

2017

Making sense of life balance: a coaching intervention for adults with sensory processing challenges

<https://hdl.handle.net/2144/27062>

Downloaded from DSpace Repository, DSpace Institution's institutional repository

BOSTON UNIVERSITY
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**MAKING SENSE OF LIFE BALANCE:
A COACHING INTERVENTION FOR ADULTS WITH
SENSORY PROCESSING CHALLENGES**

by

CATHERINE MIN

B.A., Colgate University, 2012
M.S., Boston University, 2016

Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Occupational Therapy

2017

© 2017 by
CATHERINE MIN
All rights reserved

Approved by

Academic Mentor

Ellen S. Cohn, Sc.D., OTR/L, FAOTA
Clinical Professor of Occupational Therapy

Academic Advisor

Karen Jacobs, Ed.D., OTR/L, CPE, FAOTA
Clinical Professor of Occupational Therapy

DEDICATION

I would like to dedicate this work to my beloved grandmothers, who continue to be my foundation here and up above. Thank you for showing me grace and love as you helped raise me into who I am today. Thank you for being proud of everything I have done and being my number one fans in all that I do.

ACKNOWLEDGMENTS

I would like to thank Dr. Ellen Cohn for her mentorship throughout the program. Her guidance and support pushed me to think critically and to strive for excellence. Dr. Cohn's knowledge and experiences are truly immeasurable and it has been an incredible opportunity to have Dr. Cohn as a mentor. Thank you for your time, and dedication to helping me grow as a student and occupational therapist.

I would like to thank Dr. Karen Jacobs for her support and energy throughout the doctoral program. Thank you for encouraging me to pursue my OTD and helping me achieve this great accomplishment.

I would like to thank Dr. Kathleen Matuska not only for her great contribution to the Life Balance literature but also for her guidance during my research and program development.

I would like to thank my peers and cohort for sharing the struggles and joys of getting through all the work. Thank you for all of the meaningful conversations as well as late night rants about being stressed.

Last but not least, I would like to thank my parents for their unconditional love and support. Thank you for everything you've done and continue to do to help me achieve my goals. Thank you for being my inspiration and for guiding me through your words, actions and prayers.

**MAKING SENSE OF LIFE BALANCE:
A COACHING INTERVENTION FOR ADULTS WITH
SENSORY PROCESSING CHALLENGES**

CATHERINE MIN

Boston University, Sargent College of Health and Rehabilitation Sciences, 2017

Major Professor: Ellen S. Cohn, Sc.D., OTR/L, FAOTA, Clinical Professor of
Occupational Therapy

ABSTRACT

Sensory processing challenges in adults are associated with life experiences, such as anxiety, depression and decreased quality of sleep (Engel-Yeger & Dunn, 2011; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiek, 1999). These life experiences may impact perceptions of Life Balance related to patterns of daily activities to support health, relationships, challenges and identity (Matuska, 2012b). Researchers have reported that life imbalance is associate with decreased well-being and dissatisfaction with life (Eakman, 2015). Literature that connects the sensory integration literature with the life balance literature is just evolving. The aim of this doctoral project was to better understand the potential relationship between sensory processing challenges and life balance and to identify evidence-based interventions to best address the problem of life imbalance for adults with sensory processing challenges. *Making Sense of Life Balance*, an 8-week intervention program, was developed using the results of the literature review. The intervention incorporates four key components: an interview that focuses on the participant's sensory needs as well as current coping strategies, goal-setting with development of an action plan, co-active coaching for problem solving, as well as use of

journal for tracking strategies and reflecting on life balance. The intervention is designed to facilitate reflection and problem solving to identify effective coping strategies, increase use of effective coping strategies, increase self-efficacy regarding self-management of sensory needs, and, ultimately increase perception of life balance.

TABLE OF CONTENTS

DEDICATION	iv
ACKNOWLEDGMENTS	v
ABSTRACT	vi
TABLE OF CONTENTS	viii
LIST OF TABLES	x
LIST OF FIGURES	xi
Chapter 1: Introduction	1
Chapter 2: Theoretical and Evidence Base to Support the Project	6
Chapter 3: The Proposed Program	36
Chapter 4: Evaluation Plan	49
Chapter 5: Funding Plan	57
Chapter 6: Dissemination Plan.....	64
Chapter 7: Conclusion.....	75
APPENDIX A: Logic Model	79
APPENDIX B: Strategy Diary.....	80
APPENDIX C: Participant Perception Survey	81
APPENDIX D: Intervention Session Sample	82

APPENDIX E: Executive Summary.....	83
APPENDIX F: Fact Sheet.....	94
BIBLIOGRAPHY.....	96
CURRICULUM VITAE.....	107

LIST OF TABLES

Table 3.1 Overview of Program Schedule	42
Table 4.1: Evaluation Questions	52
Table 5.1 Expenses	59
Table 5.2: Potential Funding Sources	62
Table 6:1 Budget for Dissemination Plan.....	71

LIST OF FIGURES

Figure 2.1: Explanatory Model of the Problem	14
Figure 2.2: Revised Explanatory Model of the Problem	20

Chapter 1: Introduction

Background to the Problem

How we receive and process sensory experiences impacts our daily lives. Challenges to how people process, regulate and organize themselves in response to sensory stimuli may interfere with daily functioning and engagement in valued occupations. An example of a sensory processing challenge includes tactile defensiveness, “a tendency to react negatively and emotionally to touch sensations”, often expressed in hyperactive or distracted behaviors, and other behavior problems (Ayres, 1979, p. 107).

Although the majority of the occupational therapy literature and practice related to sensory processing focuses on children, there is an increasing awareness and evolving literature related to sensory processing throughout the life course. We have some understanding of the experiences of adults living with sensory processing challenges, particularly in relation to sleep patterns, how people perceive pain, and emotional regulation patterns (Engel-Yeger & Dunn, 2011a; Engel-Yeger & Dunn, 2011b; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiiek, 1999; Kinnealey, Koenig & Smith, 2011; Kinnealey, Oliver & Wilbarger, 1995; Levit-Binnun, Szepsenwol, Stern-Eliran, & Engel-Yeger, 2014; Pfeiffer & Kinnealey, 2003). Researchers have documented relationships between sensory processing challenges and a range of detrimental consequences for adults. Many adults with various mental health illnesses including depression, anxiety, dementia, and schizophrenia also had maladaptive sensory patterns (Engel-Yeger & Dunn, 2011b; Levit-Binnun, et al, 2014). Inability to adapt to different sensory stimuli

appeared to be detrimental to relationships and negatively impact social participations for adults with no other documented health conditions (Ben-Avi, Almagor, & Engel-Yeger, 2011). Some characteristics reported in adults with sensory processing challenges include social withdrawal, avoidance of family problems, higher stress levels, and lower self-confidence compared to adults without any sensory processing challenges (Ben-Avi, et al, 2011; Engel-Yeger & Dunn, 2011b; Kinnealey & Fuiiek, 1999; Kinnealey, et al, 2011; Levit-Binnun, et al, 2014). Engel-Yeger & Dunn (2011a) also found a correlation between sensory processing patterns and pain catastrophizing. Specifically, individuals with sensory sensitivities presented with reports of higher pain levels than individuals without sensory processing challenges.

While this literature provides some description of the relationships between sensory processing challenges and human experiences, we have less of an understanding in how sensory processing impacts life balance. According to Matuska (2012b), life balance is achieved when there is a satisfying pattern of daily activities that promote a healthy, meaningful and sustainable lifestyle within the context of the individual's life and circumstances. Matuska's Life Balance model is based on the relationship between the desired amount of time engaged in activities and the actual amount of time spent in those activities. The Life Balance Model may be a useful theoretical framework to help understand how sensory processing challenges impact daily experience. Moreover, examining how individuals perceive the potential relationship between sensory processing and life balance may provide insights into the strategies individuals use to cope with and address sensory processing challenges. Although researchers have

described coping strategies used by adults with sensory processing challenges, this literature does not explicitly connect the theory of sensory integration and the life balance model. Kinnealey, Oliver & Wilbarger (1995) identified six coping strategies that adults with sensory processing challenges have used to handle various situations. These strategies include avoidance (avoiding activities or situations), predictability (organizing and controlling the environment or sensory stimuli), mental preparation (mental or emotional preparation to anticipate the sensory stimuli), talk through (talking through the experience for self-encouragement), counteracting (using another activity, such as seclusion or rocking, to counteract the negative sensory input), and confrontation (confronting fears and behaviors in attempt to overcome them). However, these strategies may interfere with their participation in daily activities and ultimately impact their life balance. For example, an avoidant coping strategy may limit participation in valued occupations, thus influencing an individual's perception of life balance.

As occupational therapists, we seek to promote “health and wellness for our clients with disability- and non-disability-related needs” (American Occupational Therapy Association, 2014, p. S1). Sheldon, Cummins & Kamble (2010) proposed that life balance is achieved when “actual time-use profile is psychologically congruent with one's ideal time use profile” (p. 1098). Researchers have documented that the perception of life balance is a positive indicator of well-being (Eakman, 2015). Individuals who reported life balance felt “greater autonomy, competence and relatedness in their lives” (Sheldon, et al, 2010, p. 1107). The converse is also reported where life imbalance was negatively associated with well-being and life satisfaction (Dur et al, 2014; Eakman,

2015). Eakman (2015) defined life imbalance as the individual's subjective need for meaning in occupations. This unfulfilled desire to have meaningful occupations can lead to feelings of negative affect and even depression. Other factors that increase vulnerability to life imbalance are being female and unemployment (Matuska, Bass & Schmitt, 2013). There are also biological implications related to stress and poor life balance. Telomere length, a biomarker that protects DNA from damage and indicates cellular aging, is shortened with severity and duration of exposure to life stressors, while a healthy lifestyle can strengthen and lengthen telomeres (Matuska, 2014). Life balance greatly impacts the health and well-being of people.

Approach to the Problem

A literature review was conducted to better understand the potential impact of sensory processing challenges on life balance among adults and to develop an explanatory model of the problem. A second literature review was conducted to identify effective intervention features to address the perception of life imbalance for adults with sensory processing challenges. The synthesis of this research led to the development of an intervention program: *Making Sense of Life Balance: A coaching intervention to address life imbalance for adults with sensory processing challenges*. This 8-week intervention program addresses perception of life imbalance for adults with sensory processing challenges. Participants in the *Making Sense of Life Balance program* will evaluate their sensory processing challenges and current coping strategies, develop goals and plans to address their life balance, engage in a co-active coaching process to guide problem solving and keep a journal to reflect on their strategy use.

The details of the literature review, program design as well as program evaluation, funding and dissemination will be outlined in the following chapters.

Chapter 2: Theoretical and Evidence Base to Support the Project

Overview of the Problem

The Sensory Integration Theory, pioneered by Dr. A. Jean Ayres, describes the role of sensory processing in successful engagement in daily occupations (Lane, Roley & Champagne, 2014). Sensory processing is a neurophysiological process that describes how sensory stimuli are received, interpreted and responded to in order to perform meaningful activities. Sensory processing impacts learning, social-emotional development and neurophysiological processes, all of which support key components of daily functioning, including attention, arousal and motor performance. Researchers have found that sensory processing plays a role in human experiences including sleep patterns, emotional regulation and perception of pain (Engel-Yeger & Dunn, 2011a; Engel-Yeger & Dunn, 2011b; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiiek, 1999; Kinnealey, et al., 2011; Kinnealey, et al., 1995; Levit-Binnun, et al., 2014; Pfeiffer & Kinnealey, 2003). In addition, research revealed that adults with sensory processing challenges have attempted to use coping strategies in efforts to address their needs (Engel-Yeger et al., 2016; Jerome & Liss, 2005; Kinnealey, et al., 1995; Turner, Cohn & Koomar, 2012). However, individuals, who reported use of coping strategies to manage their sensory needs, also reported unwanted consequences such as interference with occupations, higher anxiety, and unmet sensory needs (Kinnealey, & Fuiiek, 1999; Turner, et al., 2012). These insights suggest that some coping strategies may lead to a perception of life imbalance. This chapter will detail the theoretical basis for this doctoral project and the evidence that supports the need for and design of the program, *Making Sense of Life*

Balance: A coaching intervention for adults with sensory processing challenges.

Theoretical Frameworks

Three primary theories and models were used to frame our understanding and approach to the problem of life imbalance for adults with sensory processing challenges: Sensory Integration Theory, Life Balance Model and Coping Theory. These frameworks, along with additional supporting theories, will be further described to guide the development of the intervention program.

Dr. Jean Ayres pioneered a theory of sensory integration founded on the following five propositions (Lane, et al., 2014):

1. The brain is neuroplastic throughout the life course and has the potential for change
2. Interactions between the “higher order” (cortical) and “lower order” (subcortical) areas of the brain are fundamental for sensory integration
3. Neurophysiological development of sensory integrative function occurs in a natural order and follows a sequence
4. An adaptive response, defined as the ability to adjust one’s action based on the environment and context, promotes a higher level of integration
5. The inner drive of the human being seeks to master a challenge, which fosters the development of sensory integration

Ayres’ Sensory Integration theory describes the role of sensory processing in relation to learning, social-emotional development and neurophysiological processes that influence successful engagement of occupations. Sensory integration is a theory and an intervention

that focuses on the client's ability to process sensory and integrate sensory information from his or her body with other information from the environment to act on the environment. Sensory integration interventions seek to help individuals organize their responses to respond to different sensory, motor and organizational demands of their everyday activities (Lane, et al., 2014).

One of the main principles of the Sensory Integration theory, previously stated, is that adaptive responses are necessary to successfully engage in occupations (Lane, et al., 2014). Adaptive responses require the ability to process and interpret sensory information, and adjust our actions in order to interact with our environment. Individuals with sensory processing challenges may respond to sensory stimuli with a range of adaptive responses. Dunn (1997) classified the range of responses into four patterns: poor registration, sensory seeking, sensory sensitivity, and sensory avoiding responses to sensory stimuli. These patterns are characterized by the level of neurological threshold defined by the "intensity or duration of a sensory stimuli required to activate a response" (p. 821). A low threshold signifies a strong response to minimal sensory input. In contrast, a high threshold indicates that the brain needs more sensory input to respond to the sensory stimuli.

Ayres' sensory integration theory has influenced intervention in a variety of ways. Direct intervention is typically provided within a specialized therapeutic environment in a controlled and safe environment using suspended equipment that is designed to address sensory modulation, perception and praxis. Therapists may also provide other forms of sensory-based individual and group interventions. In these sensory-based interventions, a

sensory modality such as sound or vestibular stimuli is used in a very particular manner. Some interventions are designed to teach clients regulatory strategies such as using the metaphor of a sensory diet to create a menu of sensory experiences for clients to use to regulate their behavior on a daily basis. A sensory diet is a unique set of activities that an individual engages in to provide the sensory stimuli he or she needs to facilitate participation in their daily activities. Sensory diets are developed with clients to meet their individual values, needs and goals in their daily routines. A sensory diet can be introduced directly to the individual or as part of a program in various settings including home, schools, day programs, or hospital settings. Another regulatory strategy is modifying the environment to remove or increase sensory stimuli to promote occupational performance and engagement in activities. For example, clients may dim the lights to achieve a calming tone in a room. There are also sensory-based curriculums that can be used with different age groups and settings to achieve clients' goals. For example, Williams and Shellenberger (1996) designed the Alert Program to help children learn to recognize their response to or need for sensory stimuli. This metacognitive approach uses the metaphor of an engine to help children assess how alert they feel and to identify sensory stimuli that may help them achieve a desired degree of alertness or arousal. Occupational therapists often use a sensory integration perspective to educate or consult with family, caregivers and other team members to help others understand client behaviors from a sensory integration perspective.

