest of this chapter, I will provide an interpretation of the results, describe the limitations of the study, and suggest recommendations for future research.

RQ1: What is the experience of individuals with learned patterns of eating behavior in response to stress?

Participants noted that no one specifically taught them to use food or eating behavior to cope with stress; however, they all spoke about how they learned by watching those around them. Many participants discussed how they developed their own habits and patterns, which were reinforced over time and with repeated actions. Four main themes were pulled from the data: 1) family history, 2) memories of people using food to cope with stress, 3) people encouraging the use of food to cope with stress, and 4) learned and reinforced behavior.

RQ2: What are the beliefs of individuals regarding the use of eating behavior to cope with stress?

The overall responses fit into three themes: 1) food as a reward or incentive, 2) the food choice could be worse, and 3) it works. Participants highlighted how they often used food to reward themselves or as something to focus on to help get through a difficult day. Many said that while their food choices were often not the healthiest items, they emphasized how they were only eaten occasionally (i.e., once per week), or participants compared their choices to items that were viewed as even more unhealthy. Participants also consistently mentioned how this behavior worked well, noting it was a successful and reliable coping mechanism. For some, simply planning what they would eat later in the day could help reduce stress while others easily identified how eating certain items changed their mood and outlook.

RQ3: What is the experience of individuals in choosing eating behavior over other ways of coping with stress?

Although not all participants mentioned food or eating in their list of preferred coping skills, it was evident in the interviews that eating behavior was used regularly to manage stress. The themes resulting from this question were: 1) the intensity and type of stressor determines the coping strategy, 2) there are reasons why food is picked over other coping skills, and 3) mental fatigue is a factor in this decision making.

Interpretation of the Findings

When comparing the results of this study to what was found in the literature review, there were many similarities and some differences. The findings are organized

into four categories: stress, biopsychosocial response to stress, eating in response to stress, and mindfulness.

Stress

Participants described similar sources of stress (work demands, family obligations, etc.), and most focused on acute stressors rather than chronic issues. The primary stressors reported were: work, health, issues related to family or friends, and other general life stressors (work, commuting, finances, COVID-19, etc.). When considering stress, the choice of coping strategy matched Cannon's concept of homeostasis as participants spoke about wanting to reduce the stress to return to a feeling of normalcy (Goldstein & Kopin, 2007). For example, PA7 said she uses coping strategies to "turn my brain off" and "escape." Although no research could be found examining how individuals use food or eating behavior to provide cognitive or emotional homeostasis, it appeared that participants were using it this way. Several talked about how eating certain items brought a sense of stability, allowing them to manage the feelings of stress and continue with their daily tasks. For example, OA5 and PA7 both mentioned the benefit of having something to "look forward" to at the end of a stressful day. Participants appeared to use food as motivation and incentive to encourage them to complete their required tasks. These actions could be considered "top-down" neurobiological processes that the participants are engaging in deliberate effort to regulate stress (Flores-Kanter et al., 2021). This approach, which includes looking for positives, reinterpreting the stressor, and focusing on future plans, has been hypothesized to assist individuals in better stress recovery (Flores-Kanter et al., 2021; Murray et al.,

2021). One participant (CB1) noted that certain foods were the "highlight of my day" and also indicated that "the stress is gone" allowing her to move on with her day.

Several participants noted that the type of stress can impact their choice of coping strategy. A recent experiment by Qi and Cui (2019) looked at the casual link between stress and food intake. They concluded that low locus of control was predicted by stress. The low locus of control in turn, predicted low core self-evaluation, which then predicted increased food intake. These findings may explain why participants found themselves eating less when they were dealing with interpersonal relationship issues. For example, PA7 said that when she has relationship problems, she prefers to "talk them out," noting it is helpful to have a conversation with another person about the issue. OA5 recalled a time when she was dealing with "family drama" and lost approximately 20 pounds in a couple months because she was not eating: "I just wanted to cry, I just wanted to sleep, I did not want to eat anything." However, when stressors are "pretty quick," she turns to food for coping.

