

## **Developing Mind Body Hunger Mastery**

Siri Khalsa-Zemel, Focus Treatment Centers, USA

Kara Vander Linden, Saybrook University, USA

### **Abstract**

This quest to explore hunger using classic grounded theory was sparked within a dietitian who was hungry for a deeper understanding of her patients. The high rates of overweight and obesity in the United States are alarming and the mind body link with hunger is a rich area for study. The grand tour question for this classic grounded theory study was “can you tell me about your experience with hunger?” The resulting theory touches on some of the fastest growing fields of study in the United States: overweight and obesity, mind body medicine, and personal development. The substantive theory of developing mind body hunger mastery depicts two types of hunger, physical hunger and abstract hunger, each requiring separate nourishment processes. Nourishment can be interrupted at the physical and the abstract levels, leading to hunger confusion and hunger suffering. It may be possible to escape this maze through self-awareness and development of mind body hunger mastery.

**Keywords:** Mind, Body, Overweight, Obesity, Personal development, nourishment, hunger suffering

### **Introduction**

Eating for pleasure (hedonic eating) is shown to be associated with overeating and loss of control over eating (Stroebe, Papeis, & Aarts, 2008; Witt & Lowe, 2014), which is influenced by emotional eating (Heatherton & Baumeister, 1991; Hernandez-Hons & Woolley, 2012). Emotional eating is strongly correlated with psychological distress, such as depression, anxiety, anger, and loneliness (Ganley, 1989; Geliebter & Aversa, 2003; Pidgeon, Lacota, & Champion, 2012). There are many perspectives that aim to explain emotional eating. From a brain science perspective, obese individuals may experience food as more rewarding than normal weight individuals due to decreased dopamine activity (Nathan et al., 2012; Volkow et al., 2003).

Considering emotional regulation as a key to understanding emotional eating, eating in response to emotional cues is shown to be associated with a lack of emotional awareness (Moon & Berenbaum, 2009; Pidgeon et al., 2012; Salovey et al., 1995). In fact, the desire to escape emotional awareness is a plausible theory to explain the cause of emotional eating (Blackburn et al., 2006; Heatherton & Baumeister, 1991; Polivy & Herman, 1999). The sensitivity to perceive, understand, and respond to interoceptive signals plays a central

role in emotional regulation (Pollatos & Schandry, 2008; Nentjes, Meijer, Bernstein, Arntz, & Medendorp, 2013), and interoceptive awareness has been shown to mediate the relationship between self-objectification and disordered eating (Frederickson & Roberts, 1997; Myers & Crowther, 2008).

### **Theory Development**

This classic grounded theory study was performed as a doctoral dissertation study by a Registered Dietitian studying Mind Body Medicine at Saybrook University, College of Integrative Medicine and Health Sciences. The topic area of interest for this research included emotional eating; however, utilizing the terms "emotional eating" and "emotional hunger" may have contradicted the no-preconception rule of CGT, as these fundamental preconceived ideas and widely researched topics may have shaped and limited the data collection, and emergent variables during participant interviews. Therefore, a broader grand tour question was used to cast a wide net and allow all relevant data to emerge: "Can you tell me about your relationship with hunger?" Adult participants included those who struggled in their relationships with hunger, with theoretical sampling leading to additional interviews with those who did not struggle with hunger at any level. A total of nine interviews lasting 45-120 minutes were audio recorded, transcribed (as required by the university), and coded as data. Two additional publicly accessible interviews and relevant literature were also coded as data.

Data analysis, using substantive coding (open and selective coding), constant comparative analysis, and memoing, began with the first piece of data collected. Data were coded line by line identifying theoretical concepts in the data. Concepts were compared to each other using constant comparative analysis and theoretical ideas about concepts and relationships among the concepts were recorded in the form of memos. A total of 321 unique codes and nearly 500 memos emerged from the data.

During open coding, the questions "what are the participants working on?" and "what is this data a study of?" were continuously asked until the core variable, which is the variable that accounts for the most variation in the data, emerged. At this point, selective coding replaced open coding as the core variable and major concepts guided data analysis. Theoretical sampling, as guided by the theoretical ideas developing from data analysis, was used throughout to identify subsequent data sources to reach theoretical saturation--when no new variation was found in the data.

Theoretical coding was then used to tie the concepts of the emerging theory back together by conceptualizing the relationship between the concepts. Theoretical coding helped identify the underlying structure of the theory as the memos were sorted and a theoretical outline was developed. At this point, relevant literature was integrated and the theory was written up.

The main concern of the participants was their struggle with identifying and appropriately nourishing their hungers, which was termed as hunger confusion. This struggle with hunger was resolved for some participants via developing mind body hunger mastery which was identified as the core variable. The theory of developing mind body hunger mastery examines physical and abstract hungers, how these hungers are nourished,

what gets in the way of recognizing and nourishing these hungers, and the path to overcoming these interruptions.