Use of coping strategies may be mediated by an individual's awareness of his or her sensory challenges. Individuals who are unaware of their sensory challenges may not

seek to identify coping strategies to manage their needs. Some sensory processing patterns may be associated with less awareness due to the characteristics of the sensory processing pattern. For example, individuals with poor registration often have difficulty observing changes in the environment or sensory stimuli due to a high neurological threshold (Dunn, 2001). This difficulty may go unnoticed resulting in less awareness of their sensory challenges. A lack of knowledge regarding sensory processing challenges may also contribute to limited awareness of the need to use coping strategies to support engagement in desired occupations. Individuals who experiences sensory processing challenges but do not attribute these sensory processing challenges to daily life challenges may not develop coping strategies related to managing the sensory stimuli in their daily lives. On the other hand, those who are aware of their needs may be more likely to seek out and use coping strategies to help manage daily challenges.

Coping has been defined as conscious cognitive and behavioral efforts to manage stressful situations (Lazarus, 1993). Lazarus (1993) described coping as a process that changes and adapts according to the situation and context. The efficacy of coping strategies is dependent on the match between the strategy and the context in which they are used. Lazarus (1993) identified two functions of coping strategies — problem-focused and emotion-focused. Problem-focused strategies are used to change the aspects of the environment or self that is causing stress. Emotion-focused strategies reduce stress by changing the perception or emotion that is associated with the situation. For adults with sensory processing challenges, coping strategies may enable them to engage in satisfying patterns of daily activities. The use of effective coping strategies would enable

individuals to manage stressful situations that arise from sensory processing challenges. For example, a mother with increased stress from caring for a hyperactive child may use running as a way to help focus on her daily activities. However, without effective coping strategies or unmet sensory needs, adults may experience life imbalance. If the aforementioned mother was unable to go on a run to cope with the overly stimulating sensory input from her child's activity, she may have difficulty focusing to successfully complete her work or prepare dinner. An ineffective coping strategy may be to decrease time spent with her child, which may impact her relationship with her child thus impacting her life balance.

Life balance is defined as “a satisfying pattern of daily activities that promote a healthy, meaningful and sustainable lifestyle within the context of the individual's life and circumstances” (Matuska & Christiansen, 2008, p. 11). This definition underscores the idea that having a range of meaningful daily occupations is important, and that it is the perception(s) of this range that is significant. The Life Balance Model (Matuska, 2012b) illustrates that life balance or imbalance is dependent on the overlap between activity congruence and activity equivalence. Activity congruence signifies the match between desired and actual time spent in activities. Activity equivalence signifies the level of satisfaction with time spent in activities that meet the following four key dimensions: health, relationships, challenge and identity. Health refers to physical health and safety such as exercise, rest, and medication management. Relationship is identified as positive relationships with friends, family and other valued individuals. Challenge is defined by engagement in occupations such as hobbies and work that provides the just

right challenge. Identity refers to having a positive identify that incorporates personal roles such as caregiver or volunteer.

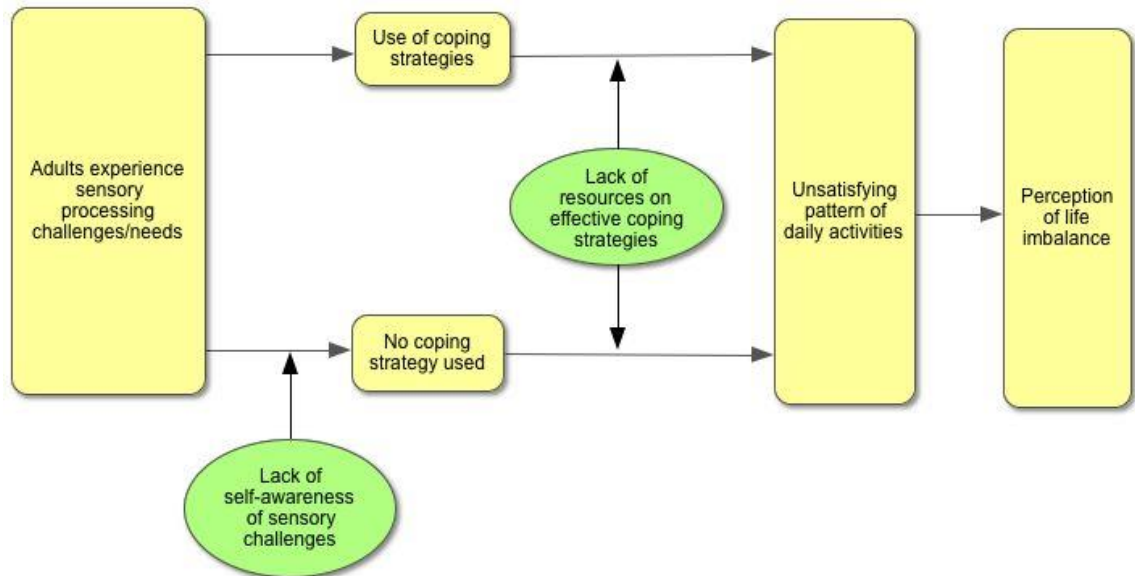
The more people are able to engage in the activities they feel they need and wish to, the more they will perceive balance and satisfaction in life. The Life Balance Model also includes the influence of the environmental context on one's ability to achieve life balance (Matuska, 2012b). The individual's environmental context may facilitate or inhibit the perception of life balance. For instance, a shopping mall may be too stimulating and hinder an individual from shopping or socializing with peers, leading to a perception of life imbalance. Although the Life Balance Model helps to identify factors proposed to influence life satisfaction and well-being, the model does not consider how sensory processing impacts occupational patterns, activity congruence, activity equivalence or life balance. However, the Life Balance Model may be a useful framework to enhance our understanding of how sensory processing challenges may impact daily experiences and ultimately patterns of occupations and perceptions of well-being. Understanding how sensory challenges influence life balance may help people to develop effective coping strategies that meet their needs and promote well-being.

Proposed Explanatory Model of Identified Problem

Researchers have documented a positive correlation between life imbalance, or the perception of life balance, with well-being (Eakman, 2015). According to Matuska (2012b), life balance is achieved when there is a satisfying pattern of daily activities that promote a healthy, meaningful and sustainable lifestyle within the context of the individual's life and circumstances. Although the impact of sensory processing on well-

being has been described in the emerging research literature, there is little research addressing the relationship sensory processing may have on life balance, especially pertaining to the adult population. This proposed explanatory model was developed to explain the process in which adults with sensory processing challenges form a perception of life imbalance. There are two indirect paths that lead to the problem of life imbalance based on the use of coping strategies. In one pathway, adults with sensory processing challenges are aware of their sensory needs and therefore, use coping strategies to manage their needs. However, the coping strategies interfere with their daily activities leading to dissatisfaction with their pattern of daily activities and ultimately creating a perception of life imbalance. In another pathway, adults with unmet sensory needs lack self-awareness of their sensory challenges and do not use any coping strategies. Consequently, they experience an unsatisfying pattern of daily activities, which creates a perception of life imbalance. It is proposed that both of these pathways are moderated by a lack of known and/or effective resources related to effective coping strategies.

Figure 2.1: Explanatory Model of the Problem



Evidence Base for the Problem

In order to assess the proposed explanatory model and evaluate the evidence supporting the model, the following four questions were asked to guide the literature search:

1. Is there evidence that adults experience sensory processing challenges?
2. Is there evidence that adults with sensory processing challenges experience life imbalance?
3. Is there evidence that adults with sensory processing challenges use coping strategies?
4. Is there evidence that adults may have a lack of self-awareness regarding their sensory processing needs?

The Sensory Integration Theory has primarily been used to explain and support intervention for the pediatric population. However, researchers have found that adults

experience sensory processing challenges as well, leading to the development of sensory processing assessments for adults (Blanche, Parham, Chang & Mallinson, 2014; Brown, et al., 2001; May-Benson, 2015). Studies on adults with sensory processing needs have indicated that sensory processing influences and contributes to our everyday experiences (Engel-Yeger & Dunn, 2011a; Engel-Yeger & Dunn, 2011b; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiiek, 1999; Kinnealey et al., 2011; Kinnealey, et al., 1995; Levit-Binnun, et al., 2014; Pfeiffer & Kinnealey, 2003). Furthermore, these studies have revealed that different sensory processing patterns are associated with challenging life experiences. For example, individuals with the low registration pattern presented with higher levels of anxiety and higher pain catastrophizing level (Engel-Yeger & Dunn, 2011a; Engel-Yeger & Dunn, 2011b). In another study, the sensory sensitivity and sensory avoiding patterns were positively correlated to poor sleep quality (Engel-Yeger & Shocat, 2012).

Evidence also reveals that adults with sensory processing challenges experience life imbalance, supporting the proposed explanatory model. The four key dimensions described in the life balance model are health, relationships, challenge and identity (Matuska, 2012b). A disruption to any one of these dimensions may lead to perception of life imbalance. The findings of multiple studies document a positive correlation between individuals with sensory processing challenges and pain, anxiety, depression, difficulties in social interactions and relationships (Ben-Avi, et al., 2012; Jerome & Liss, 2005; Kinnealey & Fuiiek 1999; Kinnealey, et al., 2011; Khodabakhsh, Cheong & Rosli, 2016; Turner, et al., 2012). These correlations may suggest that challenges associated with

sensory processing challenges may also impact the four dimensions of the life balance model among people with sensory processing challenges. Engel-Yeger and Dunn (2011a) identified a positive correlation between pain catastrophizing level and sensory processing sensitivities. Pain catastrophizing is understood as “an exaggerated negative cognitive response to actual or anticipated pain experience” (Engel-Yeger & Dunn, 2011a, pp. e1). Individuals with sensory processing sensitivities often perceive sensory stimuli as noxious, resulting in a heightened perception of pain. Thus, a link is made between sensory processing sensitivities and pain catastrophizing level. When an individual experiences an enhanced pain catastrophizing level, it may interfere with perception of physical health, a key dimension in the life balance model.

In support of the explanatory model, there is evidence that adults with sensory processing challenges use coping strategies. Researchers have identified different coping strategies that are used by individuals with a range of sensory processing patterns (Jerome & Liss, 2005; Kinnealey & Fuiiek, 1999; Kinnealey, et al., 1995; Turner, et al., 2012). Some coping strategies are problem-focused while others are emotion-focused. Problem-focused strategies attempt to change the circumstance, whether it is a change in environment or the self, such as avoidance of stimuli, controlling the environment, or forced confrontation of the stimuli. For example, Turner, et al. (2012) found that a mother, who is sensory avoiding, designated rooms and areas in her home for specific purposes such as for sleeping or reading in order to gain a sense of control over her environment and manage her sensory stimuli. Emotion-focused strategies attempt to reframe the stimuli. An example of an emotion-focused strategy is to mentally prepare for

the sensory stimuli. An individual with tactile sensory sensitivity may mitigate the sensory stimuli of a hug by mentally anticipating the event prior to its occurrence. In a study by Kinnealey, et al. (1995), one participant would tell herself “Here it comes and don’t be nervous about it” to cope with the sensory stimuli of a hug from a boyfriend.

Coping strategies, described in the literature, include spending time alone, hiding feelings, avoiding sensory stimuli, or disengaging with others (Jerome & Liss, 2005). However, some of these coping strategies such as withdrawal, isolation or disengagement may have unintended effects on relationships and/or daily function, which may to life imbalance. Moreover, Kinnealey, et al. (1995) found that some of the identified coping strategies were time and energy consuming as well as emotionally exhausting, further interfering with life experiences. In another study, mothers with sensory processing challenges found that their coping strategies often exacerbated their unmet sensory needs or interfered with their parenting role (Turner, et al., 2012). While coping strategies have been identified, they may not be effective in facilitating life balance.

A limitation of the proposed explanatory model is that this model may not be applicable for all types of sensory processing patterns. The relationships described above may not apply to people with a “sensory seeking” pattern. For instance, studies showed that sensory seeking behaviors were correlated with increased vitality, and fewer sleep disturbances (Engel-Yeger & Shocat, 2012; Kinnealey, et al., 2011). In addition, the sensory seeking pattern was not associated with attachment anxiety or attachment avoidance (Levit-Binnun, et al., 2014). Levit-Binnun, et al. (2014) identified two adult attachment orientations that may influence an individual’s life balance. The anxious

attachment orientation is exhibited by concerns about the availability and support of the adult partner. The avoidant attachment orientation presents with distrust, and emotional distance to adult partners. The sensory seeking pattern had a negative association with avoidant attachment and an insignificant correlation to the anxiety attachment.

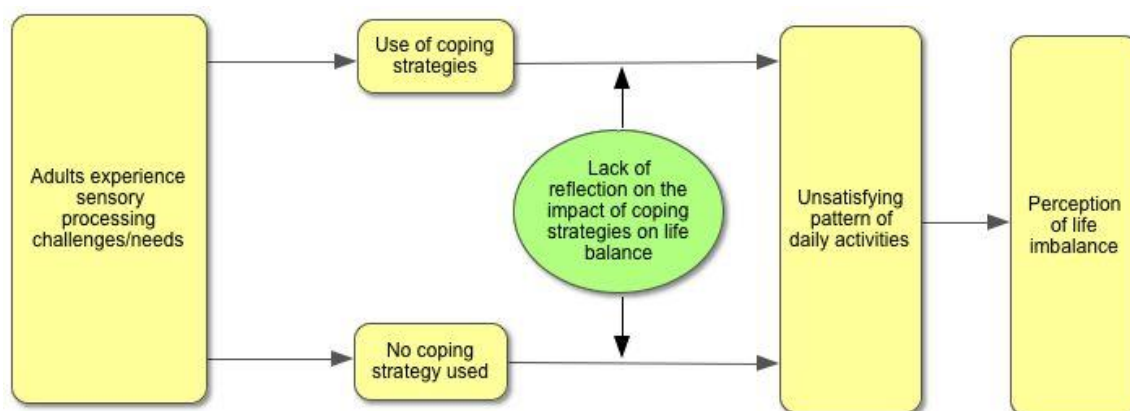
Another limitation of the explanatory model is the lack of studies to support the proposition that adults with sensory processing needs may have a lack of awareness leading to lack of use of coping strategies. In fact, two studies refuted this proposition of the explanatory model (Brindle, Moulding, Bakker, & Nedeljkovic, 2015). Brindle and colleagues found that individuals with sensory processing sensitivities are generally more observant of sensory stimuli and have an increased awareness of their emotional state. Kinnealey et al. (1995) posited that insight related to an individual's sensory processing challenge may provide the person with relief and lead to motivation to address their sensory needs. However, what remains unclear is whether an individual's awareness of his or her sensory processing challenges relates to coping strategies being used and how or if the copying strategies relate to life balance. To better reflect the research findings, the explanatory model has been revised to exclude the modifier "lack of self-awareness of sensory challenges".