Biopsychosocial Response to Stress

When an individual appraises a situation or event as stressful, they can have biological, psychological, and social responses. Participant responses were consistent with the literature when reviewing how stress impacted them physiologically. Without prompting, many spoke about feeling agitated, flushed, sweating, and how their heart would race. They agreed that stress often interfered with their ability to concentrate and focus while also altering their appetite, either increasing or decreasing it. Although participants were likely unaware of the biological processes occurring in reaction to

stress, their responses were in line with previous research. For example, researchers found that people under stress tend to prefer calorie dense foods that are high in sugar or fat (Hill et al., 2021; Sominsky & Spencer, 2014). Participants in this study reported selecting "comfort" foods such as ice cream, chocolate, fast food, and specific meals (typically as take-out). Some participants noted they specifically desire items "high in sugar," "sugary foods," "carbs," or "junkier foods" (PS6, FV2, and OA5). One participant (CB1) said she does not usually crave sweets; instead, she prefers a specific meal from one restaurant. The meal is a brown rice, double meat burrito bowl, which would not be considered high in sugar or fat compared to ice cream or chocolate; however, the meal could be approximately 55g of fat (15g saturated fat). These amounts could fit within a healthy diet according to the WHO (2020) recommendations of fat intake being less than 30% of total calorie intake.

Part of Chapter 2 reviewed literature on how individuals under stress tended to rely on habitual behavior and impulsive actions (Jentsch & Wolf, 2020; Plessow et al., 2017). It was hypothesized that, in a "fight" or "flight" response, there is less energy available to higher order cognitive processes, which included self-control. Participants in this study tended towards habitual behavior, noting they could be selecting certain items due to habit, routine, or without much thought. However, this behavior would not be considered subconscious, as most participants were able to describe the planned steps they took to select, obtain, and consume their preferred food items. Researchers studying the impact of craving control (managing food cravings while regulating food intake) have suggested that individual differences may have the most impact on the consumption of

high calorie foods (Buckland & Kemps, 2021). Although they found that low craving control could result in participants being more susceptible to increased consumption during the COVID-19 lockdown, they note their findings did not replicate a previous study. In discussing the conflicting findings, Buckland and Kemps (2021) cite several studies with varying results and recommend that additional research is needed to understand how cognitive restraint impacts food consumption. Several participants of this study pointed out that habitual choices happened more often when they were mentally fatigued and did not feel that they could expend the mental energy required to make other (sometimes healthier) choices. In a similar study, Leow et al. (2021) found that some participants reported an increase in habitual behavior when stress levels increased, often resulting in over-eating. Volz et al. (2021) reported conflicting findings when studying the amount of food consumed when participants were completing tasks requiring a high or low cognitive load. The researchers examined three previous studies then conducted two of their own and determined that there is evidence that participants eat both more and less food when experiencing a high cognitive load. Volz et al. concluded that researchers could not identify all the possible things that participants could be attending to during the study, making it difficult to isolate one source as the potential cause of the change in food consumption. Similarly, it has been suggested that stress due to long hours at work can result in over-eating; however, it is difficult to identify the cause as being either work-related stress or long hours and being unable to eat (Park & Sung, 2020). This highlights the importance of recognizing individual differences and how behavior can be influenced by numerous factors.

The impact of stress on social interactions had mixed results in this study. Researchers have found that social support can mitigate the effect of stress by improving overall wellbeing (Gilmour et al., 2020; Nabi et al., 2013). However, stress can limit the desire for social interaction as some individuals prefer to isolate or struggle with anxiety or depression making social gatherings less desirable (Green et al., 2014). In this study, most participants said they preferred to be alone or spend time with few select people when they were feeling high levels of stress. Researchers have found that social interactions and perceived social support can mitigate the negative impacts of stress (Fleuren et al., 2021; Szkody et al., 2021). Although many of the participants recognized the benefits of social activity as a coping mechanism, they said it was not an appealing option when their mood was low. PA7 talked about how there are many similarities amongst her friends, making it easy to connect and how it helps "that they understand the stress you're going through." She also noted that many social gatherings are centered on food, an observation shared by GT3. She said a group of friends did a wine advent calendar together to maintain connection when they could not be together in-person. Although participants did not specifically talk about eating more when they were with others, researchers have suggested that there may be increased consumption due to individuals being in a comfortable and relaxed environment (Mankad & Gokhale, 2021).