### **Developing Mind Body Hunger Mastery**

Developing mind body hunger mastery is moving towards successfully identifying and nourishing both physical and abstract hungers, the two types of hunger that emerged from the data.

Physical hunger is the commonly accepted experience of the physiological sensation(s) produced by the physical body when it requires fuel. Physical hunger is typically recognized through the body's internal communication system that creates the experience of hunger physically, mentally, and/or emotionally (hunger signs). Within the data, this experience was often referred to as "a gnawing sensation" or "that feeling of emptiness in the pit of the stomach." Some individuals find contentment in their relationship with physical hunger over time, accepting and allowing this meaningful feedback regarding the body's needs for optimal well-being. The achievement of this level of contentment is physical hunger mastery: having mastered an effective and harmonious relationship with physical hunger by accepting and responding to the body's feedback signals for fuel as evidenced by making food and food quantity choices that satiate the physical hunger. This mastery can be seen in one participant's statement, "when I feel hungry, I'm looking for something to eat and so that I just don't feel that hunger anymore . . . to me, it's a very simple thing."

However, within participant interviews, more than one type of hunger was spoken of leading to the emergence of the concept abstract hunger.

Abstract hunger is a longing or desire, which may be elusive in nature, and may include emotional hunger, intellectual hunger, spiritual hunger, or other non-physical hungers. One interviewee talked about "the non-physical . . . things like instincts and emotions and intuitions." She noted the need to "differentiate between these kinds of hunger." Another study participant spoke of "soul hunger" as she described her spiritual path and finding fullness in this journey. She said, "if you don't have [physical hunger], you're dead . . . and on the spiritual level, I think the same thing happens . . . if you don't have the hunger . . . you're going to spiritually shrivel up and die." Similarly, in the final interview, the participant spoke of "a different kind of hunger" when "people eat for emotional, psychological and spiritual reasons." Thus, hunger was separated into physical hunger and abstract hunger.

The awareness of physical and abstract hunger can occur along a continuum of intensity from subtle through extreme. In fact, hunger experiences can be nuanced and complicated to the point that some people experience confusion and interruptions at multiple levels along the nourishment process. Appropriately nourishing physical and abstract hungers can be interrupted by a variety of factors, most notably, hunger confusion and lack of awareness. Lack of awareness is missing insightful understanding of deep meaning and connections. Together, lack of awareness and hunger confusion can be associated with a complex cascade of interfering factors, behaviors, and struggles that may exacerbate a vicious cycle. Over time, this cycle can become habitual, creating a sense of

being stuck in the self-destructive patterns of interrupted nourishment, leading to hunger suffering.

Hunger suffering can be understood as experiencing negative emotions (such as guilt, sadness, conflict, confusion, angst, self-doubt, anger, etc.) regarding the experience of hunger. Indeed, some individuals have a significantly problematic relationship with hunger and/or relationship with food, leading to a great deal of suffering beyond just the discomfort of the hunger sensations themselves. As there is an increase in the identification of physical hunger signs, there may likewise be an increase in conflicting thoughts and emotions related to the physical hunger, such as guilt and shame, which can be a distraction from attunement with mind-body connection, clarity of physical hunger, and ability to engage in simple physical nourishment. Unfortunately, some people struggle with intense negative emotions surrounding hunger for many years; for some, this suffering can be present for most of their adult lives. One study participant said,

I really started noticing being mad at myself when I would be hungry, I mean I'm sure I felt it as an adolescent, but I really started noticing it in high school. Probably between 14, 15, 16 – those years I really started becoming more aware of certain feelings, like you have to be skinny to be loved.

This study participant was living her life stuck in the struggle of hunger suffering on a daily basis, month after month, and year after year.

This state of confusion and suffering is addressed by some people through the development of mind body hunger mastery. Overcoming hunger confusion and hunger suffering includes consistent behavioral patterns of both physical hunger mastery as well as full expression. Physical hunger mastery is having successfully achieved an effective and harmonious relationship with physical hunger by accepting and responding to the body's feedback signals for fuel as evidenced by making food and food quantity choices that appropriately satiate and manage the physical hunger. Full expression is the outward expression of abstract hungers through actions and behaviors that match those hungers, which manifests as the fullness and richness of life and the satisfaction of the soul. One study participant explained, "I've managed to fulfill emotionally, spiritually what I've needed...it's not a coincidence that the physical hunger isn't an issue (for me) because the soul hunger has been satisfied." When individuals develop mind body hunger mastery, nourishing abstract hungers through expressing their desires and taking the necessary actions in life to satisfy their hungers becomes more frequent. That is, longings, such as companionship, self-expression, adventure, reward, safety, and so on, are satisfied with specific behaviors to address those desires (connection with others, communication, executing an adventurous experience, etc.). When mind body hunger mastery is achieved, physical hunger mastery and full expression are more prominent than patterns of hunger confusion and hunger suffering. However, many people do not experience mind body hunger mastery but instead struggle with interrupted nourishment.