Another proposition in the initial proposed explanatory model was that adults with sensory processing challenges did not have access to resources to support them to effectively cope with their sensory processing challenges and achieve life balance. There was no evidence in the literature reviewed that supports this initial proposition and even less is known about the proposed relationship between an individual's coping strategies

to address sensory processing challenges and the impact of the coping strategies on life balance. Thus, it remains unclear whether or not the perception of life imbalance is due to the lack of available resources on effective coping strategies or other factors.

The proposed explanatory model attempted to address a causal relationship between sensory processing challenges and life imbalance. The model was informed by of three major theories: Sensory Integration Theory, Life Balance Model, and Coping Theory. After review of the literature, the previously proposed explanatory model was modified to reflect the evidence from literature. Due to the lack of evidence in support of the proposition that lack of awareness contributes to limited coping skills, “lack of awareness” was removed from the explanatory model. In addition, there was no evidence found supporting the modifier “lack of resources on effective coping strategies”. Thus, the modifier was revised to “lack of reflection on the impact of coping strategies on life balance”. Numerous authors of the studies reviewed advocate for using a sensory profile in the occupational therapy assessment process to gain a clearer understanding of an individual’s cognitive, emotional, and physical well-being, which influences engagement in daily activities and ultimately life balance. In addition, a life balance questionnaire and a coping inventory would be beneficial to identify appropriate strategies for addressing sensory processing needs and for promoting life balance for each individual.

Figure 2.2: Revised Explanatory Model of the Problem



Evidence Base to Support Intervention Program

To identify the most effective and evidence-based interventions to address life imbalance for adults with sensory processing challenges, a literature review was conducted focused on three areas: interventions to address sensory processing challenges for adults, interventions to support adults living with chronic conditions, and coaching interventions to promote life balance. The first literature review addresses the primary concern highlighted in the explanatory model — that adults experience sensory processing challenges. Due to the limited literature on evidence-based interventions for adults with sensory processing challenges, the scope of the literature review was broadened by framing sensory processing challenges as a chronic condition. Consequently, a literature review was conducted to explore the effectiveness of interventions that focused on teaching coping strategies to adults with chronic conditions. The third literature reviewed addressed the resulting impact of sensory processing challenges on life imbalance. Dr. Kathleen Matuska, an occupational therapist who proposed the life balance framework, suggested that coaching may be an effective

intervention to promote life balance (K. Matuska, personal communication, January 2, 2017). The current literature on coaching is summarized below.

Interventions to address sensory processing challenges for adults

There are multiple types of interventions used to address sensory processing challenges, primarily with the pediatric population. Reynolds et al. (2017) proposed a framework to conceptualize these interventions into the following three categories: environmental supports and adaptations, education and coaching interventions, and client-focused intervention. Environmental supports and adaptations include interventions focused on changes to the physical, social temporal and/or virtual environment, such as use of headphones, compression clothing, or altered seating. An education and coaching intervention is similar to family education utilizing methods such as coaching. These interventions seek to provide family members with education and/or coaching guidance to enable the family member to support the family member with sensory processing challenges. Client-focused interventions focus on changing the client through skills development or neurological changes and may utilize sensory integration interventions, sensory-based interventions, behavioral interventions, or cognitive interventions.

Although sensory processing interventions have focused on the needs of the pediatric population, there is a growing body of literature that explores the impact of sensory processing challenges for individuals across the life course. There is an evolving body of literature that describes the life experiences of adults with sensory processing challenge and consequently, there has been an increasing awareness and recognition for the need to develop interventions to address sensory processing challenges for adults.

However, there is limited available research investigating the effectiveness of interventions developed for adults with sensory processing challenges. Rather, the published articles have proposed and described potential interventions for adults with sensory processing challenges (Kinnealey, et al., 1995; May-Benson, 2009; May-Benson & Kinnealey, 2012; Pfeiffer, 2012).

Similar to the sensory processing interventions for children described in the literature, the proposed interventions for adults with sensory processing challenges also vary and can be categorized into the three types analogous to those identified by Reynolds et al. (2017). A few researchers have examined the impact of a treatment model developed by Kinnealey et al. (1995) for adults with sensory processing challenges (Kinnealey, Riuli & Smith, 2015; Pfeiffer, 2012; Pfeiffer & Kinnealey, 2003). One focus of the intervention designed by Kinnealey et al. (2015) is education-based and uses behavioral and meta-cognitive interventions to increase the individual's insight and understanding of his or her unique sensory needs and how sensory needs may influence daily experiences. "The sensory-based treatment approach, developed by Kinnealey, "involves five main areas: (a) education and insight, (b) self-advocacy, (c) a sensory diet, (d) environmental adaptations, and (e) social supports" (Pfeiffer, 2012, p. 2). Adults are taught how to analyze their sensory needs and preferences in relation to their desired daily activities and to develop coping strategies to meet their sensory needs while engaging in desired activities.

The Adult Sensory Interview (ADULT-SI) has been used to help an adult develop awareness of his or her sensory processing needs and preferences (Pfeiffer & Kinnealey,

2003). The ADULT-SI uses a semi-structured open-ended question format that elicits information regarding the participant's thoughts and experiences related to sensory processing and use of coping strategies. One coping strategy specifically designed for an individual to address sensory needs is referred to as a "sensory diet". A sensory diet is an individualized activity plan in which a person identifies a menu of sensory activities that may be used to provide the desired sensory input to allow for satisfying participation in daily activities (Pfeiffer & Kinnealey, 2003). The intervention proposed by Kinnealey et al. (1995) is also client-focused as sensory-based interventions such as a sensory diet or inclusion of physical activity provide the adult with desired sensory stimuli. Pfeiffer and Kinnealey (2003) assessed the effectiveness of an intervention based on the intervention Kinnealey and colleagues developed in 1995. Throughout the intervention period, individuals kept a log of their activities as well as their reactions to participating in the activity. This intervention included weekly contact over the phone, for 4 to 5 weeks, between the individual and the therapist. During the weekly phone calls, the therapist asks the participant questions regarding the intervention process, compliance, difficulties, and response to the intervention. These weekly phone calls were used to adjust the intervention if necessary and answer any questions that the individual might have regarding the intervention. Using these interventions, Kinnealey and her colleagues documented decreased anxiety based on change in scores on the Beck Anxiety Inventory (Kinnealey, et al., 2015; Pfeiffer & Kinnealey, 2003). The recipients of intervention also reported decreased sensory defensiveness, an increased awareness of their sensory needs, and improved emotional regulation. However, there are a few limitations to these studies

using this intervention. Collectively, these three studies represent a small sample of the targeted population, as two of the studies were single- subject case studies and the 2003 study included a sample size of 15 adults. In addition, none of the studies included a control group to compare the effectiveness of the intervention and all of the studies attribute the changes solely to the intervention.

May-Benson and her colleagues have described another intervention for adults with sensory processing challenges that primarily focuses on therapeutic interventions to change the response elicited by the individual's central nervous system (CNS) (Champagne, Koomar, Olson, 2010; May-Benson, 2009; May-Benson & Kinnealey, 2012). Like the intervention model that Kinnealey et al. (1995) developed, May-Benson (2009) utilized environmental supports in the form of sensory diets. However, May-Benson (2009) did not focus on education interventions and primarily used sensory processing and integration interventions to elicit neurophysiological changes within the person. With this approach, therapeutic sensory activities such as sound therapy for auditory processing, deep-touch pressure, the Wilbarger Therapressure protocol, or activities that provide intense vestibular stimuli are provided both in the clinic and home setting. Following Ayres' principles, May-Benson (2009) posits that intensive sensory integration intervention would be most effective compared to intermittent treatment sessions. She recommended that individuals receive clinical intervention five times a week for 3 to 5 weeks. She recommends individualized intervention sessions, in a tailored designed out-patient clinic with suspended equipment and an array of sensory stimulation activities that consist of four stages: preparatory activities, sensory activities,

integrating activities and organizing wrap-up activities. The number of articles that recommend this intensive intervention is scarce and there are no empirical studies assessing the effectiveness of May-Benson's recommendation. None of the existing interventions for adult with sensory processing challenges explicitly integrate a life balance perspective into the intervention.

Interventions to teach coping strategies for adults with chronic conditions

Researchers have investigated various interventions to help adults with chronic illnesses manage their conditions. Beatty and Lambert (2013) performed a systematic review of literature that explored the use of internet-based self-help interventions. In this review, numerous conditions such as cancer, epilepsy, diabetes and irritable bowel syndrome (IBS) were explored. The majority of the studies used cognitive behavioral theory (CBT) techniques to guide the interventions. According to Bruce and Borg (2002), the goals of CBT are to "broaden clients' knowledge, strengthen the application of knowledge in skill-building, or improve the ability to problem solve" (p. 163). CBT is founded on the assumption that an individual's thoughts and beliefs influence behavior. Therefore, interventions based on CBT aim to change the individual's thoughts in order to produce behavior change. Some mechanisms to produce behavior change using CBT include facilitating problem solving and educating to change the individual's knowledge, behavior or thoughts. One method to facilitate problem solving is by asking questions that challenge the participant to identify evidence for the participant's beliefs (Bruce & Borg, 2002). The goal in challenging beliefs is to guide exploration and reorganization of the participant's beliefs as part of the problem-solving process in efforts to change the

participant's beliefs, attitude, or thoughts influencing behavior. The skill of problem solving can also be taught using a four-step process known as Goal-Plan-Do-Check (Meichenbaum, 1979). This process incorporates setting a goal for an identified problem, developing a plan, implementing the plan and assessing the outcome. Based on a review of 24 studies, Beatty and Lambert (2013) concluded that online CBT interventions resulted in decreases in distress for individuals with chronic pain, IBS, and tinnitus, yet they found no significant changes post intervention for individuals with epilepsy, fatigue and cancer. The authors suggest a few reasons for the lack of changes such as the attrition rate, low compliance rate, small sample size, and lack of moderator. They also highlight that only one article per diagnosis was reviewed. In addition, the authors note that the studies investigating intervention for diabetes did not show a reduction in distress. However, they hypothesize that the lack of change in participants with diabetes may be because the intervention was designed with a focus on nutrition rather than CBT components.

Another mechanism of CBT that is commonly utilized for self-management of chronic illness is for participants to use of diaries and/or journals to document their thoughts, feelings, and experiences (Liedberg, Hesselstrand, & Henriksson, 2004; Longhurst, 2006). Documentation through diary or journal offered multiple benefits for individuals managing chronic illnesses. For one, the documentation process provided the participants with a structure to self-reflect and increase their awareness of their experiences. The documentation process was also used to support the participants to develop strategies and set goals based on what they observed and recorded in their

documentation.

Lorig and her colleagues studied the effectiveness of a Chronic Disease Self-Management Program (CDSMP) for people living with various chronic conditions including diabetes, stroke, heart disease, and arthritis (Lorig et al., 1999; Lorig, Ritter, Ory, & Whitelaw, 2013). The CDSMP program is based on the self-efficacy theory and offers a self-management education course. Self-efficacy related to health behaviors is defined as “confidence in the ability to implement a health behavior change” (Reitz, 2014, pp.580). Self-efficacy theory includes multiple propositions. The theory proposes that a person’s efficacy expectation, or beliefs regarding his or her potential success in performing a skill, will influence performance of that particular skill. In addition, efficacy expectation influences the persistence and effort put into performing the skill (Bandura, 1977). An individual is more likely to approach and pursue activities in which he or she has greater confidence in successfully completing. In contrast, an individual is more likely to avoid activities in which he or she fears or is less confident in completing. Bandura (1977) describes four methods of increasing efficacy expectation: performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal. For example, a specific mechanism categorized as performance accomplishments is guided performance of the activity through carefully structured environment to ensure successful skill development or activity completion. Another mechanism is gradual exposure to the skill or activity to decrease fear and avoidance. Vicarious experience is developed through, observation of others’ successful performance and experiences of activity. Multiple observations that portray skill development, use of various strategies and/or

ability to overcome obstacles raises the chances of increased self-efficacy. Examples of verbal persuasion include encouragement from others believing in the individual's potential and suggestions for successful completion of the activity. Bandura (1977) states high emotional arousal such as stress, and anxiety tends to impede successful activity performance. And so, Bandura proposes that mechanisms that decrease fear and increase relaxation would increase self-efficacy. Examples of mechanisms to regulate emotional arousal are biofeedback techniques and desensitization through constant exposure of the feared activity with relaxation techniques.

The Chronic Disease Self-Management Program, developed by Lorig and her colleagues, is founded on the following three assumptions: 1. Patients with different chronic diseases have similar self-management problems and disease-related tasks, 2. Patients can learn to take responsibility for the day-to-day management of their diseases, and 3. Confident, knowledgeable patients practicing self-management will experience improved health status and will utilize fewer health care resources (Lorig et al., 1999, p. 6). Some proposed mechanisms of change guided by the self-efficacy theory include progressive goal setting, modeling of behaviors, and positive feedback such as verbal reinforcement. The CDSMP course consisted of weekly group sessions, in which the leaders, albeit trained for this course, acted as facilitators of the group. During the group session, methods such as modeling of desired behaviors, weekly action planning, which includes goal setting, and problem-solving are used. As stated earlier, Bandura proposed that an increase in an individual's efficacy expectation will increase the effort and participation in an activity. The mechanisms used in the CDSMP were developed based

on Bandura's suggestions to increase an individual's efficacy expectation (Lorig et al., 1999; Reitz, 2014). Regardless of condition, improvements in health status and changes in behaviors that facilitated health management such as exercise, nutrition and communication with health professionals were reported. This program is typically run over 6 weeks with 2.5hour sessions (Lorig et al., 1999; Lorig et al, 2013).

Other researchers also focused their intervention on increasing self-efficacy in efforts to produce a change in behavior (Cha et al., 2014; Mantler, Irwin, Morrow, Hall, & Mandich, 2015; Pearson, Irwin, Morrow, Battram, & Melling, 2013). These interventions utilized weekly phone counseling sessions as well as behavioral goals to facilitate motivation and confidence throughout the course. The interventions consisted of 8 to 12 treatment sessions that lasted between 30- to 45-minutes per session. However, Mantler et al. (2015) noted that the participants felt 8–10 sessions were enough to produce meaningful behavior change. An increase in self-efficacy often led to a change in behavior which included strategy use.