Eating in Response to Stress

Much of the research on eating in response to stress was confirmed by participants in this study. All participants said their diets typically changed due to stress, which is consistent with research (Born et al., 2010; Hill et al., 2021; Machado et al.,

2013; Pidgeon et al., 2013; Pool et al., 2015a). Participants noted that eating more was rarely related to hunger; instead, they felt it was being used as a way of coping with stress (Di Renzo et al., 2020a). CB1 described it as feeling like she was "super charged up after I've eaten, and it's not because I was starving." She went on to say, "I see the discrepancy because it's not like I'm starving. It's something else, getting that charge. Dopamine, I assume?" Similarly, FV2 said there are times when "I want something to eat but I also want something to…to make me feel fulfilled. Then I will probably go to food." Several other participants described the hedonic eating, knowing they were eating for taste and pleasure rather than for required nutrition or calories. Researchers believe this is due to reward pathways as there is not a physiological need for additional energy (Mankad & Gokhale, 2021).

Participants also confirmed that eating in response to stress was reinforcing and could become habitual, despite them knowing it was a temporary solution (Chee et al., 2020; Groesz et al., 2012; Schepers & Bouton, 2019). For example, one participant (PS6) said that eating behavior mitigated the stress for approximately half an hour. Despite knowing he could use other coping skills that may provide longer results, consuming certain foods was reliable and effective. SB8 similarly said she would return to the same restaurant because it is familiar, welcoming, and they remember her, even if they do not necessarily have the greatest food. She also said that after eating items that she realized, "Oh, I feel the same as I did before I had it." Researchers have suggested that stress can reduce reward sensitivity in certain people, resulting in increased food consumption to compensate for the lack of reward (Chang et al., 2022). This could explain why some

participants found the benefits of food consumption were less effective or worked for shorter durations. If the reward center is hypoactive, individuals may seek alternative ways of stimulating it or may eat more than typical, attempting to achieve the same feeling of reward they once had. Maintaining and reinforcing this pattern of behavior could lead to food addiction and disordered eating (Chang et al., 2022).

The relationship between eating to cope with stress and obesity was not discussed in this study. Several participants did independently talk about how they gained weight during particularly stressful periods of time. They attributed this to the foods they picked (i.e., take out or fast food, greater consumption of sweets), an overall increased volume of food eaten, and decreased physical activity. It should be noted that interviews took place almost 2 years into the global COVID-19 pandemic, which altered many aspects of society and day-to-day routine. For example, PS6 said he would regularly go to the gym, which had been closed, and OA5 worked part-time as a dance teacher before the pandemic. Another potential factor in food selection and weight gain during the pandemic could be they types of food purchased. Researchers have noted a difference in eating patterns where individuals focus on eating for pleasure and taste rather than the nutritional value of food items (Mankad & Gokhale, 2021). This influences grocery shopping and in turn what is available in their homes. Although individuals will typically eat what they have at home, several participants in this study talked about the ease that food can be ordered and quickly delivered to them.

All participants noted that stress changed their eating behavior and that they actively and purposefully used food to help cope with stress. The actions of the

participants could be understood using the concepts of SCT (Bandura, 1989). The concepts include psychological determinants of behavior, observational learning, environmental determinants of behavior, self-regulation, and moral disengagement.

Psychological Determinants of Behavior

Participants had strong outcome expectations that were based on their previous behavior or from watching those around them. They seemed to predict results, believing they knew what would happen when they ate specific items. For example, CB1 said:

> During a meeting, I'll have my phone on the app [of her preferred restaurant]…if I see that the meeting is coming to an end, I'm like ok, by the time this thing is over, the food is going to be at my door.

When asked if there were ever times when this meal did not reduce stress, CB1 said "after I'm done eating, it's like everything's…all the stress is gone." There was a certainty to her actions and a strong belief that this would help reduce stress. This can be due to their experience with using food as a reward or coping strategy. Individuals remember the impact the food choice had and believe there is a high probability of it having the same result (Plassmann et al., 2021). Participants in this study focused on their ability to obtain their specific food choices, sometimes knowing alternative locations or very similar items that could be substituted when needed. Researchers have found that eating alone can reduce healthy food consumption (Mankad & Gokhale, 2021). It was found that these individuals were more likely to select pre-packaged, take-out, ready-to-eat, or fast-foods that tend to be more palatable, meaning higher in sugar and/or fat. This behavior can influence future actions in several ways including developing habits and

patterns that are reinforced by the value placed on the food choice (Plassmann et al., 2021). For example, individuals will predict the physiological and emotional benefits of consuming certain foods based on the immediate sensory cues and previous experiences with that food. Dopamine helps encode the choices, which influences motivation, reinforcement, and the desire to eat in the absence of hunger (Plassmann et al., 2021).