### **Interrupted Nourishment**

There are a number of factors that interfere with the development of mind body hunger mastery, which include family influences, emotional interference, cognitive interference, and environmental influences. One of the most foundational influences of hunger experience

(including interrupted nourishment) may be family influence: the impact of family members, family dynamics, learned behaviors, mindset, and family history. Things like eating habits, normalization of hunger, spoken and unspoken nourishment behaviors, and food consumption struggles can be experienced in youth and modeled through family influence (Brown, Schiraldi, & Wroblewski, 2009; Dinsmore & Stormshak, 2003). Family influences impact the developing mind and behavior patterns of children in the context of hunger and eating; however, these influences may lead to conscious or unconscious lifestyle habits and belief systems in adulthood as well (Grant & Boersma, 2005). Family influence can also play a significant role in how an individual identifies, manages, and nourishes both physical hunger and abstract hunger into adulthood. One woman addressed the impact of family influence on her present-day food consumption pattern of over-indulgence:

I don't have memories of being especially hungry. I do remember that we would eat so much at Sunday dinner that it was just a family tradition for everyone to be sitting around after Sunday dinner just holding our bellies going, "Ooh, I'm so miserable." That was a standard part of our family culture...every meal, every dinner, especially every Sunday dinner was like a Thanksgiving feast.

In this example, the study participant connected her early food memories with an unspoken family culture of excessive food quantities and eating past fullness regardless of the presence or absence of physical hunger. Family and life stress impacts young children's behaviors of eating in the absence of hunger (Michels et al., 2014), and when viewed through the lens of attachment theory, overeating due to emotional hunger feeds a deep hunger for safe and nurturing relationships (Hernandez-Hons & Woolley, 2012; Hertz, Addad, & Romel, 2012; Wilkinson, Rowe, Bishop, & Brunstrom, 2010). Family influences can be very closely connected with emotional factors both in childhood and into adulthood.

Emotional interference is a process whereby emotions get in the way of one's ability to recognize and respond to hunger. In general, emotions and physical hunger exhibit distinctly different physical sensations in the body; however, these differences may be subtle enough that some people can get confused by whether they are experiencing a specific emotion, a cocktail of emotions, or the physical sensations of hunger or fullness. Also, some individuals engage in food consumption in direct response to negative emotions. This concept is widely studied, and several research tools have been developed to assess how emotionality impacts one's experience with hunger and/or food consumption (Arnou, Kenardy, & Argas, 1995; Garaulet, Canteras, Morales, Lopez-Guimera, Sandez-Carracedo, & Corbalan-Tutau, 2012; van Strien, Fritjers, Bergers, & Defares, 1986).

Emotional hunger can play out as a form of abstract communication leading to physical hunger experiences that are symbolic of other, deeper hungers. The phenomena of nuanced and entwined physical and abstract hungers can be associated with the habit of engaging in food consumption to temporarily quiet non-physical hungers and anxiety related to abstract hungers. Several study participants noted the experience of "escaping," "sedating," and "going numb" by using food to quell unattainable abstract hungers, difficult emotions, and life stressors. Blackburn, Johnston, Blampied, Popp, and Kallen (2006) demonstrated that turning to food consumption as a means of avoidant coping fits within the context of escape theory.

Anxiety and other negative emotions may actually trigger physical hunger in people who have responded to such emotional stress through food consumption over time. In other words, some individuals may respond to certain emotions with the experience of physical hunger in anticipation of a patterned response: eating. For example, one study participant described how uncertainty, such as loss and transitions, cause her anxiety and lead to food consumption. This happens for her on a large scale (major life transitions) as well as on a smaller scale (subtle transitions throughout each day). She said:

I know that dropping my children back off, there's always a loss. So when there's a loss, I feel hunger . . . going from one task to another, there's always this little space in the middle where this thought of, "Oh, maybe you should have something to eat."

The link between hunger experience and food consumption patterns can be a common link for many people. In particular, emotionality (both negative and positive) can be a strong force when the lines of emotional hunger and physical hunger are blurred.

Emotional eating is eating in response to emotions, as a way to cope with emotions, and/or as a form of emotional alteration or emotional suppression. Eating in the presence of negative emotions and in the absence of physical hunger is a well-documented aspect of emotional eating and binge eating (Haedt-Matt & Keel, 2011; Witt & Lowe, 2014). Emotional eating itself has been studied as it relates to body weight, eating disorders, emotional awareness, and mindfulness (Compare et al., 2013; Geliebter & Aversa, 2003; Moon & Berenbaum, 2009; Roosen, Safer, Adler, Cebolla, & van Strien, 2012; Waller & Osman, 1996, respectively).