Coaching interventions to promote life balance

Matuska and Christiansen (2008) proposed the Life Balance Model, which has been studied and found to be a valid framework for understanding the influences of perception of life balance. They defined life balance as “a satisfying pattern of daily activity that is healthful, meaningful, and sustainable to an individual within the context of his or her current life circumstances” (Matsuka & Christiansen, 2008). Some of the symptoms experienced by individuals with sensory processing challenges include anxiety, depression and difficulties with relationships (Ben-Avi, et al., 2012; Kinnealey

& Fuiek, 1999). These symptoms have been correlated with poor emotional well-being and health, and ultimately, life imbalance (Zuzanek, 2009). Thus, there is evidence that points to the possibility of life imbalance among adults with sensory processing challenges.

Professional coaching has been identified as an intervention to facilitate and restore life balance (Heinz & Pentland, 2009). Professional coaching has been used to promote health and wellness across a range of different populations including individuals with obesity, individuals with seek to quit smoking, parents of children with autism spectrum disorders, and individuals with multiple sclerosis (Dunn, Cox, Foster, Mische-Lawson and Tanquary, 2012; Heinz and Antolak, 2010; Newnham-Kansas, Irwin, Morrow, & Battram, 2011; van Zandvoort, Irwin, & Morrow, 2009). Specifically, co-active life coaching (CALC) has been used to guide the intervention and facilitate behavior change. Many studies describing CALC as the primary method of intervention note that the intervention was provided by a certified professional co-active coach who administered the intervention via telephone or video-conversation. Coaching embraces a strengths-based approach, in which the participant has a collaborative relationship with the coach (Heinz & Pentland, 2009). The participant is accepted as a partner throughout the coaching process and is recognized as the expert of his or her own life. Rather than the coach giving advice or creating a plan to be followed, it is the participant's responsibility to identify areas that need to be addressed and develop a plan to achieve the identified goals. The coach listens and asks questions to "support, stretch and challenge the client toward achieving his or her goals" (Heinz & Pentland, 2009, pp.

243). Other strategies that coaches use include collaborating with the participant to establish goals, developing challenges within the context of the participant's goals, creating accountability, and taking an "action-reflection-learning approach" (Heinz & Pentland, 2009, pp. 247).

Strengths have been defined as "qualities that contribute to (the individual's) life in a functional way and are descriptors that reveal (the individual's) distinctive attributes (McCammon, 2012, p. 557). In a strengths-based approach, the intervention focuses on the client's positive qualities or attributes rather than his or her shortcomings. According to Davis, Mayo, Sikand, Kobre, & Dollard (2007), this approach uses the identified strengths or abilities to address a specific area of the individual's life and ultimately improve his or her overall wellbeing. Seven types of strengths were identified to be used as part of the assessment, planning and intervention: talent strengths, resiliency strength, possibility strength, resource strength, borrowed strength, past strength, and hidden strengths (Davis et al., 2007). Each type of strength has a function that can be used based on the participant's needs. For instance, a talent or skill, such as playing a sport, can be directly linked to a goal incorporating exercise. In addition, identifying talent cause also enhance relationships or self-efficacy by stating an already established skill that can be used to address their needs. Within the context of a strength-based therapeutic relationship, the coach lists and discusses the participant's strengths. Acknowledgement of the participant's strengths can provide affirmation and create a hopeful tone to the conversations (McCammon, 2012). One of the goals of coaching is to assist the individuals to "identify their choices and develop strategies" to manage their challenges

(Heinz & Pentland, 2009). Studies found through this talk-based approach, participants reported an increase in self-efficacy and self-esteem (Mantler, et al., 2015; Newnham-Kansas, et al., 2011; Pearson, et al., 2013; van Zandvoort, et al., 2009). In addition, the coaching intervention has resulted in behavioral change that included implementation of identified strategies and action plan.

A gap in the current coaching literature is the inconsistency in protocol for use of coaching intervention. As coaching is client-driven and individualized for each participant, intervention using coaching is fluid in nature. In addition, the length of the intervention and duration of each session varied depending on the study. The majority of the interventions consisted of weekly sessions that lasted between 30 to 60 minutes. The duration of the entire intervention, however, ranged from six to eighteen weeks. One study did not report a consistent number of sessions between participants (van Zandvoort, et al., 2009). Coaching has been used through various formats including in-person, telephone and video conference calls. While most studies provided individual coaching sessions, Heinz and Antolak (2010) used a group coaching intervention for individuals with multiple sclerosis. For this population, the group sessions were successful in developing strategies to reduce stress and increase life balance through the coaching sessions.

Summary

There is evidence indicating that adults with sensory processing challenges may experience life imbalance. However, interventions to facilitate life balance and improve quality of life for adults with sensory processing needs are not described in the literature.

The current research on interventions for adults with sensory processing challenges is focused on increasing their awareness of their sensory challenges and developing coping strategies to address the individual's sensory needs. However, the intervention does not explicitly incorporate the impact that their needs or coping strategies use may have on life balance.

The following three frameworks could help shape the understanding and approach to an intervention program to facilitate life balance for adults with sensory processing challenges: the sensory-based intervention proposed by Kinnealey et al., the life balance model, and the coping theory. In addition, the coaching model, self-efficacy theory and the cognitive behavioral theory provide useful constructs to inform selection of appropriate assessments and guidelines for the intervention.

Although there is a limited amount of research regarding the effectiveness of interventions for adults with sensory processing challenges, the available evidence indicates that an intervention that incorporates a metacognitive intervention with a sensory-based intervention may lead to promising results. Sensory-based interventions follow Ayres' principles to teach clients to analyze their sensory needs and develop a sensory diet of activities and coping strategies that will meet their sensory needs and support them to achieve life balance in desired activities. Coping strategies may include environmental adaptations and modifications such as use of headphones or sunglasses, and adjustments to daily schedule.

Cognitive-behavioral interventions may be used to increase clients' self-awareness of sensory processing needs and use of coping strategies. Metacognitive

interventions include education and coaching to facilitate insight into strategy use or lack of strategy use and guide a person to problem solve and produce a change in behavior. Another evidence-based method to increase awareness is the use of self-analysis and reflection of daily occupational patterns. These strategies can be used to guide individuals to analyze their activities, sensory demands, coping strategies, and satisfaction with their activity patterns. Some methods that have been used are daily logs, diaries, or time use tracker of activities to help individuals become aware of their sensory needs and the impact on engagement in desired occupations.

In conjunction with increasing self-awareness, increasing self-efficacy is another key goal of the intervention that promotes changes in behavior. Empowering individuals to problem solve and self-advocate for their choices facilitate learning, allowing individuals to feel more confident about their decisions and actions. Another method of increasing self-efficacy was holding weekly sessions for accountability and to sustain motivation to continue to make changes in lifestyle. In addition, development of weekly goals, which individuals can work toward, positively influences motivation and self-efficacy.

Key features of co-active coaching have been studied and found to be effective. Co-active coaching is a collaborative relationship that acknowledges the expertise of the individual as well as the therapist. The relationship promotes a collaborative goal setting process to promote the involvement of the individual throughout the intervention. The co-active coaching process embraces a client-centered and strengths-based approach. This strength-based approach is based on a therapeutic relationship with the individual to build

trust and guide the sessions that is empowering for the individual and highlights his or her strengths. The principles of sensory integration theory, the self-efficacy theory, cognitive behavioral theory and co-active coaching may be combined to meet the needs of an adult with sensory processing challenges, by promoting self-awareness to develop strategies that would facilitate life balance and therefore promote wellbeing of the individual.

Chapter 3: The Proposed Program

Introduction

Perception of life balance is associated with well-being and satisfaction in life (Matuska & Barrett, 2014). In the Life Balance Model, there are four dimensions that are required to facilitate life balance — health, relationships, challenge and identity (Matuska, 2012b). Researchers have documented that adults with sensory processing challenges have experiences, such as pain, anxiety, and difficulties with relationships (Ben-Avi, et al., 2012; Jerome & Liss, 2005; Kinnealey & Fuiiek 1999; Kinnealey, et al., 2011). In addition, researchers reported that some adults use ineffective coping strategies to address their sensory needs, potentially disrupting one or more of the dimensions of life balance (Jerome & Liss, 2005; Kinnealey & Fuiiek, 1999; Kinnealey, et al., 1995; Turner, et al., 2012). The proposed program is a coaching intervention to address life imbalance for adults with sensory processing challenges. The intervention was developed using principles from sensory integration theory, the life balance model and the coaching model

Program Description

Program goal. The intent of this program is to facilitate the perception of life balance for adults who experience sensory processing challenges. The program seeks to empower participants to problem-solve and identify strategies to address their sensory needs that will be congruent with their lifestyle. The ultimate goal is for participants to perceive a sense of life balance.

Outcomes: There are many desired outcomes from participation in this program. Short-term outcomes include reports of decreased level of anxiety indicated on the Beck Anxiety Inventory (BAI), as well as reports of increased perception of general self-efficacy, measured by the General Self-Efficacy Scale (GSES) (Beck, Epstein, Brown & Steer, 1988; Luzcynska, Scholz & Schwarzer, 2005). Intermediate outcomes include participant's use of coping strategies to address their sensory needs as well as their satisfaction with coping strategies. These outcomes will be indicated on the participant's strategy diary based on their reports of strategy use and satisfaction rating of the strategy. The long-term outcome is participant's improved perception of quality of life and life balance, which includes satisfaction with participation in daily occupations. The long-term outcome will be measured by Quality of Life Inventory and the Life Balance Inventory (Frisch, Cornell, Villaneuva & Retzlaff, 1992; Matuska, 2012a).

Program participants: The program is designed for adults with sensory processing challenges. Program participants will be recruited through outpatient occupational therapy practices that specialize in sensory integration and include individuals who are already receiving occupational therapy services for their sensory needs or are parents of children with sensory processing disorders. The Adult Sensory Questionnaire will be given to potential participants to identify individuals who may benefit from the program. The Adult Sensory Questionnaire is a 26-item questionnaire, designed to screen for sensory defensiveness in adults (Kinnealey, et al., 2011; Pfeiffer & Kinnealey, 2003). An individual with a score of 10 or above is considered sensory defensive and the score of 10 will be used to identify people who may benefit from the

program.

Assessments & Measures: A group of assessments will be used to serve two purposes. For one, assessments will be administered pre- and post- intervention to identify changes as a result of participation in the program and to determine if the participant has achieved his or her desired outcomes. The assessments will also be used for therapist and the participant to better understand the needs of the participant.

ADULT- SI: The ADULT-Sensory Interview is a semi-structured, open-ended interview focused on 75-items pertaining to sensory defensiveness (Kinnealey & Fuiiek, 1999). This interview was reported to have 100% content validity, implying appropriate use for assessing sensory defensiveness (Kinnealey, Oliver, & Pfeiffer, 1995). In addition, Kinnealey et al. (1995) report that this assessment was found to have a 90–100% inter-rater reliability and strong test-retest reliability over a 4–6 week time span. This interview will take approximately 2 hours and will serve multiple purposes for this program. The ADULT-Sensory Interview will allow therapist and the participant to gain insight about the participant’s sensory needs and perspectives related to his or her response to sensory stimuli. The participant’s responses will guide the intervention and support the exploration of strategies to effectively address the participant’s sensory needs. In addition, the interview will serve as a tool to increase the participant’s awareness of his or her sensory needs. The interview will provide the opportunity for a participant to reflect on his or her sensory experiences.

Beck Anxiety Inventory (BAI): The BAI is a 21-item self-report measure of anxiety in adolescents and adults (Beck, et al. 1988). It is estimated to take 5–10 minutes

to administer and less than 5 minutes to score and interpret (Bardhoshi, Duncan & Erford, 2016). A higher score on the BAI indicates greater levels of anxiety. Beck et al. (1988) reported that this assessment's one-week test-retest reliability was .75, indicating adequate reliability. However, a recent meta-analysis of the psychometrics of the BAI revealed that the test-retest reliability was .65 when performed in six-week time frame. Despite the decreased reliability score, it is commonly used as a pre- and post-intervention assessment (Kinnealey, et al., 2011; Kinnealey, et al., 2015; Pfeiffer & Kinnealey, 2003). The BAI will be used to document anxiety levels pre and post-intervention.

Life Balance Inventory (LBI): The Life Balance Inventory was developed to explore the concepts proposed in the Life Balance Model (Matuska, 2012a). The LBI measures the match between desired and actual time spent in 53 activities. It also measures how well the needs of four dimensions (health, relationships, identity and challenge), identified in the Life Balance Model, are met. Matuska (2012a, 2012b) documented that the Life Balance Inventory showed good construct validity as well as internal consistency. The LBI takes approximately 10 minutes and can be completed online as well as on paper depending on the participant's comfort and access to resources. The results of the LBI will provide descriptive information on the participant's perception of his or her life balance. In addition, the Life Balance Inventory will be completed pre- and post-intervention.

Quality of Life Inventory (QOLI): The QOLI, a 5 minute self-report measure, includes 32 items and can be completed on the computer or on paper. The QOLI

measures 16 areas related to quality of life (Frisch, et al., 1992). The QOLI was found to be reliable and sensitive to change to determine effectiveness of the intervention (Frisch, 2013). Frisch et al. (1992) analyzed test retest reliability from two groups: veterans (.91) and undergraduate students (.81). In addition, the assessment was found to be a valid tool to assess well-being and life satisfaction. The results of this assessment will be used to document the participant's perception of his or her well-being as well as satisfaction with life. QOLI will be administered pre- and post- intervention to document the participant's perception of well-being as well as determine the effectiveness of the intervention in improving well-being and increasing satisfaction with life.

General Self Efficacy scale (GSE): The GSE is a 10-item scale used to measure general self-efficacy, or “the belief in one's competence to cope with a broad range of stressful or challenging demands” (Luzcynska, et al., 2005). It takes approximately 5 minutes to complete and has been adapted into many different languages. The GSE was confirmed to be reliable and valid to measure perceived self-efficacy. The internal reliability for the GSE range between .76 and .91 depending on the language adaptation of the assessment (Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002). The authors also analyzed test-retest reliability and found an average of .61. In addition, the research on teachers in Germany found that general self-efficacy correlated with proactive coping (.55). This assessment will be administered pre- and post- intervention to determine if the intervention influences the participants' self-efficacy.

Intervention format and design

The intervention will be delivered over the course of eight weeks and

administered both in-person and via phone conversations. Prior to the start of the intervention, the participants will be asked to complete a battery of assessments to be used as a baseline before beginning the intervention. The first week, participant will meet with the therapist in-person for an initial evaluation and interview. The in-person meeting will facilitate the development of a therapeutic relationship between the participant and the therapist. In order to complete the ADULT-SI and review the program structure, the first meeting may last up to 2 hours. The subsequent meetings will take place over the phone or through video-conference and will be expected to last an hour. The day and time of the phone calls will be determined by the participant and therapist to accommodate the participant's schedule. The times for the phone calls will be tentatively selected during week one at the in-person session with flexibility and understanding that the pre-determined time may change. In order to facilitate commitment with the program the participant will be expected to call the therapist at the designated time to begin the weekly session.