Some of the certainty participants felt could have been related to the type of food chosen. For example, one participant preferred chicken nuggets and fries from McDonalds. She noted that the restaurant always had her items in stock, the hours were reliable, and the taste was consistent. These factors are in addition to the predictable influence of eating highly palatable foods (Mankad & Gokhale, 2021). Several participants noted that they "knew" that eating behavior would work unlike other coping techniques that had been suggested to them, such as yoga or breathing techniques. They felt those could be gimmicky or were only beneficial to certain people. They preferred to rely on techniques they had experience with and were confident would work, although several participants noted they had not tried other coping skills on a sustained basis, perhaps attempting yoga once or twice and deciding it was not effective. Using a coping strategy very few times does not allow the neurotransmitters to "learn" the value of the skill in managing stress (Plassmann et al., 2021). Additionally, individuals may select food consumption as it provides a more immediate effect. Some coping strategies provide delayed results, making them less desirable to individuals who would like rapid relief from stress-related symptoms.

Observational Learning

While participants did not recall specific times when they were directly taught to use food or eating behavior to cope with stress, all recalled learned associations. They spoke about how, in hindsight, they recognized that certain behaviors had been used by their parents, or those around them, to help manage stress. For example, going out to eat after a stressful day at work (NN4), or making certain "comfort meals" (FV2). While participants did not relate their use of specific items to having watched someone else's use, their responses showed they had learned that food could be used to cope with stress. Several participants said they recognized how their behavior mimicked that of someone in their past. In a similar study, Leow et al. (2021) found that eating because of stress occurred more as a result of social influence. They also found that parents and family were heavily influential as role models, shaping the eating patterns of individuals in the future. The learning can become reinforced over time and is supported by parallel physiological systems (Reichenberger et al., 2018). These systems are bidirectional as the behavior causes biological changes and hormones and physiology can influence change to behavior (Hill et al., 2021). The interaction is reinforcing, and the patterns become engrained.

Environmental Determinants of Behavior

The responses to interview questions supported the concept that certain behaviors were rewarded and reinforced. For example, a boss purchasing bakery items after staff completed a project (PA7), or a parent offering to pick up treats after a bad day (OA5). Reichenberger et al., (2021) suggested that eating with friends and family can make

situations more positive, improving affect, which can make it likely to consume more food. Some participants noted their friends also engaged in the same behavior they do, making it easy to go out to eat together (PS6). Eating out with friends may occur more in the evenings when self-control has diminished and individuals are more distracted (Bouwman et al., 2021). Park and Sung (2020) found that office workers often turned to late night snacks or food. However, they could not differentiate if this was due to working long hours or the stress created by work.

One participant (CB1) found it interesting that food delivery apps made it much easier for her to reorder her favorite menu items. She said with quick checkout and memorized delivery locations and payment options, she barely had to think, and it only took a few clicks to have her food ordered. She said this removed the option for a second thought as it only took seconds for the transaction to be completed. Researchers have noted that many foodservices were interrupted and had to alter their delivery options during the pandemic (Filimonau et al., 2022). Researchers studying the use of mobile food ordering apps have found that customers prefer the apps for many reasons including: reducing time and effort in ordering, increased flexibility, and a sense of pleasure, comfort, and enjoyment from using the apps (Alalwan, 2020). Satisfaction with this ordering method can result in brand loyalty and repetitive behavior of ordering using the app. This can create habits and become reinforced as individuals are satisfied with the results (Alalwan, 2020).