Cognitive interference is the process whereby thoughts get in the way of one's ability to recognize and respond to hunger. In general, thoughts can influence many aspects of hunger either positively or negatively. One study participant noticed that thoughts about hunger interrupted her ability to trust her body's natural hunger cues:

A lot of times when I feel hungry, especially if I'm having a day where I feel fat, or feeling self-conscious, if I start to get that hunger twinge, it's like I freak out and panic . . . this huge part of me is saying, "you're not, don't ever eat again," so it's very complex and sometimes I'm okay with eating when I'm hungry and realize I need to, but a lot of times I'm not.

In this example, the participant touched on the aspects of negative body image and cognitive interference that can be associated with hunger denial and hunger confusion. This confusion is a well-studied common phenomenon among those who experience interrupted nourishment. For instance, in a study of 365 overweight and obese adults, Sibilia (2010) identified a complex web of bio-psychosocial and behavioral pathways related to hunger confusion, perceived hunger, and dysregulated eating habits, which included reduced self-control of child's eating behaviors, emotional distress, eating in the absence of hunger, and many more factors. Those who experience hunger confusion are more likely to also experience hunger suffering.

In addition to family influences, emotional interference, and cognitive interference, there is another factor that can interrupt nourishment patterns: environmental influence (situations, events, people, and/or other environmental factors that impact an individual's hunger experience and/or nourishment patterns). Environmental influences are typically

external factors (outside of one's own body and mind); however, the external environment can act as a stimulus for internal states (thoughts and emotions) that impact hunger and nourishment experiences, both at the physical and abstract levels. One study participant shared this sentiment:

If I go sit in front of the TV to veg out, to relax, the next natural thing for me is to get something to eat, get some popcorn or fix some ice cream or look for a cookie or look for some chocolate or something which is just habitual. It's not that I'm hungry, it's just it's a habit. When I come out [to my porch] . . . I don't feel the need to nibble...I just enjoy feeling the breeze, listening to the birds, and it feeds all my senses.

In this example, the study participant was just beginning to become aware that she could experience a sense of abstract nourishment that was not related to food consumption, and that the awareness of this level of nourishment was influenced by the physical environment.

### **Interoceptive Awareness**

Interoceptive awareness (the identification and acceptance of physical sensations in the body that correspond to internal physiological or emotional states, including hunger, fullness, anger, joy, contentment, etc.) is the first step in overcoming hunger confusion and hunger suffering. As interoceptive awareness increases, hunger confusion and hunger suffering often decrease. Interoceptive awareness aids in recognizing personal nuances, such as food consumption patterns, emotional states, and the differentiation of physical hunger and abstract hunger. The development of this deep state of self-awareness can also facilitate an understanding of how food quality, quantity, and timing can impact the physical hunger experience. One study participant said, "the past couple of years from everything I've learned about my body and my experiences with food . . . it's changed over time . . . I've started to realize subtle differences about hungers." In this example, the study participant explained how her self-awareness opened her eyes to the subtlety of her hunger experiences, both at the physical and abstract levels.

Self-awareness can be associated with self-trust, which is a belief in and alignment with the internal states of the self. As the practice of becoming aware of the body's internal cues increases, hunger confusion often decreases. Self-trust is an element of developing the internal skills to move away from interrupted nourishment and towards physical hunger mastery and full expression. The development of self-trust may occur over time and after consistent experiences with self-awareness and self-care and in response to past failures and/or successes. One man noted, "I can be at my best because I've been through those selves where I didn't understand." In this example, the interviewee was specifically referring to his fine-tuned ability to recognize and respond to his physical hunger throughout the day. Self-trust is a necessary element in fulfilling both physical hunger and abstract hunger, including both trusting the inner communication system of the physical body as well as the abstract stirrings of the soul and the psyche. If mind body hunger mastery is achieved, then a higher level of self-trust may also be achieved that allows individuals to trust their body's needs, though this may not happen on its own without effort and change of old habits.

### **Effort to Change**

Developing mind body hunger mastery can include putting forth the effort to employ new coping strategies and emotional responses, as well as challenging current thought patterns. Willingness, curiosity, courage, and discipline may also aid the development of mind body hunger mastery. Without willingness, the effort required to change habits may be insurmountable. Effort and change are very closely linked; however, individuals can put forth effort without making significant change in their lives and/or individuals can seek change but are unable, unwilling, or unsure of how to put forth the effort required for that change to take place. One study participant explained how this worked for her:

When I try to change my thought process or I spend time kind of talking myself down, I can get that to override this other hunger. Emotional hunger, given the time and the effort and waiting . . . if I just pause, then I can change that. . . just having a conversation with myself, I can override emotional hunger...It works, it's just a matter of how much effort am I going to put into that today.