During the initial meeting, the participant will be given an overview of the program and provided materials such as the activity journal. Based on a discussion of the participant's sensory needs, the therapist will collaborate with the participant to identify goals and develop an individualized sensory diet for the first week. The sensory diet will incorporate activities for meeting the participant's sensory needs previously described in the interview. Throughout the week, the participant will be encouraged to use the activity journal to reflect and document on the activities identified in the sensory diet. The activity journal will include the participant's response to the activity

(emotional/physical), and satisfaction with engagement in activity. During the subsequent weeks, the participant will be encouraged to continue using the activity journal, documenting adjustments in strategy use, response and satisfaction. After the completion of the eight weeks, the participant will be asked to complete the same battery of assessments that they had completed prior to the intervention.

Table 3.1 Overview of Program Schedule

Week	Setting	Content/Discussion
Prior to intervention	At participant's home (~30 minutes)	Participant independently completes battery of assessments: (BAI, Life Balance Inventory, Quality of Life Inventory, General Self-Efficacy Scale)
1	In-Person (~2 hour)	ADULT-SI, overview of program <ul style="list-style-type: none"> - Based on findings from the ADULT- SI interview, initiate collaborative development of sensory diet - Identify goal to work on for the week
2-7	Phone Call (up to 1 hour)	<ul style="list-style-type: none"> - Discuss last week's goal - Reflect on past week's activities and strategy use - Identify strengths and attributes that facilitate coping - Coach on effectiveness/satisfaction, facilitate problem-solving - Identify goal to work on for the upcoming week
8	Phone Call (up to 1 hour)	<ul style="list-style-type: none"> - Discuss last week's goal - Reflect on past week's activities and strategy use - Coach on effectiveness/satisfaction, facilitate problem-solving - Discuss effective strategies throughout
9	At participant's home (~30 minutes)	Participant independently completes battery of assessments (BAI, Life Balance Inventory, Quality of Life Inventory, General Self-Efficacy Scale)

Key components of the intervention: This evidence-based program was designed with four key components to guide the intervention. The components are a) interview with a focus on the participant's sensory needs and current coping strategies, b) goal

setting with action plan c) co-active coaching for problem solving, including examination of the coping strategies, d) journaling.

Interview using Adult-SI: Awareness of one's needs is necessary to motivate and initiate use of coping strategies to address those needs. However, adults with sensory processing needs may not be aware of their sensory needs, while others may be hyper-aware of their sensory needs. In either situation, adults may need methods to manage their sensory needs. Sensory integration has primarily been used to guide intervention for the pediatric population. Consequently, research related to adults with sensory processing challenges is just emerging and we do not know if these adults are aware of how their sensory processing challenges influence their perception of life- balance. The initial goal of the intervention will be to assess the participant's awareness of their sensory needs and how or if their needs affect their daily living. The Adult Sensory Interview (ADULT-SI) is semi-structured with open-ended questions to elicit information regarding the participant's thoughts and experiences that are related to sensory processing. This interview will provide data and an opportunity to facilitate participant's reflection on their sensory need as well as overall life experiences. A portion of the discussion will be on the impact of the sensory processing challenges on the four key components of life balance — health, relationships, challenge and identity. Health refers to physical health and safety such as exercise, rest, and medication management. Relationship is identified as positive relationships with friends, family and other valued individuals. Challenge is defined by engagement in occupations such as hobbies and work that provides the just right challenge. Identity refers to having a positive identify that incorporates personal

roles such as caregiver or volunteer. The interviewer will ask probing questions to facilitate an exploration of the impact of sensory processing on these four domains of life balance.

Goal setting with action plan: Problem solving is an important mechanism proposed by cognitive behavioral theory (CBT). CBT proposes that the individual's thoughts and beliefs influence the behavior (Bruce and Borg, 2002). Therefore, a change in beliefs will lead to a change in behavior. One approach to facilitate use of problem solving is to challenge the participant's beliefs about the circumstances and encourage the participant to explore the evidence supporting the beliefs. Problem solving involves a four-step process known as "Goal-Plan-Do-Check". These four steps can guide the participant to tackle problems they may encounter. Goal setting is used in both self-management of chronic illnesses as well as in the coaching process (Heinz & Pentland, 2009; Lorig et al., 1999; Lorig, et al., 2013). During every session, the participant will identify a goal to guide the discussion and develop a plan or a set of strategies to accomplish those goals. During the first session, the therapist will have the opportunity to educate the participant and discuss how to create and manage a sensory diet. The participant's individualized sensory diet will be part of the initial plan that is developed for coping with the participant's sensory needs.

A sensory diet is an activity plan developed uniquely for individuals to provide desired sensory input to facilitate satisfying participation in daily activities (Pfeiffer & Kinnealey, 2003). These activities provide sensory input, such as deep pressure, proprioceptive and vestibular input, to facilitate regulation of the nervous system.

Another key feature of the sensory diet is that these activities can be incorporated into the individual's daily routine. In a study by Pfeiffer & Kinnealey (2003), the researchers allowed the participants to try different equipment such as a rocking chair or a trampoline to identify their response to the equipment. The researchers interviewed the participants about their responses to and feelings about different sensory activities that they engaged in. Based on these information, the researchers developed a plan of activities (called sensory diet) for each participant. The development of the sensory diet will be the second step, "plan", in the four-step process of problem solving.

The participant's engagement in the activities over the week is the third step, "do", in the four-step process. At the start of the subsequent sessions, the therapists will inquire regarding compliance with the intervention as well as the participant's reflections over the week. In this process, the therapist will ask probing questions to encourage the participant to review the strategies used over the week and reflect on how effective the strategies are in supporting the participant's life balance. The conversation will seek to assess the outcome of the strategy use on the four areas of life balance (health, relationships, challenge and identity). These probing questions will facilitate the fourth step, "check", in the four-step process. The weekly sessions will provide accountability for the participant to continue with the intervention and increase the likelihood of compliance and successful completion of the intervention. Identification and successful achievement of weekly goals will potentially increase the participant's self-efficacy related to management of his or her sensory processing needs with repeated exposure to success in using the participant's use of problem-solving skills.

Co-active coaching: Coaching is an intervention that has been used for health promotion with various population including individuals with chronic illnesses. One of the main goals of coaching is to facilitate behavior change using principles of a strengths-based approach. A strengths-based approach focuses on the participant's strengths and attributes that can be incorporated into the intervention (Davis, et al., 2007). Davis et al. (2007) identified seven types of strengths that serve to empower, affirm and give hope to the participant as well as develop the therapeutic relationship between the participant and the therapist. Using a strengths-based coaching approach, the therapist will facilitate the participant to describe his or her strengths (McCammon, 2012). Acknowledging the participant's strengths helps the therapist build a therapeutic and trusting relationship.

The coaching relationship is based on a collaborative relationship in which the participant is the expert of his or her life (Heinz & Pentland, 2009). The therapist can coach the participant to connect the identified strengths to address his or her challenges and achieve his or her goals however, the participant is given the responsibility and ownership to create goals and develop a plan to reach the goals. It is the therapist's responsibility to listen, support and challenge the participant to work toward achieving his or her goals. An approach utilized in the coaching relationship is to increase self-efficacy. Self-efficacy related to health promotion refers to the participant's confidence in ability to perform a skill or activity to promote a health behavior change. (Reitz, 2014). According to Bandura (1977), a person's belief in his or her ability to successfully perform a skill, also known as efficacy expectation, will influence the amount of effort put into using that skill. If the participant has low efficacy expectation, he or she is less

likely to attempt and persist in completing the activity. Bandura (1977) identified four sources that influence self-efficacy: a) performance accomplishment, b) vicarious experience, c) verbal persuasion, and d) emotional arousal. In this program, the therapist will use verbal persuasion in form of verbal reinforcement and positive feedback to encourage the participant to follow through with the plan he or she developed. The therapist will acknowledge the successes each week to promote the participant's efficacy expectation for the upcoming week's plan of action. A frequency of eight to twelve weekly treatment sessions has been found to be effective in increasing motivation and confidence to continue with the performance of the planned treatment in other behavior change intervention (Cha et al., 2014; Kinnealey et al, 2015; Pfiffer & Kinnealey, 2013; van Zandvoort, et al., 2009).

Journaling: The participant may have been using coping strategies to address their sensory needs. However, the coping strategies may or may not be effective and may interfere with daily activities and life balance (Turner, et al., 2012). Researchers have incorporated use of journals or diaries to track use of coping strategies and facilitate participants' reflection on the effectiveness and reaction to the coping strategy (Liedberg, et al., 2004; Longhurst, 2006; Pfeiffer & Kinnealey, 2003). The journal provides a mechanism to increase awareness of strategy use and facilitate reflection about the effectiveness of each coping strategy. The journal will also incorporate reflection on the participant's satisfaction with the coping strategy. Understanding the participant's level of satisfaction with the coping strategy will help to determine the effectiveness of the coping strategy in facilitating life balance.

Potential barriers and challenges for implementation

A challenge to the implementation of this program will be the initial recruitment and collaboration with the participant. A component of the proposed explanatory model is that some adults with sensory processing challenges may not be aware of their needs and therefore may not seek for help. Active participant recruitment to reach individuals with sensory processing challenges is essential. Another barrier to implementation of the program is scheduling. Both the therapist and the participant will have to agree to a specific time that works for both partners. Depending on the lifestyle and routine of the participant, the participant may not be able to meet on a weekly basis. In addition, the therapist will have to find time that works for multiple participants and ensure that there is no overlap between designated times for different participants. A third potential challenge for implementation of this program is the participant's commitment to the program. Although the participant may begin the program with the intention of participating in and persisting through the entirety of the program, there is no guarantee of full commitment. In addition, documentation of the participant's engagement with the intervention throughout the week will be based on the participant's report and honesty. The outcomes of the program may be skewed if the participant does not complete the intervention as negotiated. Another challenge to this program is that life balance may be affected by circumstances outside of the participant's sensory challenges. If any additional circumstance arises during the program, the desired outcomes may be affected.

Chapter 4: Evaluation Plan

Introduction

The proposed coaching intervention seeks to address perception of life imbalance for adults with sensory processing challenges. Research found that sensory processing challenges impact life experiences for adults including difficulties with relationships, impaired sleep and heightened perception of pain (Engel-Yeger & Dunn, 2011; Engel-Yeger & Shochat, 2012; Kinnealey & Fuiiek, 1999; Levit-Binnun, et al., 2014). In addition, these experiences are correlated to dimensions of life balance in the Life Balance Model (Matuska, 2012b). Furthermore, perception of life balance has been positively associated with well-being (Eakman, 2015). *Making Sense of Life Balance: A Coaching Intervention for Adults with Sensory Needs* is a program intended to improve life balance through the use of coaching techniques. A Logic Model, provided in the appendix, was developed to provide a visual explanation of the inputs, activities, program, outputs, and outcomes of this program.

This summative program evaluation was specifically developed for *Making Sense of Life Balance* in order to determine the effectiveness of the program in producing the intended outcomes including decreased anxiety, improved self-efficacy, improved quality of life and improved life balance. In addition, the program evaluation will also provide content for marketing the program to key stakeholders including potential participants, and other therapists who are interested in implementing the program.

In order to determine the effectiveness of the proposed program, the following research question was used to guide the design of the evaluation study: Does participation

in *Making Sense of Life Balance: A coaching intervention for adults with sensory processing needs* result in improved life balance and quality of life?

Plan for Evaluation

To determine the effectiveness of the intervention, the program evaluation will focus on the design of the program and the impact on participants. The therapist who implements the intervention and a research assistant will complete the entire program evaluation process, from data collection to data analysis. Quantitative data will be collected to obtain a greater understanding of the program's design and effectiveness.

Purpose of Program Evaluation

This program evaluation serves two purposes: to produce descriptive information about the program and causative information about the effects of the program.

Descriptive outcomes of the evaluation include the content and features of the program such as what the therapists and participants are doing. In addition, the evaluation describes the resources and costs necessary to implement the program.

The evaluation also seeks to determine if the described intervention and activities lead to desired outputs and outcomes of the program. The program evaluation is designed to determine if participation in *Making Sense of Life Balance* leads to decreased life balance and improved quality of life. The evaluation would help to determine if the program produced the intended outcomes and if an 8-week program can produce behavior change. The program evaluation would also help to determine if the program is decreasing anxiety and increasing self-efficacy on selecting and using effective strategies.

Scope of Evaluation

The program evaluation would be implemented over a 10-week span, which includes the 8-week intervention program. During the initial and final weeks of the program evaluation, the participants would be completing the pre- and post- intervention assessments, which include the Beck Anxiety Inventory (BAI), General Self-Efficacy Scale (GSES), Quality of Life Inventory (QOLI), and Life Balance Inventory (LBI) (Beck, et al., 1988; Frisch, et al., 1992; Luszczynska, et al., 2005; Matuska, 2012). The pilot study will aim to recruit at least 5 participants. The participants would be recruited through outpatient occupational therapy clinics focused on sensory integration. The participants must be adults who are at least 18 years old. They must be identified as having sensory processing challenges using the Adult Sensory Questionnaire, and must report decreased life balance due sensory processing needs (Kinnealey, et al., 2011; Pfeiffer & Kinnealey, 2003). An exclusion criteria of this program is if the participant reports any recent or known upcoming changes in life circumstances, which may impact life balance. Examples of such events include birth of a new baby, new job or start of school.

Evaluation Questions

Evaluation questions are determined for three groups of stakeholders. The first group of stakeholders are the participants who will be interested in the effects of the intervention. The second group of stakeholders is the program developer. The program developer will be interested in the design and efficacy of the program. The third group of stakeholders who would be interested in this program evaluation is other occupational

therapists working in sensory integration clinics. These therapists would be interested in efficiency and impact of the program to determine the value of implementing the program at thought an outpatient practice. See Table 4.1 for specific program evaluation questions for each stakeholder group.

Table 4.1: Evaluation Questions

Stakeholders	Evaluation Questions
Participants	<ul style="list-style-type: none"> ○ Will this program help me manage with my sensory processing needs? ○ Will this program improve my life balance?
Program Developer	<ul style="list-style-type: none"> ○ Is this program producing the intended outcomes? ○ Is an 8 week program sufficient to produce change?
Occupational therapists working in Sensory Integration Outpatient practice	<ul style="list-style-type: none"> ○ Is this an effective program to offer our clients? ○ Will this program be costly to implement? ○ Will this program be time consuming to implement?

Research Design and Methods

A fixed-effect research design will be used to identify and explore the relationships between the program and its intended outcomes. In the fixed-effect design, each participant would serve as his/her own comparison. The participant in the pre-program stage would be viewed as the “no treatment” comparison group while that participant in the post-program stage would be viewed as the “treatment” group. The benefits of using this research design are that the characteristics between the two comparison groups remain consistent and other variables such as volition can be eliminated. Through this fixed-effect research design, participants will be monitored through pre- and post- assessments of the dependent variables.

Dependent Variable: There are multiple dependent variables that this program evaluation proposes to address. These variables incorporate both short-term and long-term outcomes including decreased anxiety level, increased self-efficacy, improved quality of life and improved life balance. In order to measure the dependent variables, the BAI, GSES, QOLI, and the LBI will be used. These assessments are based on participant self-reports. The dependent variables will be measured prior to the intervention, immediately after the intervention and one month after the intervention.