Self-Regulation

The concept of self-regulation was viewed differently by participants. GT3 talked about portion control and how any of her "treat" items would fit in her total allotted calories for the day, saying when she ate Ruffles chips: "I know 16 is a serving size. So, I either slowly eat eight or I eat 16. I know what the calorie count is for them." GT3 was the only participant who spoke about limiting the serving size and being actively aware of the nutritional value of "treat" foods. Another participant (OA5) said she limits her purchase of certain foods to once per week, describing it as an indulgence, which should not occur more frequently. She defined it as "something special," saying "I only have a Bundt cake once a week. I only have chocolates once a week. It's stuff that I wouldn't have every single day." Interestingly, OA5 had numerous things on the list of items she would only eat once per week and recognized that this pattern of rewarding herself occurred almost daily. This behavior would be supported by research from Mankad and Gokhale (2021) as they noted the more habitual the actions are, the more likely individuals are to hedonically eat foods high in sugar and fat. They described these foods as often being too tempting to resist. Others talked about how the cost of specific food choices was as a constraining factor (NN4, PS6). And finally, many talked about how the use of food and eating behavior was a part of their overall ability to self-regulate. While they may overindulge in certain foods, this was seen as acceptable as it was a method of managing other stressors. For example, PS6 said that he would binge on fast food and "anything high in sugar" is it would "help me get through the moment of stress and anxiety and gives me more time" (as opposed to preparing food). Researchers found that

when individuals had time constraints, their eating tended to be driven by hunger more than taste (Reichenberger et al., 2021). However, they reported this did not include a possible stress-related change in eating patterns. They further suggest that time pressure can increase the desire for foods that are easily available (often pre-prepared) and highly palatable (Reichenberger et al., 2021).

Moral Disengagement

None of the participants seemed upset or showed hesitation when talking about their eating behavior. Only one participant, PA7, showed any embarrassment. She said:

> I can polish off a whole frozen pizza after dinner if it's been a really stressful day, and that doesn't…I just said that out loud…acknowledged that I can finish the whole frozen pizza by myself. It's just like…not awesome…but there have definitely been days like that.

Most participants spoke factually, sometimes noting that others (a doctor, therapist, etc.) may disagree with their view on using food to cope with stress; however, they felt it was not "that bad" as what they were eating "wasn't junk food." These statements were made without prompting, and it seemed that participants felt their food choice may not be the healthiest options, but it was worth it, given the benefits. There also appeared to be a belief that since the food was not being eaten daily, it was not a concern. There was an overall sense of "it's not that bad" or "it could be worse." These findings could be related to the tendency for self-regulation to decrease throughout the day (Bouwman et al., 2021). Researchers have determined that individuals will experience more food cravings at the end of the day, when they think about food and

eating more frequently, and are also more tired. This could make individuals more accepting of their actions, believing it was the best choice they could have made at that time.

Mindfulness

The literature review contained a section on mindfulness, specifically on how these techniques can help individuals interpret events as less stressful, thus helping them feel more in control, which can reduce the negative impact of stress (Hicks et al., 2020; Nezlek et al., 2016). This could be seen with participants who said they could manage stressful events more effectively when they thought about what they would eat later in the day. For example, OA5 said she does not mind waiting: "then I have something to look forward to in the next hour." Researchers seemed to emphasize the use of mindfulness in reducing impulsive food choices (Forman et al., 2016; Gidugu & Jacobs, 2019; Hendrickson & Rasmussen, 2017). Participants in this study reported few impulsive choices and appeared to be very aware of their actions, knowing their patterns of behavior; however, it did not seem to influence or change what they planned on eating. Researchers have determined that individuals who focus on restraining their food intake may experience stronger food cravings, which can result in overeating (Hagerman et al., 2021). Therefore, being aware of the foods they "should" eat can have the opposite effect of what was intended. The participants of this study may have been unique in their use of mindfulness. For example, many participants described conscious, purposeful actions that were intended on eliciting a specific result. They were very aware of the food choice they were making. Although it may appear to be an impulsive decision to pick food as the

coping strategy, it does not seem that increased mindfulness would have changed that. Participants stated several times that these choices were purposeful, and it was likely related to their belief that consuming those food items had a high probability in reducing their stress level (Plassman et al., 2021).

Limitations of the Study

The primary limitation of this study is regarding the selection of participants. Recruitment for this study was done through ResearchAndMe.Com, an online recruitment company based in the United States. Participants were notified when new study was published to the site, and they could sign up for them. Although the final selection of participants was completely up to the researcher, and based on eligibility criteria, who initially signed up for the study was not. Participants viewed a brief explanation of the study before selecting it, meaning they most likely had a specific interest or some familiarity with the topic. The general description for this study was brief; however, it had enough information to allow participants to understand generally what the study was about (stress and using eating behavior to cope). It could be hypothesized that this information had the potential to skew results by drawing in participants who had experience thinking about the connection between food and stress or who had discussed this in other settings. For example, I had not expected participants to so easily articulate how they consciously and purposefully used food to manage symptoms of stress; however, most participants did this readily and eloquently with minimal prompting. The ease of this, and the similarity of responses may have been due to the type of participant who selected the study.