In this particular example, the study participant was aware of and able to put forth the effort required to change her emotional eating and related thought patterns; however, she was unable and/or unwilling to put forth the effort consistently over time for sustainable change.

Thought regulation is managing thoughts or thought patterns. Thought regulation is often crucial to developing hunger mastery for some people. The urge to engage in food use (such as emotional eating or binge eating) can be overridden by thought regulation and entering a state of self-awareness. In other words, thought regulation may be strengthened through effort and discipline of the mind. Hunger and eating behaviors can include obsessive thinking for some people, in which thought regulation can be particularly helpful. With consistent effort over time, the habit change of thought regulation can be possible, which may be particularly relevant for those who are stuck in the cycle of food use and hunger suffering. Replacing food use may in fact necessitate thought regulation, including positive self-talk. One study participant said, "It's exhausting sometimes to constantly be having this healthy voice having this kind of well-meaning discussion with this other unhealthy voice." In this example, the study participant acknowledged the effort required to consistently engage positive self-talk to dialogue with the "healthy" and "unhealthy" perspectives within oneself. Though it requires great effort, self-talk can specifically aid in both thought regulation as well as emotion regulation.

Emotion regulation is the process of successfully managing emotions and emotional patterns in healthy ways. Similar to thought regulation, healthy regulation of one's emotions is a key component of personal development and overcoming interrupted nourishment. There is significant interplay between thought regulation and emotion regulation among those striving for physical hunger mastery through self-awareness and personal development. In fact, the first step in emotion regulation may be to believe that emotion regulation is possible, and can ultimately become successful over time with effort and practice. One woman explained her experience: "Being able to feel and express [emotions] and ask for acknowledgement of them . . . requires a tremendous effort and practice, and belief that it is valuable—belief that it makes a difference." In this example, the study participant clearly articulated how she had to believe it was possible and then came to a decision regarding her willingness and the ability to change how she approached and regulated her emotions. Emotion regulation may take place when not only when belief



is present, combined with the ability to recognize and overcome emotional interference. Learning emotion regulation may be one of the most difficult steps for some people in the process of developing mind body hunger mastery.

Another important tool that aids in positively altering negative emotional states is social support. Social support is a person or persons who aid and encourage--a spiritual teacher, friend, family member, professional helper, or other helpful and supportive persons. Developing hunger mastery can include reaching out for social support and/or consciously building social support around oneself. As support increases so may thought regulation, emotion regulation, and/or other supportive aspects of self-awareness and personal development. One study participant talked about the importance of social support along her movement towards hunger mastery:

The support of family and friends, especially family support . . . I've gotten support and that has gone a long way and I've seen other people going through a journey like me that don't have the same support and seeing how that just doesn't help serve them. It really has served me to have support. I think I couldn't have done it without it.

In this example, social support was a crucial pillar in developing hunger mastery and in the climb out of hunger suffering.

Finally, a disciplined eating structure may be another important key in developing mind body hunger mastery. Structure, as played out through eating schedules and balanced nutrition, is a relevant pattern among those who had moved (or who are in the process of moving) out of interrupted nourishment and towards physical hunger mastery. The incorporation of an eating schedule may actually stimulate hunger signs, which can promote interoceptive awareness. One study participant noted:

When I eat what's a reasonable breakfast and I know all the i's are dotted and t's are crossed--it's got all my proteins and my fats, my grains, whatever it is that I need that should hold me for a couple of hours . . . when I actually fuel my body in what I think is supposed to be an appropriate manner I actually experience physical hunger more.

In this example, the study participant was just beginning to move towards physical hunger mastery and was actually feeling frustrated by the increase in hunger sensations she experienced when following a structured eating routine. Another study participant who was further along in her journey towards hunger mastery described a similar phenomenon:

I think getting on a regular schedule of eating correctly--three meals and three snacks throughout the day--just getting into that pattern I think did a lot for my body as far as bringing back those hunger and fullness cues.

In both examples, the study participants identified nourishment disciplines, such as balanced nutrition and scheduled eating times, as key in their development of mind body hunger mastery. Development of physical hunger management through proper nourishment patterns is also commonly identified within hunger literature (Academy of Nutrition and Dietetics, 2013; Palmer, Capra, & Baines, 2011; Talbot & Avery, 2011), including the management of emotionally-provoked food use (Ganley, 1989; Geliebter & Aversa, 2003; Pidgeon et al., 2012).