Independent Variable: The independent variable is the skilled occupational therapy intervention program, *Making Sense of Life Balance*. The key features of the program are a) an interview with a focus on the participant's sensory needs and current coping strategies, b) goal setting with action plan c) co-active coaching for problem solving, d) journaling. The intervention is an 8-week program that begins with an initial session in-person. This first session will be structured utilizing the Adult Sensory Interview to guide a discussion about the participant's sensory experiences. The subsequent weekly sessions will occur via phone or video-conference utilizing co-active coaching techniques. During the weekly sessions, the participant will set a goal and identify strategies to achieve his or her goal. Throughout the course of the week, the participant will track and reflect on the strategies utilized and his or her response to the strategy as well as satisfaction with the strategy.

In order to establish internal consistency and fidelity of the program, there will be only one occupational therapist implementing the intervention. The therapist must also have experience using coaching techniques and be well versed in the core competencies

(International Coach Federation, n.a.). A therapist with coaching credentials would be preferred. In addition, the program developer who will study and be proficient with implementing the ADULT-SI will also train the occupational therapist to implement the ADULT-SI. With the consent of the participants, the interview will be recorded and reviewed to ensure that the therapist is adhering to the implementation of the ADULT-SI and is consistent across multiple participants. The coaching sessions will also be recorded to ensure that the intervening therapist is following the protocol outlined in the program description, which includes coaching principles and the four-step process of problem solving, “goal-plan-do check”.

Data Collection and Management Plan

Data will be obtained using the following measures: BAI, GSES, QOLI, and the LBI. The measures will be mailed to the participants with a stamped and self-addressed envelope to return the data to the therapist. In addition, the participants will be sent a two-question survey (using a Likert scale) through the Google platform to obtain the participant’s perception of his or her ability to manage sensory needs and in relation life balance. Data will be collected in multiple phases. The primary phase will be prior to the intervention, baseline information will be collected using participants’ scores on the BAI, GSES, QOLI, and the LBI. The assessments will be available online for the participants to access at home. The baseline data will be compiled and recorded electronically. The second phase of data collection will occur immediately after program implementation and the third phase will occur one month post intervention. Data will be collected again using the same four assessments utilized to obtain baseline information. These assessments will

be administered at three time points to determine the degree of changes in scores and identify relationships between the intervention and dependent variables.

A research assistant will complete all data collection and analysis. All data collection will be recorded and maintained on a laptop that is password protected. This laptop will have programs including Microsoft Word and Excel to collect and store all data in an efficient manner that facilitates access and analysis. Data collection begins at the prior to the intervention when the baseline data is collected from the participants. The results from the assessments will be entered immediately upon data collection.

To assess intervention fidelity, the initial interviews will be audio recorded directly onto the laptop and then the research assistant will transcribe the recordings into word documents within a week of the interview.

Approach to Data Analysis

The data collected will be analyzed using quantitative approaches. The quantitative data (scores on BAI, GSES, QOLI, LBI) will be collected multiple times throughout the course of the study. In order to identify changes in scores for the participants, ANOVA repeated measures will be completed. The assessment scores between the data collection periods will be analyzed for change to determine if there was a decrease in anxiety, increase in self-efficacy, quality of life and life-balance. Statistical significance will be determined based on the average change in scores across participants as well as changes in scores within the participants to determine if this intervention was effective for producing the desired outcome. A limitation of this evaluation plan is the small participant sample, which will underpower the statistical analysis. A visual analysis

will also be completed to determine correlation between the effects on the different dependent variables.

Chapter 5: Funding Plan

Program Description

The Life Balance Model identifies four dimensions that need to be satisfied to facilitate life balance: health, relationships, challenge and identity (Matuska, 2012b). Adults with sensory processing challenges experience symptoms, such as increased anxiety, depression and difficulties with relationships, that affect these key dimensions of life (Engel-Yeger & Dunn, 2011a; Engel-Yeger & Dunn, 2011b; Kinnealey & Fuiiek, 1999; Kinnealey, et al., 2011; Levit-Binnun, et al., 2014). *Making Sense of Life Balance* is an intervention program to promote life balance for adults with sensory processing challenges. The program is an eight-week intervention that uses a coaching model to facilitate participants' self-efficacy to self-manage sensory processing challenges. The intervention will guide participants through a reflective process to increase participant's awareness of their sensory processing and coping strategies and how the coping strategies relate to life balance. During the first week of the intervention, the occupational therapist will meet in person with the participant for a two-hour interview. In order to increase the participant's awareness and understanding of unique sensory experiences that may be affecting the participant's life balance, the interview is focused on the individual's sensory processing challenges and perception of life balance. The subsequent sessions will be held virtually; either via telephone or video conference, and may last up to an hour. With the therapist's coaching, the participant will be guided to develop goals and identify coping strategies that may facilitate life balance. Participants will be encouraged to complete activity journals throughout the week to record strategy use as well as the

participant's response and satisfaction with the strategy. Prior to and post-intervention, participants will complete four assessments to identify the participant's challenges as well as to evaluate the effectiveness of the intervention.

The following funding plan describes the necessary expenses to develop and implement *Making Sense of Life Balance* as well as potential funding sources that would support the implementation of the this program. Potential funding sources incorporate both in-kind donations and grants.

Expenses

The expenses are described in relation to three phases of the program: 1. program development, 2. program implementation, and 3. dissemination of program and program evaluation. Since *Making Sense of Life Balance* was developed as part of an occupational therapy doctoral studies, there are no expenses related to the program development phase. During the program implementation phase, the expenses will include the therapist's salary, interview venue, materials and supplies for intervention and the evaluations. The expenses required for implementation of the program may vary over time depending on number of participants as well as availability of in-kind donations. With increased number of participants in the program, the number of assessments needed will increase. In addition, the number of days required for renting the interview venue will also be dependent on the number of participants as well the participants' schedule to partake in the interview. Table 5.1 includes a detailed list of expenses. The expenses for dissemination will be described in greater detail in the Chapter 6 as part of the dissemination plan. However, a line item for the dissemination plan expenses are

included in Table 5.1.

Table 5.1 Expenses

Materials/ Resources	Expense	Description
Program development	\$0	The program, in its entirety, was developed as part of an occupational therapy doctorate program. The occupational therapist donated her time to research and develop the program.
Therapist with coaching background	\$2000	<p>The therapist will be paid at the average rate for an occupational therapist in the state of NY (https://www.bls.gov/oes/current/oes291122.htm)</p> <p>The therapist's paid time will include the time required to develop and implement the intervention.</p> <p>5 participants x 9 hours of contact with participants + 1 hour of preparation = 50 hours</p> <p>\$40.00/hour x 50 hours = \$2000</p> <p>The development of the intervention was initiated and completed as part of the occupational therapy doctorate program and so the therapist will not require to be compensated. The implementation phase will occur over 8 weeks with an additional week to score and interpret the post-intervention assessments.</p>
Research assistant to complete program evaluation	\$600	<p>The research assistant who will perform the program evaluation will be paid for his or her time to complete data analysis for the evaluation plan (described in Chapter 4). This research assistant will be paid for five 8-hour days following the third data collection period to perform data analysis.</p> <p>\$15.00/hour x 40 hours = \$600</p>

Interview venue	\$35/day (\$0 with in-kind donation)	A quiet setting for the initial in-person interview will be required. Based on online resources, the cost of a meeting space on Long Island, NY could cost \$35/day. Ideally, the therapist would be able to meet with multiple participants during the day to decrease cost. Funding for this cost would ideally be covered through in-kind resources. https://www.sharedesk.net/search/space/14030-launchpad-great-neck?city=11714&wsTypeGroup=all
Intervention Supplies	\$4.40	Laptop: \$700 (already owned) Skype: free download Microsoft Word: \$69.99 (already owned) Printed copies of diary pages: \$.11 x 5/week x 8 weeks = \$4.40
Evaluations	\$467.75	Beck Anxiety Inventory: \$132.95/kit (includes manual, 25 response sheets) General Self Efficacy Scale: Free download \$.11 x 10 printed copies = \$1.10 Life Balance Inventory: Free download \$.11 x 2pages x 10 printed copies = \$2.20 Quality of Life Inventory: \$132/kit (includes manual, 50 response sheets and 50 worksheets) Flat rate envelopes: \$6.65 x 15=\$99.75 (5 participants x 3 data collection=15)
Dissemination Expenses	Phase 1: \$892.85 Phase 2: \$1,283 Total: \$2,175.85 (with in-kind donation \$1,315.85)	The dissemination expenses cover the costs for two phases: before implementation of pilot study and after implementation of pilot study. The detailed breakdown of dissemination costs are elaborated upon in Chapter 6. In-kind donation includes time that the program developer will spend to visit occupational therapy clinics and market on social media. The cost of the graphic designer is included in the in-kind donation.

Total expenses	<p>\$5,283.00 without in-kind donation</p> <p>\$4,388 with in-kind donation</p>	
----------------	---	--

Potential Funding sources

Funding for the creation and implementation of this program will be sought from in-kind donations as well as corporation and foundation grants. An in-kind donation will be a quiet venue where the initial interview will take place. This in-kind resource would ideally be provided by the sensory integration clinic that facilitated the recruitment process for participants for the program. A partnership with the sensory integration clinic to advance services for adults would serve as an incentive to increase the chances of receiving this in-kind resource. Based on the evaluation of the program, the clinic may desire to incorporate this program as a service offered by the clinic. Another potential in-kind source for a quiet venue is the program developer's local church. As a member of the church, the developer could ask the church for a classroom space to conduct the interviews. Without the in-kind donation, the cost of a meeting room on Long Island, NY could cost \$35/day. Another in-kind resource is a family member of a friend, who is a graduate from the Fashion Institute of Technology in advertisement and marketing design. She agreed to provide her services to design marketing brochure and fliers for this program. An incentive to retain this in-kind resource is that her family members are therapists who are also interested in advancing the occupational therapy field. The lowest cost to hire a graphic designer to design dissemination material is \$300.

In addition to the in-kind resources described previously, funding through grants and crowdsourcing will be explored to cover the costs of creation and implementation of this program. After completion and evaluation of the program, other occupational therapists who work with adults with sensory processing challenges may use this intervention format as part of the services offered. Some of the expenses may be covered through payment for services received from insurance companies or private payment. These funding sources are described in Table 5.2.

Table 5.2: Potential Funding Sources

Funding Source	Description or Focus of Grant
Walmart	<p>The Community Grant Program provides grants to local organizations to support the needs of the communities in which Walmart facilities are located. The awarded grant may range from \$250 to \$2,500.</p> <p>http://giving.walmart.com/walmart-foundation/community-grant-program</p>
CVS	<p>“Health in Action” provides grants to support organizations and initiatives dedicated to ensuring patient safety, supporting those with chronic disease, meeting the needs of an aging population, promoting medication adherence, facilitating accessible and affordable care, and/or combating prescription drug abuse. The organization must provide services in one of the following areas: access to health care for underserved populations, chronic disease management programs, or tobacco cessation and prevention services.</p> <p>In order to apply for a community grant, you must contact your regional Community Relations contact.</p> <p>https://www.cvshealth.com/social-responsibility/our-giving/corporate-giving/community-grants</p>
Aetna Foundation	<p>The Cultivating Healthy Communities Grant Program supports local non-profits that advance good health for the communities. The project must address the social determinants of health and participants’ physical, mental, social and emotional well-being. The program must</p>

	<p>fall under one or two of the following domains: built environment, community safety, environmental exposures, healthy behaviors or social/economic factors.</p> <p>The maximum grant awarded is \$100,000.</p> <p>http://www.aetna.com/pdf/2017%20RFP%20-%20Final.pdf</p>
<u>Crowdsourcing</u>	<p>Crowdsourcing is a method of fundraising through public support. Crowdsourcing targets family, friends, and acquaintances to help raise part of the funds necessary. Personal fundraising sites can be disseminated to the public to seek funding from any individual who would like to support the cause.</p> <p>GoFundMe.com FundAnything.com KickStarter.com</p>

Conclusion

The funding plan for *Making Sense of Life Balance* addresses the necessary expenses to cover the development, implementation and dissemination of the intervention program. The detailed expenses for the development and implementation are described in this chapter and the detailed expenses for the dissemination of the intervention program will be described in Chapter 6. The total cost to complete all three stages amounts to \$4,923.00 without the in-kind donations. If all of the in-kind donations were accounted for, the total cost would decrease to \$4028. In addition, this total cost does not incorporate assumed possessions including a laptop that that treating therapist can use.

In order to cover the costs of the total expense, funding through in-kind donations as well as corporate and foundation grants will be utilized. Through the implementation and evaluation of the intervention, this intervention may be utilized by other occupational therapists who work with adults with sensory processing challenges. The dissemination plan for this program will be described in the following chapter.

Chapter 6: Dissemination Plan

Introduction

Making Sense of Life Balance is an intervention program to improve life balance for adults with sensory processing challenges. The intervention is provided by an occupational therapist over an eight week period and is delivered using telecommunications. During the eight weeks, the therapist coaches the participants to facilitate development of a sensory diet along with other strategies that will address the participants' sensory challenges and promote life balance. Throughout the weeks, the participants use diaries to track the strategies used, response to the strategies as well as the satisfaction with each strategy. This intervention seeks to increase self-efficacy while addressing the participants' challenges to improve quality of life and life balance.

The dissemination of the program will begin upon the completion of program development as part of the program developer's Occupational Therapy Doctorate studies and occur in two phases. Phase 1 will occur before implementation of pilot study and Phase 2 will occur after implementation of the pilot study. The dissemination plan will first identify the dissemination goal. The target audiences, at three different levels, will then be specified along with key messages tailored for the audience and speakers and activities to deliver the messages. Finally, a detailed budget and evaluation plan for successful completion of dissemination will be described.

Dissemination Goals

Long term goal: *Making Sense of Life Balance: A coaching intervention for adults with sensory processing challenges* will be replicated by other occupational

therapists to improve life balance and quality of life for adults with sensory processing challenges.

Short term goals:

1. The dissemination of this program will lead to building relationships with at least two outpatient occupational therapy clinics focused on sensory integration to facilitate recruitment of participants.
2. *Making Sense of Life Balance* will be implemented as a pilot study with at least five participants to evaluate the effectiveness of the program.
3. *Making Sense of Life Balance* will be made known to at least 25 occupational therapists outside of the Long Island, NY region.
4. At least one outpatient occupational therapy clinics focused on sensory integration will offer to use *Making Sense of Life Balance* as a service provided from their clinic.

Primary target audience: The primary target audience for the dissemination of this program will be directors, owners and administrators of outpatient occupational therapy clinics focused on sensory integration in the Long Island, NY region.

Key messages for primary target audience

1. Adults with sensory processing challenges encounter many life experiences, such as anxiety, depression and poor quality of sleep, which are associated with life imbalance and decreased quality of life.
2. *Making Sense of Life Balance* is an evidence-based and theory-driven intervention program designed to promote life balance for adults with sensory processing

challenges.