Additional limitations include the complexity of using eating behavior to cope with stress. Changes in behavior can have a multitude of potential factors and although it may appear to be directly related to stress, other influences could be at play (Reichenberger et al., 2018). It should also be noted that this study was conducted towards the end of the COVID-19 lockdowns and restrictions on movement. The pandemic may have altered stress levels, coping skills, and eating behavior making it challenging to know what can be attributed to the pandemic and what results from other stressors (Cummings et al., 2021). Researchers found that stress levels could have increased due to individuals feeling vulnerable and at risk due to the pandemic (Calvillo et al., 2020). Individuals may not recognize the potential sources of stress or be able to differentiate the sources. Participants also spoke primarily about acute stressors, as opposed to chronic stress. It is possible that if the focus of the participants was more on chronic stressors, the results could have been different. It can be assumed that individuals dealing with chronic stress may have to rely on alternative means of coping as short-term solutions may not be adequate (i.e. eating ice cream).

This study did not account for gender, age, weight, or body mass index (Cummings et al., 2021; Leow et al., 2021). It has been suggested that older individuals may have a wider variety of coping strategies to deal with stress and they could be more ingrained into typical behaviors (Chang, et al., 2022; Cummings et al., 2021). Location of participants was factored into this study, and it is unknown if results would be different if considering urban vs rural populations.

Recommendations

The literature review highlighted the gap in research regarding using food to cope with stress; however, there was ample literature on "emotional eating" and how food could be used to manage emotions. Participants in this study tended to answer question based on eating and regulating emotions. It seemed less natural for individuals to discuss the thought processes behind those actions, instead turning to a more familiar pattern of discussing how eating choices come from feelings and emotions. As noted, it can be difficult for participants to differentiate between specific stressors to identify potential influences on eating behavior (Reichenberger et al., 2018). Laboratory studies typically cannot replicate real-world scenarios or stressors and researchers should gain more information into the type of stress impacting a participant (Hill et al., 2021). Obtaining detailed data could assist in understanding the influence of varying factors.

Understanding the impact of learned and observed behavior in developing eating habits could assist in creating ways to unlearn such behavior. Researchers have noted the extent that individuals are shaped by early life experiences, including learning how to use food to cope with stress (Leow et al., 2021). Developing a better understanding of how current behavior is shaped by encoding and reinforcement throughout one's lifetime could impact how they change or manage that behavior. Additional research could expand this study, selecting participants who are less aware of the topic, as this may provide less congruent views.

In this study, participants discussed their actions as being purposeful and thoughtful. Although they felt their food choices were not always the healthiest options,

the reliability of the results (managing stress) helped them overlook any potential repercussions. Participants were aware of their choices and options for coping with stress; however, this awareness did not seem to influence their actions of using food as a primary coping technique. Future studies may attempt to understand how individuals reconcile their food choices by overcoming potential cognitive dissonance as opposed to relying on automatic responses (Bouwman et al., 2021). This work could assist in explaining how the behavior is maintained over time. Such research could limit the development of disordered eating as new ways of managing stress could be taught while unhealthy behaviors (such as over-eating) could be unlearned (Chang et al., 2022).

Implications

The results of this study could impact society on an individual level. This was evident during the interviews as several participants said they planned on thinking about this topic, and their actions, more after the discussion was over. Having the conversation appeared to highlight some of their subconscious behavior and resulted in participants wanting to take time to think through their actions when they were not feeling stressed. Assisting individuals in preparing alternative coping techniques during low-stress times could help them be more likely to use them during times of heightened stress. This could benefit them by reducing the consumption of excess calories, which can lead to weight gain, disordered eating, food addiction, and health complications (Chang et al., 2022; Ravichandran et al., 2021; Sinha, 2017; WHO, 2020a). These changes can reduce pressure on health care systems, the development of chronic illnesses, and the cost of

health care while also improving physical and mental health (Michels et al., 2015; PHAC, 2019; WHO, 2020a).