## Conclusion

In summary, the main problem for the participants of this classic grounded theory study included hunger confusion, which was alleviated by the process of developing mind body hunger mastery. Hunger confusion and mind body hunger mastery are both unique concepts that emerged from this study, and neither has specifically been studied within the fields of eating behavior, behavioral medicine, or psychology. While there is ample research in the overlapping areas of hedonic hunger (Stroebe et al., 2008; Witt & Lowe, 2014), emotional hunger (Andrews et al., 2011; Hernandez-Hons & Woolley, 2012; Timmerman & Acton, 2001), and spiritual hunger (Flinders, 1999; Lake, 2015; Lelwica, 2009; Myers, 2001; Plueddemann & Plueddeman, 2000), this is the first study to explore the full complexity and continuum of hungering. Similarly, while existing literature points to interoceptive awareness as it relates to eating disorder recovery (Myers & Crowther, 2008) as well as general eating behavior (Francis & Stevenson, 2011), this is the first study to explore the pathway out of generalized hunger confusion and into a state of hunger mastery. Further, the term mind body hunger is a very timely addition to the breadth of theories (Al-Shawaf, 2016; Blackburn et al., 2006; Frederickson & Roberts, 1997; Orzolek-Kronner, 2002), qualitative (Hertz, et al., 2012; Ogden, et al., 2011) and quantitative studies (Barkeling, et al., 2007; Born, et al., 2010; Davidson & Jarrard, 1993) that aim to address eating behaviors from the separate neurological (Born, et al., 2010; Davidson & Jarrard, 1993), bio-behavioral (Friedman, 1999; Jospe, 2015; Talbot & Avery, 2011), and psychological (Loeber, 2013; Sibilia, 2010) aspects of hunger.

Hungering can be experienced as physical hunger and as abstract hunger, which can become intertwined and layered due to the interrupting factors of family influence, cognitive interference, emotional interference, and environmental influence. The path out of hunger confusion is the development of mind body hunger mastery, which begins with interoceptive awareness and is supported through the effort to change patterns in thought regulation and emotion regulation. Social support and structured nourishment are both supportive factors in the development of mind body mastery as well. The overarching connection between lack of self-awareness with hunger confusion paralleled with the development of interoceptive awareness as an aspect of developing mind body hunger mastery is consistent within hunger literature (Nentjes et al., 2013; Pollatos et al., 2008).

The implications for the application of this theory may include a breadth of disciplines, including health care professionals in the fields of dietetics, behavioral medicine, weight management, and psychology. In particular, the exploration of hunger confusion, and its depth of hunger suffering may provide insight for the compassionate care of those who struggle with food behaviors. In addition, the recognition of the specific factors that contribute to the exit from hunger confusion may provide guidance to individuals who struggle with hunger as well as for the professionals who support these individuals in their journey towards health and well-being.

The limitations of this substantive theory include the small sample size of interviews that were coded as data. Continued data collection among more individuals will offer a more refined theory that is more generalizable to the human experiences of hunger confusion and the development of mind body hunger mastery. In addition, the personal

background of the primary researcher in the fields of nutrition, obesity, and eating disorders may have impacted the data analysis. Finally, because this theory was generated as a doctoral dissertation, the artificial timeline imposed on completing this theory may have contributed to lack of full saturation in some area, thus providing opportunities for future research.

References

- Academy of Nutrition and Dietetics. (2013). Position of the Academy of Nutrition and Dietetics: Total diet approach to healthy eating. *Journal of the Academy of Nutrition and Dietetics*, 113(2), 307-317. doi:10.1016/j.jand.2012.12.013
- Al-Shawaf, L. (2016). The evolutionary psychology of hunger. *Appetite*, 105(1), 591-595.
- Andrews, R. A., Lowe, R., & Clair, A. (2011). The relationship between basic need satisfaction and emotional eating in obesity. *Australian Journal of Psychology*, 63, 207-213. doi:10.1111/j.1742-9536.2011.00021.x
- Arnow, B., Kenardy, J., & Agras, W. S. (1995). The Emotional Eating Scale: The development of a measure to assess coping with negative affect by eating. *International Journal of Eating Disorders*, 18(1), 79-90.
- Barkeling, B., King, N. A., Naslund, E., & Blundell, J. E. (2007). Characterization of obese individuals who claim to detect no relationship between their eating pattern and sensations of hunger or fullness. *International Journal of Obesity*, 31, 435-439. doi:10.1038/j.ijo.0803449
- Blackburn, S., Johnston, L., Blampied, N., Popp, D., & Kallen, R. (2006). An application of escape theory to binge eating. *European Eating Disorders Review*, 14, 23-31. doi:10.1002/erv.675
- Born, J. M., Lemmens, S. G. T., Rutters, R., Nieuwenhuizen, A. G., Formisano, E., Goebel, R., & Westerterp-Plantenga, M. S. (2010). Acute stress and food-related reward activation in the brain during food choice during eating in the absence of hunger. *International Journal of Obesity*, 34, 172-181.
- Brown, S. L., Schiraldi, G. R., & Wroblewski, P. P. (2009). Association of eating behaviors and obesity with psychosocial and familial influences. *American Journal of Health Education*, 40(2), 80-89.
- Compare, A., Calugi, S., Marchesini, G., Shonin, E., Grossi, E., Molinari, E., & Grave, R. D. (2013). Emotionally focused group therapy and dietary counseling in binge eating disorder. *Appetite*, 71, 361-368.
- Davidson, T. L., & Jarrard, L. E. (1993). A role for hippocampus in the utilization of hunger signals. *Behavioral and Neural Biology*, 59, 167-171. doi:10.1016/0163-1047(93)9092508
- Dinsmore, B. D., & Stormshak, E. A. (2003). Family functioning and eating attitudes and behaviors in at-risk early adolescent girls: The mediating role of intra-personal competencies. *Current Psychology: Development, Learning, Personality, Social*, 22(2), 100-116.
- Flinders, C. (1999). *At the root of this longing: Reconciling a spiritual hunger and a feminist thirst*. New York, NY: Harper Collins.