Primary influential spokesperson

1. The program developer will be the most knowledgeable about the intervention program and will be able to provide detailed description about the development, costs and resources required to implement the program

Activities

1. The program developer will develop a list of outpatient occupational therapy clinics that provide sensory integration services. This list will include clinics that provide services to children as well as to adults. The program developer will then identify and contact key individuals at the clinics such as clinic directors, owners and other administrators. The initial contact may be in form of email or phone conversation. However, it is important that the developer meets the individuals in person to explain the program as well as build a relationship with the individuals. The development of these relationships will be in hopes to partner with the clinic to recruit participants for the pilot study as well as encourage the use of the intervention program after the pilot study.
2. Brochures, describing the *Making Sense of Life Balance*, will be developed and disseminated to all of the potential clinics that the program developer makes an attempt to connect with. In addition to the initial email or phone contact the brochures will be given to the key contact to attract their interest and attention. Brochures will contain information regarding the intervention program, the goals of the program and contact information to learn more or get involved with the

program. The clinician-oriented brochures will be distributed at the start of the meeting to provide points of discussion and gain interest in the program.

3. When the program developer leaves the meeting, the program developer will also provide the point of contact with written information in the form of an executive summary to increase ease of understanding the project in its entirety. To increase interest and “buy-in” to help with recruitment of participants for the pilot program, the executive summary will summarize the theoretical foundation as well as the evidence that supports the *Making Sense of Life Balance* intervention. During the second phase of the dissemination plan, the executive summary will be a starting point to provide an understanding of the program. Material such as a sample strategy diary and sample session will be provided electronically upon request for implementation of the program.

Secondary target audience: The secondary target audience will be adults who have sensory processing challenges or family and friends of adults who have sensory processing challenges.

Key messages for primary target audience

1. *Making Sense of Life Balance* is an intervention program that is client-centered and developed to empower participants to be an active participant throughout the intervention.
2. *Making Sense of Life Balance* is an intervention developed to promote life balance and increase quality of life for adults with sensory processing challenges.

Primary influential spokesperson

1. The program developer will be able to provide information regarding the details of the intervention including structure, duration, content, goals and objectives.
2. Former participants of the program, who volunteer to share their success stories will provide quotes or messages to encourage others to participate in the program as well.

Activities

1. Participant-oriented brochures will be placed at outpatient occupational therapy clinics around the Long Island area to increase awareness and interest for any potential participants or family members and friends of participants. The brochures will also be distributed at various community centers with open membership to spread knowledge of the program. Brochures will contain information regarding the intervention program, the goals of the program and contact information to learn more or get involved with the program.
2. The program developer will use social media such as Facebook, Twitter and LinkedIn to describe and increase awareness about the program to family and friends. The program developer will encourage family and friends to share posts about the program on their web pages to increase the audience. During the Phase 2 of the dissemination plan, quotes from former participants regarding their experience will be included to show the success. Quotes and short stories will be shared only after obtaining written consent from participants who completed the program. Two dissemination goals during the second phase of dissemination, are

- to: 1) Recruit participants for the *Making Sense of Life Balance* intervention and,
2) Share information about the program with current or future occupational therapist.

Tertiary target audience: The tertiary target audience will be occupational therapists who may be interested in using and implementing the intervention program.

Key messages for primary target audience

1. Adults with sensory processing challenges encounter many life experiences, such as anxiety, depression and poor quality of sleep, which are associated with life imbalance and decreased quality of life.
2. *Making Sense of Life Balance* is an evidence-based and theory-driven intervention program developed to promote life balance for adults with sensory processing challenges.

Primary influential spokesperson

1. The program developer will be most knowledgeable about the intervention program and will be able to provide detailed description about the development, costs and resource. In addition, the program developer will be able to provide information regarding the intervention such as the structure, content, goals and objectives.
2. Former participants of the program will share their success stories to show the effectiveness of the program.

Activities

1. During Phase 2 of the dissemination plan, the program developer will submit a

proposal to present at the AOTA conference. If accepted, the program developer will design a poster presentation to be presented at the annual AOTA conference. The presentation will incorporate the program description and goals as well as results from the pilot study. In addition, quotes from former participants and clinicians who were part of the pilot study will be included.

2. At the presentation, which will occur during Phase 2, the clinician-oriented brochures will be disseminated at the conference for clinicians and students to take back to their clinics and school to share with other practitioners. Brochures will contain information regarding the intervention program, the goals of the program and contact information to learn more or get involved with the program. If clinicians are interested in implementing the program, the program developer's contact information will be provided to share more information on potential use at their own settings.

Budget

The budget to implement the dissemination plan is organized by the three levels of audience previously described. The funding for the following budget plan has been described in the previous funding chapter. Funding will be sought through various corporation and foundation grants as well as in-kind donations. One of the in-kind resource covers the cost of the graphic designer, who will design both the clinician-oriented and participant-oriented brochures that will be disseminated. This in-kind resource is a family member of a friend, who is a graduate from Fashion Institute of Technology (FIT) in advertisement and marketing design. She agreed to provide her

services to design marketing brochure and fliers for this program. An incentive to retain this in-kind resource is that her family members are therapist who are also interested in advancing the occupational therapy field. The lowest cost to hire a graphic designer to design dissemination material is \$300. In addition, the program developer will donate her time and travel expenses to travel to various occupational therapy clinics on Long Island as well as her time spent using social media to disseminate the intervention program. The following table displays the costs to implement the described dissemination plan.

Table 6:1 Budget for Dissemination Plan

Materials/ Resources	Description	Phase 1 Expense	Phase 2 Expense
PRIMARY AUDIENCE			
Person-to-person contact at various occupational therapy clinics	<p>During phase 1, there is a cost in the time that the program developer will spend to travel to various occupational therapy clinics on Long Island, NY. At a rate of \$40/hour, the program developer will spend 10 hours traveling and meeting with clinic administrators.</p> <p>The program developer will donate her time and travel expenses to travel to various occupational therapy clinics on Long Island, NY.</p>	\$400	N/A
Graphic Designer to design brochures	<p>The graphic designer will be hired to design and develop two brochures that would be used as a marketing tool. One brochures will target administrators of occupational therapy clinics and occupational therapists. The other brochure will target potential participants of the program.</p> <p>A family member of a friend offered to provide her services as an in-kind donation to design the brochures for marketing the program.</p>	\$300	N/A
Printed brochures	Clinician-oriented brochures will be distributed to administrators of outpatient occupational therapy	\$0.61 x 25= \$15.25	N/A

	clinics to provide detailed information on the intervention program.		
Printed Executive Summaries	The executive summaries will be distributed to interested clinics who would like to learn more about the program in greater detail and potentially partner with the program developer to recruit participants	\$0.61 x 6pages x10= \$36.60	N/A
SECONDARY AUDIENCE			
Printed brochures	Participant-oriented brochures will be distributed and placed in occupational therapy clinics for individuals to increase awareness of the program and have interest in participating in the pilot study.	\$0.61 x 100= \$61.00	N/A
Social media	Although there is no cost to accessing various social media platforms including Facebook, Twitter and LinkedIn, there is a time cost that the program developer will need to spend to market the program intervention. At the cost of \$40/hour, the program developer would spend 2 hours on the social media platforms. However, the program developer will be donating her time to perform these activities.	\$80	\$80
TERTIARY AUDIENCE			
AOTA conference	The registration cost to attend AOTA conference for members.	N/A	\$451
Poster presentation	Travel cost including hotel accommodation		\$600
	The cost of printing poster to be used at AOTA conference.		\$30
Printed brochures	Clinician-oriented brochures will be distributed to therapists and students who visit the poster presentation at the AOTA conference	N/A	\$0.61 x 200 = \$122.00
Sub-Total expenses		\$892.85	\$1,283
Total Expense		\$2,175.85	

	In-kind donations include program developer's time and graphic designer.	(with in-kind donation \$1,315.85)
--	--	------------------------------------

Evaluation of the success of the dissemination

The success of the dissemination will be based on the achievements of the goals targeting the three levels of audience. Since the primary audience is administrators and directors of outpatient occupational therapy clinics focused on sensory integration, success of dissemination will be assessed by the number of clinics that are interested in meeting with the program developer to learn more about the program. More specifically, success will be measured by recruitment of at least two clinics that would like to get be involved in recruitment of participants for the pilot study. Success of dissemination to the secondary audience will be determined by the number of participants in the pilot study. The goal will be to recruit five participants at a minimum for the initial feasibility and pilot study of the program.

The success of dissemination to the tertiary audience will be determined by the successful completion of presenting a poster at the annual AOTA conference in efforts to increase awareness of the program to occupational therapists outside of the Long Island, NY region. In addition, the number of clinicians and students made aware of the program, identified by the number of individuals who listen to the presentation and the number of brochures distributed, will determine the success of the presentation at the conference. Another measure of success is the number of therapists and/or clinics who are interested in implementing the program in their own clinic.

Conclusion

The dissemination of *Making Sense of Life Balance* will target individuals and groups at three different levels. The primary audience includes directors, owners and administrators of outpatient occupational therapy clinics focused on sensory integration. The secondary audience includes potential participants of the intervention program as well as family and friends of potential participants. The tertiary audience includes other clinicians and students who may be interested in using the intervention for their clientele. In effort to disseminate the program to the three target audiences, different methods will be used including written materials such as brochure, person-to-person contact, use of social media, as well as a presentation at the annual AOTA conference. The subtotal expense to complete Phase 1 of the dissemination plan will be \$892.85. The subtotal expense to complete Phase 2 will be \$1,283. The total cost to accomplish both phases of the dissemination plan is \$2,175.85. However, with the anticipated in-kind donation, the total expenses will be \$1,315.85. The goals of the dissemination will be increased awareness of the program as well implementation of the intervention for adults with sensory processing challenges to promote life balance.

Chapter 7: Conclusion

Researchers have documented that adults with sensory processing challenges have life experiences that include depression, anxiety, and decreased quality of sleep (Engel-Yeger & Dunn, 2011b; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiek, 1999). These life experiences are also associated with the four key areas of the Life Balance Model (health, relationship, challenge and identity), potentially leading to a perception of life imbalance (Matuska, 2012b). In addition, Eakman (2015) and Dur et al. (2014) reported that perception of life imbalance is associated with decreased well-being as well as dissatisfaction with life. The intervention program, *Making Sense of Life Balance: A coaching intervention for adults with sensory processing challenges* was developed to address the problem of life imbalance for adults with sensory processing challenges.

An explanatory model was created to develop an initial explanation of the factors that contributed to the problem of life imbalance for adults with sensory processing challenges. A review of the literature was conducted to determine if there was research-based evidence to support the initial propositions in the explanatory model. A review of the literature on adults with sensory processing challenges revealed that some individuals with sensory processing challenges have used coping strategies to address their sensory needs. However, use of ineffective coping strategies led to unwanted consequences such as increased anxiety and exacerbation of their sensory processing challenges. In addition, a lack of reflection on how coping strategies impact life balance influenced use of effective strategies that facilitate life balance. *Making Sense of Life Balance* is an eight-week intervention that uses telecommunication to coach adults with sensory processing

challenges. The participants meet with the therapist once a week to first reflect on their sensory processing challenges and coping strategies, and how the strategies impact their life balance. Then the therapist will guide the participant in an examination of coping strategies to address identified sensory processing challenges and ultimately improve perception of life balance.

In order to design the *Making Sense of Life Balance* program, various literature reviews were conducted. One literature review focused on interventions for adults with sensory processing challenges. The results of this literature search revealed that use of an individualized sensory diet along with increasing the participant's understanding of their sensory needs facilitated the use of effective coping strategies and decreased unwanted symptoms. In addition, journals increased self-reflection on the use of coping strategies and helped participants identify effective coping strategies that met their sensory and lifestyle needs. These results led to the incorporation of an interview that focused on the participant's sensory needs and current coping strategies. In addition, use of journals are encouraged throughout the intervention to guide self-reflection on strategy use.

Intervention approaches for chronic conditions were also explored to identify effective mechanisms for behavior change. The results from this literature review found that increasing self-efficacy was significant to facilitating behavior change. Effective methods to increase self-efficacy include goal setting, weekly session to reflect on the strategies used to promote change, and positive feedback. The literature also supports the use of guided problem-solving such as "goal-plan-do-check" to facilitate self-management of chronic illnesses. As recommended by Dr. Kathleen Matuska, an author

of the life balance framework, the coaching literature was reviewed to identify effective interventions to improve life balance and inform the *Making Sense of Life Balance* program design. In both the coaching literature and the literature exploring interventions for self-managing chronic conditions, goal-setting was an effective approach to facilitating behavior change. Based on this extensive literature review, the essential components of the *Making Sense of Life Balance* program include an initial interview with a focus on the participant's sensory needs and current coping strategies, goal setting with an action plan, co-active coaching for problem solving including examination of the coping strategies, and journaling.