When individuals change their behavior, they can shape and impact the actions of those around them. As noted, many patterns of using food to cope with stress are learned when individuals are young. These patterns are taught, either directly or indirectly such as through observation, social media, or in social interactions (Leow et al., 2021; Reichenberger et al., 2018). If individuals changed their behavior, they could impact the actions of those around them by directly teaching or providing healthy patterns for others to emulate. For example, a parent may teach their child about non-food related coping techniques or friends may share what they learned with each other.

Actively using alternative coping strategies and encouraging their continued use can result in automatic habits that are not food-related (Hill et al., 2021). The results of this study could be used by nutritional and health professionals to provide advice and information for how to improve healthy coping skills (Bouwman et al., 2021). Understanding that seemingly automatic behaviors are often learned can help individuals think about other actions in their lives and consider what else may be in their locus of control (Leow et al., 2021). Everyone can impact those in their social circles: friends, family, colleagues, church groups, etc. This can spread information to larger groups and have far-reaching influence.

Conclusion

Stress seems unavoidable and it can have negative physical, social, and emotional repercussions if not managed in effective ways (Dalmazo et al., 2019; Janson &

Rohleder, 2017; O'Connor et al., 2021). All participants in this study used food and eating behaviour to reduce feelings of stress. They reported this to be a reliable and consistent coping technique that was typically accessible and quickly effective. Their actions were purposeful and often planned. Participants acknowledged the various routines and habits they developed over time and how these were consistently reinforced and therefore, repeated. Overall, participants were aware of the thought patterns that led them to choose eating behavior to cope with stress. Although they could identify healthier coping skills, they reiterated their belief that eating behaviour was an effective skill and there was no indication that they planned to change it. The participant's demonstrated mindfulness as they were purposeful in their actions, could demonstrate delayed gratification, and denied that their behavior was impulsive. Instead, they viewed it as thoughtful and logical, as the coping strategy was effective most of the time.

For the participants of this study, food provided more than a means to alleviate or manage stress. Food and eating behavior were links to family history, relationships, memories, and culture. It was a reward for getting through demanding situations, for working hard, or celebrating achievements. Sometimes it was the specific restaurant and its employees that seemed to help alter a mood, and other times it was the act of preparing food that calmed a participant. Although the food selections (i.e., ice cream or chocolate) and outcomes (reducing stress) were similar amongst participants, the stories, reasons, and connections were different. Whether through facial expression, tone of voice, or words, it was evident that food brought joy, relief, and satisfaction to the participants of this study while also helping them cope with stress.

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Appendix: Interview Questions

1. In thinking about the amount of stress you've been feeling, how would you rate your overall level of stress for the past two weeks? (*If 5 is very high and 1 is very low*)
2. Take a second to think about what kind of things make you feel stressed.
    a. Could you list the top five things that are most stressful for you?
    b. Which item causes you the most stress?
3. When you start to feel stress, how do you cope with it? (*What kind of things do you do to handle or decrease that stress?*)
4. Do you view any of these coping skills as a "reward" or "treat"? (*Or something you earned or deserve because you had to deal with stress?*)
5. Can you tell me about a time when you used eating behavior to cope with stress? When I say "eating behavior" I mean certain foods or specific actions like going to a special place.
6. When you look back on this, how purposeful do you think your behavior was?
7. Can you describe a time when you seemed to automatically use food to handle stress? (*Something you did without a lot of thought?*)
8. Looking back, can you describe your first memory of seeing someone use eating behavior to deal with stress? (*What was the first time you remember food being used as a reward?*)

9. Can you describe a time when people around you (could be friends, family, colleagues) encouraged, expected, or pressured you into using eating behavior to deal with stress?
10. Have there ever been times when others seem to discourage it? This could be by direct comments, saying something shaming, or giving disapproving looks?
11. Describe your conscious, purposeful thinking that occurs before you select eating behavior as a coping skill.
    a. Can you think of how this became a strong impulse for you? (*Can you guess what thoughts might be there, if you were aware of them, that causes you to pick that?*)
    b. Can you describe the thought process that results in picking eating behavior over a different coping skill?
12. One final question, can you describe any other thoughts that might cause you to pick eating behavior over other coping skills when you're dealing with stress?