- Francis, H. M., & Stevenson, R. J. (2011). Higher reported saturated fat and refined sugar intake is associated with reduced hippocampal-dependent memory and sensitivity to interoceptive signals. *Behavioral Neuroscience*, *125*(6), 943-955. doi:10.1037/a0025998
- Frederickson, B. L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, *21*, 173-206.
- Friedman, M. I., Ulrich, P., & Mattes, R. D. (1999). A figurative measure of subjective hunger signals. *Appetite*, *32*, 395-404.
- Ganley, R. M. (1989). Emotion and eating in obesity: A review of the literature. *International Journal of Eating Disorders*, *8*, 343-361. doi:10.1002/1098-108X(198905)8:3<343:AID-EAT2260080310>3.0.CO;2-C
- Garaulet, M., Canteras, M., Morales, E., Lopez-Guimera, G., Sandez-Carracedo, D., & Corbalan-Tutau, M.D. (2012). Validation of a questionnaire on emotional eating for use in cases of obesity: The Emotional Eater Questionnaire (EEQ). *Nutricion Hospitalaria*, *27*(2), 645-51. doi:10.1590/S0212-16112012000200043
- Geliebter, A., & Aversa, A. (2003). Emotional eating in overweight, normal weight, and underweight individuals. *Eating Behaviors*, *3*, 341-347.
- Grant, P. G., & Boersma, H. (2005). Making sense of being fat: A hermeneutic analysis of adults' explanations for obesity. *Counseling and Psychotherapy Research*, *5*(3), 212-220. doi:10.1080/17441690500310429
- Haedt-Matt, A. A., & Keel, P. K. (2011). Revisiting the affect regulation model of binge eating: A meta-analysis of studies using ecological momentary assessment. *Psychological Bulletin*, *137*(4), 660-81. doi:10.1037/a0023660
- Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin*, *110*, 86-108. doi:10.1037//0033-2909.110.1.86
- Hernandez-Hons, A., & Woolley, S. R. (2012). Women's experiences with emotional eating and related attachment and sociocultural processes. *Journal of Marital and Family Therapy*, *38*(4), 589-603. doi:10.1111/j.1752-0606.2011.00239.x
- Hertz, P., Addad, M., & Romel, N. (2012). Attachment styles and changes among women members of overeaters anonymous who have recovered from binge eating disorder. *Health & Social Work*, *37*(2), 110-122. doi:10.1093/hsw/hls/019
- Jospe, M. R., Brown, R. C., Roy, M., & Taylor, R. W. (2015). Adherence to hunger training using blood glucose monitoring: a feasibility study. *Nutrition & Metabolism*, *12*, 22. doi:10.1186/s12986-015-0017-2
- Kaye, W. (2008). Neurobiology of anorexia and bulimia nervosa. *Physiology and Behavior*, *94*, 121-135. doi:10.1016/j.psychbeh.2007.11.037

Lake, J. G., & Lindsay, G. (2015). Spiritual hunger, the God-men, and other sermons [E-reader version]. Retrieved from <http://www.faithfulitions.com>

Lelwica, M. M. (2009). *The religion of thinness: Satisfying the spiritual hungers behind women's obsession with food and weight*. Carlsbad, CA: Gurze Books.

Loeber, S., Grosshans, M., Herpertz, S., Kiefer, F., & Herpertz, S. (2013). Hunger modulates behavioral disinhibition and attention allocation to food-associated cues in normal-weight controls. *Appetite*, *71*, 32-39.  
doi:<http://dx.doi.org/10.1016/j.appet.2013.07.008>

Michels, N., Sioen, I., Boone, L., Braet, C., Vanaelst, B., Huybrechts, I., & DeHenauw, S. (2014). Longitudinal association between child stress and lifestyle. *Health Psychology*, *34*(1), 40-50. doi:<http://dx.doi.org/10.1037/hea0000108>

Moon, A., & Berenbaum, H. (2009). Emotional awareness and emotional eating. *Cognition and Emotion*, *23*(3), 417-429. doi:10.1080/02699930801961798

Myers, D. G. (2001). *The American paradox: Spiritual hunger in an age of plenty*. New Haven, CT: Yale University Press.

Myers, T. A., & Crowther, J. H. (2008). Is self-objectification related to interoceptive awareness? An examination of potential mediating pathways to disordered eating attitudes. *Psychology of Women Quarterly*, *32*, 172-180.

Nathan, P., O'Neill, B., Mogg, K., Bradley, B., Beaver, J., Bani, M., . . . Bullmore, E. (2012). The effects of the dopamine D<sub>3</sub> receptor antagonist GSK598809 on attentional bias to palatable food cues in overweight and obese subjects. *International Journal of Neuropsychopharmacology*, *15*, 149-161. doi:10.1017/S1461145711001052

Nentjes, L., Meijer, E., Bernstein, D., Arntz, A., & Medendorp, W. (2013). Brief communication: Investigating the relationship between psychopathy and interoceptive awareness. *Journal of Personality Disorders*, *27*(5), 617-624.

Ogden, J., Avenell, S., & Ellis, G. (2011). Negotiating control: Patients' experiences of unsuccessful weight-loss surgery. *Psychological Health*, *26*(7), 949-964.  
doi:10.1080/08870446.2010.514608

Orzolek-Kronner, C. (2002). The effect of attachment theory in the development of eating disorders: Can symptoms be proximity seeking? *Child and Adolescent Social Work Journal*, *19*, 421-435.

Palmer, M., Capra, S., & Baines, S. K. (2011). To snack or not to snack: What should we advise for weight management? *Nutrition & Dietetics*, *68*, 60-64.  
doi:10.1111/j.1747-0080.2010.01497.x

Pidgeon, A., Lacota, K., & Champion, J. (2012). The moderating effects of mindfulness on psychological distress and emotional eating behavior. *Australian Psychologist*, *48*, 262-269. doi:10.1111/j.1742-9544.2012.00091.x

- Plueddemann, J., & Plueddeman, C. (2000). *Spiritual hunger: Filing your deepest longings*. Colorado Springs, CO: Waterbrook Press.
- Polivy, J., & Herman, C. P. (1999). The effects of resolving to diet on restrained and unrestrained eaters: The 'false hope syndrome'. *International Journal of Eating Disorders, 26*, 434-447. doi:10.1002/da.20504
- Pollatos, O., & Schandry, R. (2008). Emotional processing and emotional memory are modulated by interoceptive awareness. *Cognition and emotion, 22*(2), 272-287. doi:10.1080/02699930701357535
- Roosen, M. A., Safer, D., Adler, S., Cebolla, A., & van Strien, T. (2012). Group dialectical behavior therapy adapted for obese emotional eaters: A pilot study. *Nutricion Hospitalaria, 27*(4), 1141-7. doi:3305/nh.2012.27.4.5843
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure and health* (pp. 125-154). Washington, DC: American Psychological Association.
- Sibilia, L. (2010). The cognition of hunger and eating behaviors. *Psychological Times, 19*(2), 341-354. Retrieved from <https://hrcak.srce.hr/psihologiske-teme>
- Stroebe, W., Papeis, E. K., & Aarts, H. (2008). From homeostatic to hedonic theories of eating: Self-regulatory failure in food-rich environments. *Applied Psychology, 57*, 172-193. doi:10.1111/j.1464-0597.2008.00360.x
- Talbot, A. M., & Avery, A. (2011). An investigation into how satiety and hunger they influence food choice in slimmers and non-slimmers. *Journal of Human Nutrition and Dietetics, 24*, 404.
- Timmerman, G. M., & Acton, G. J. (2001). The relationship between basic need satisfaction and emotional eating. *Issues in Mental Health Nursing, 22*, 691-701.
- van Strien, T., Frijters, J., Bergers, G., & Defares, P. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders, 5*(2), 295-315.
- Volkow, N. D., Wang, G. J., Maynard, L., Jayne, M., Fowler, J. S., Zhu, W., . . . Pappas, N. (2003). Brain dopamine is associated with eating behaviors in humans. *International Journal of Eating Disorders, 33*, 136-142. doi:10.1002/eat.10118
- Waller, G., & Osman, S. (1998). Emotional eating and eating psychopathology among non-eating-disordered women. *International Journal of Eating Disorders, 23*(4), 419-424.
- Wilkinson, L. L., Rowe, A. C., Bishop, R. J., & Brunstrom, J. M. (2010). Attachment anxiety, disinhibited eating, and body mass index in adulthood. *International Journal of Obesity, 34*, 1442-1445.

Witt, A. A., & Lowe, M. R. (2014). Hedonic hunger and binge eating among women with eating disorders. *International Journal of Eating Disorders*, 47(3), 273-280.  
doi:10.1002/eat.22171