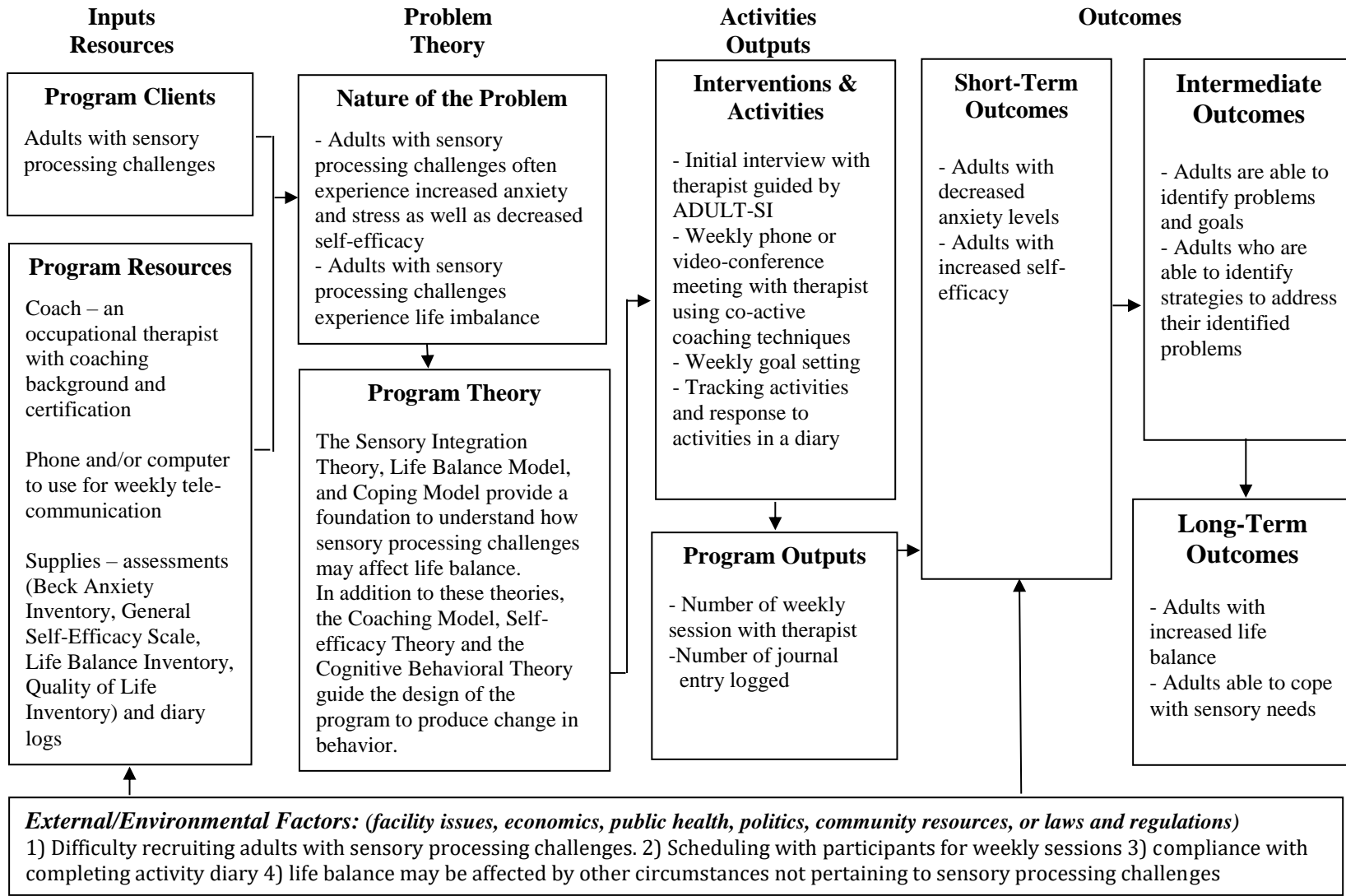
The selection of assessments was also informed by the literature review of effective interventions. To identify on the participant's specific needs as well as evaluate the success of the intervention five assessments were selected. The measures have strong reliability and validity psychometrics to support their use for assessing desired outcomes including decreased levels of anxiety, increased self-efficacy, and improved perception of life balance. Findings from the literature indicated that sensory processing challenges are associated with increased anxiety. The Beck Anxiety Inventory was used by numerous researchers to measure anxiety. For example, Kinnealey and Fuiiek (1999) found that individuals who used ineffective coping strategies reported higher anxiety, as measured by the Beck Anxiety Inventory. Researchers also suggested that self-efficacy facilitated self-management of chronic conditions. Thus, the General Self-Efficacy Scale will be used to assess the extent to which the intervention increased the participant's self-efficacy. The overall goal of the intervention is to improve perception of life balance and

quality of life. Two measures, recommended in the literature, Quality of Life Inventory and the Life Balance Inventory, will be used to set goals with participants and as outcomes measures

The evaluation plan uses a fixed-effect research design to determine the impact of the intervention. The outcome measures are used prior to the intervention, immediately post intervention and one month post intervention to track the change in outcome measures. The evaluation plan is further described in Chapter 4. A funding and dissemination plan was developed to outline the logistics of implementing the program. The funding and dissemination plan is organized into two phases. Phase 1 occurs prior to the implementation of the pilot study and phase 2 occurs after the implementation of the pilot study. The funding plan describes the expenses required to develop, implement and disseminate the program as well as offer potential funding resources to cover the costs. The dissemination plan describes the approach to recruiting participants for the pilot study as well as increasing awareness of the program to occupational therapists and potential participants of the program. The funding and dissemination plan is elaborated upon in Chapters 5 and 6.

Making Sense of Life Balance is a theoretically grounded, and evidence-based intervention program designed to address life imbalance for adults with sensory processing challenges. Currently, there is limited literature exploring intervention approaches for this population and so this program will serve to bridge the gap between sensory processing challenges and life balance.

APPENDIX A: Logic Model



APPENDIX B: Strategy Diary

Date/Time	Strategy used	Physical/Emotional Response	Satisfaction**

** Please use rating scale (1–10): 1=unsatisfied 10=very satisfied

APPENDIX D: Intervention Session Sample

1. Greetings
2. Review of last week's goal & strategies
 - a. Your goal last week was... and the strategies that we discussed were...
3. Check (Goal-Plan-Do-**Check**)
 - a. Were you able to use your strategies this past week?
 - b. Which strategies did you use? Tell me about a time you had to use a strategy.
 - c. How did that strategy work for you? What was most helpful? What might make it work better next time?
 - d. How did your experience using (strategy) compare to before? How did your (health/identity/challenge/relationship) compare with your (strategy)?
**be specific to what client says*
 - e. Identify one of client's strengths through their response
4. Identify a Goal
 - a. Do you have a goal in mind for this week?
 - b. If client has difficulty, relate to a challenge they share during their reflection.
5. Problem-solve to develop strategies
 - a. What have you tried to address this goal?
 - b. How did you know you needed to change your plan? What else could you have done to accomplish your goal? What might make it work better?
 - c. How is that consistent with what your goal is?
6. Closing statements and review of strategies to be utilized during the upcoming week.

APPENDIX E: Executive Summary
MAKING SENSE OF LIFE BALANCE: A COACHING INTERVENTION FOR
ADULTS WITH SENSORY PROCESSING CHALLENGES

Introduction

Sensory processing is how an individual takes in and responds to sensory information from his or her body and from the environment to participate in an activity. For instance, sensory processing impacts attention, the ability to engage with our environment and the ability to regulate our emotions appropriately in order participate in our daily activities. Individuals with sensory processing challenges may respond to sensory stimuli based on the amount and intensity of sensory input needed to elicit a response. Dunn (1997) categorized sensory processing challenges into four different patterns: poor registration, sensory seeking, sensory sensitivity, and sensory avoiding responses to sensory stimuli. Sensory processing challenges were found to be associated with difficult life experiences such as depression, anxiety and decreased quality of sleep (Engel-Yeger & Dunn, 2011; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiiek, 1999; Levit-Binnun, Szepsenwol, Stern-Eliran, & Engel-Yeger, 2014). While researchers noted that some individuals use coping strategies in attempt to address their sensory challenges, individuals with sensory processing challenges also reported undesirable consequences such as increased anxiety, and interference with their roles or responsibilities (Kinnealey, & Fuiiek, 1999; Turner, Cohn, & Koomar, 2012). The ineffectiveness of used coping strategies, as well as the lack of use of coping strategies, may lead to a perception of life imbalance. Eakman (2015) documented that life balance was positively correlated to

well-being. Consequently, the perception of life imbalance may be detrimental to an individual's well-being. Occupational therapists seek to promote "health and wellness for our clients with disability- and non-disability-related needs" (American Occupational Therapy Association, 2014, p. S1). *Making Sense of Life Balance* is an occupational therapy intervention that seeks to address the problem of perception of life imbalance for adults with sensory processing challenges.

Theoretical Framework and Key Findings

The research literature was explored to develop an evidence-based intervention to address life imbalance for adults with sensory processing challenges. Based upon the findings of the initial literature review, three theories and models were used to frame our understanding and approach to addressing life imbalance for adults with sensory processing challenges: Sensory Integration Theory, Life Balance Model and Coping Theory. Another literature review guided the development of the program, *Making Sense of Life Balance*.

Sensory Integration Theory, pioneered by Dr. Jean Ayres, describes the role of sensory processing in an individual's ability to successfully engage in daily activities (Lane, Roley, Champagne, 2014). One of the assumptions that guides Sensory Integration intervention is that an adaptive response, the ability to adjust one's actions using sensory stimuli to interact with the environment, is required to successfully participate in an activity (Lane et al., 2014). Sensory integration interventions aim to facilitate an individual's ability to respond to the different sensory, motor and environmental demands of everyday activities (Lane, et al., 2014). There are a variety of intervention approaches

that draw on sensory integration theory. One of the approaches is the development of a sensory diet, an individualized set of activities that provide sensory input in order to facilitate the use of adaptive responses needed for participation in daily activities (Pfeiffer & Kinnealey, 2003).

The Life Balance Model describes life balance as a satisfaction with time spent in activities that meet four key dimensions: health, relationships, challenge and identity (Matuska, 2012b). Health refers to physical health and safety such as exercise, rest, and medication management. Relationship is identified as positive relationships with friends, family and other valued individuals. Challenge is defined by engagement in occupations such as hobbies and work that provides the just right challenge. Identity refers to having a positive identify that incorporates personal roles such as caregiver or volunteer.

The Coping Theory shapes our understanding of effective coping. Lazarus (1993) described coping as a conscious effort to manage stressful situations. In addition, coping is a process that changes and adapts to the situation and context. Coping strategies are effective when there is a match between the strategy and context in which the strategy is used. For adults with sensory processing challenges, coping strategies may enable them to manage stressful situations that arise from their sensory processing challenges and therefore spend time in their desired daily activities.

The literature review to identify effective intervention approaches focused on three areas: interventions for adults with sensory processing challenges, intervention to teach use of coping strategies for adults with chronic conditions, and coaching intervention for life balance. Findings from this literature review identified the four key

components of the program, *Making Sense of Life Balance*: 1. Interview with a focus on the participant's sensory needs and current coping strategies, 2. Goal setting with development of action plan, 3. Co-active coaching for problem solving, including examination of the coping strategies, 4. Journaling.

Although there is limited evidence that describes the relationship between lack of awareness and use of coping strategies, Kinnealey, Oliver & Wilbarger (1995) proposed that insight related to an individual's sensory processing challenges may lead to use of coping strategies. Researchers have used the Adult Sensory Interview (ADULT-SI) to help individuals develop awareness of their sensory processing needs, preferences and coping strategies (Kinnealey, Riuli & Smith, 2015; Pfeiffer & Kinnealey, 2003).

Therefore, in the *Making Sense of Life Balance program*, the ADULT-SI will be used to support participants to explore the impact of sensory processing challenges. This interview also allows the therapist to gain insight to the participant's experience and will support the coaching process used throughout the intervention.

Many interventions to teach use of coping strategies for adults with chronic conditions utilized cognitive behavioral theory techniques such as problem solving. One method for guiding use of problem-solving is a four-step process known as Goal-Plan-Do-Check (Meichenbaum, 1979). In addition, in numerous intervention studies, goal setting led to an increase in self-efficacy, which facilitated continued use of coping strategies. Self-efficacy is defined as confidence in ability to implement a change in behavior (Reitz, 2014). Therefore, the second key component of the *Making Sense of Life Balance program* is goal setting with development of action plan. In the same literature,

the researchers discussed the significance of journals to document and self-reflect on strategy use to increase participants' awareness of their experiences (Liedberg, Hesselstrand, & Henriksson, 2004). This finding led to the incorporation of journaling as another key component of the intervention.

Dr. Kathleen Matuska, an expert on the Life Balance Model, suggested that coaching interventions may be an effective intervention to promote life balance (K. Matuska, personal communication, January 2, 2017). The literature on coaching detailed the importance of collaboration for establishing goals and creating accountability to increase ownership and facilitate change in behavior (Heinz & Pentland, 2009).

Project Overview

Making Sense of Life Balance is an 8-week intervention for adults with sensory processing challenges. The Adult Sensory Questionnaire (Pfeiffer & Kinnealey, 2003) is used to screen and identify individuals who are appropriate for and may benefit from the program. The program goal is to improve participant's perception of life balance, indicated on the Life Balance Inventory (Matuska, 2012a). Other desired outcomes of the program include decreased level of anxiety, increased self-efficacy, and improved perception quality of life. These outcomes will be measured using the Beck Anxiety Inventory (BAI), the General Self-Efficacy Scale (GSES), Quality of Life Inventory, and a subjective survey of participants' perception of their life balance and ability to manage their sensory processing challenges (Beck, Epstein, Brown & Steer, 1988; Frisch, Cornell, Villaneuva & Retzlaff, 1992; Luzcynska, Scholz & Schwarer, 2005).

During the first week of the program, participants meet with the therapist in person for an interview focused on learning about the participant's sensory processing needs and current coping strategies. In the subsequent weeks, the sessions will occur over the phone or video-conference. Every week, the therapist will coach the participant to problem-solve and identify strategies for management of sensory processing challenges. The therapist and participant will collaboratively set weekly goals and develop a plan of coping strategies to achieve the desired goal. A component of the participant's coping strategies will be a sensory diet in effort to meet the participant's sensory processing challenges. The participant will be encouraged to utilize their collective coping strategies during the week and reflect on their emotional and physical response using a strategy diary. The strategy diary will also allow participants to rate their satisfaction with using the strategy. In the beginning of the weekly sessions, the therapist will coach the participant to further reflect on the effectiveness of the strategies to make adjustments as needed. The table below outlines the schedule of the entire intervention program.

Week	Setting	Content/Discussion
Prior to intervention	At participant's home (~30 minutes)	Participant independently completes battery of assessments: (BAI, Life Balance Inventory, Quality of Life Inventory, General Self-Efficacy Scale, subjective survey)
1	In-Person (~2 hour)	ADULT-SI, overview of program <ul style="list-style-type: none"> - Based on findings from the ADULT- SI interview, initiate collaborative development of sensory diet - Identify goal to work on for the week
2-7	Telecommunication (up to 1 hour)	<ul style="list-style-type: none"> - Discuss last week's goal - Reflect on past week's activities and strategy use - Identify strengths and attributes that facilitate coping - Coach on effectiveness/satisfaction, facilitate problem-solving - Identify goal to work on for the upcoming week
8	Telecommunication (up to 1 hour)	<ul style="list-style-type: none"> - Discuss last week's goal - Reflect on past week's activities and strategy use - Coach on effectiveness/satisfaction, facilitate problem-solving - Discuss effective strategies throughout
9	At participant's home (~30 minutes)	Participant independently completes battery of assessments (BAI, Life Balance Inventory, Quality of Life Inventory, General Self-Efficacy Scale, subjective survey)

There are two phases to develop, implement and disseminate the program, *Making Sense of Life Balance*. Phase 1 will occur prior to the implementation of the pilot study of the program, while phase 2 will occur after the implementation of the pilot study. In order to accomplish both phases, a total expense of \$4,923 will be required. The expenses for Phase 1 include intervention resources such as the coaching therapist, interview venue, evaluation assessments, marketing materials such as clinician-oriented and participant-oriented brochures, executive summary and time spent recruiting

participants for the pilot study. During Phase 2, the necessary expenses cover dissemination materials to increase awareness of the program to other occupational therapists. These costs include clinician-oriented brochures and necessary costs to present at the annual AOTA conference.

Phase 1 of the dissemination plan aims to recruit participants for the pilot study. This phase focuses on two audiences and will be completed in the Long Island, NY region. The primary audience is directors, owners, and administrators of outpatient occupational therapy clinics focused on sensory integration. Activities include in-person contact as well as written information in form of clinician-oriented brochures and executive summary. The secondary audience for dissemination is potential participants for the pilot program. Activities to reach the secondary audience are social media and participant-oriented brochures. During Phase 2, the audience will be other occupational therapists who may be interested in using and implementing the intervention program. Activities will include presenting a poster and distributing clinician-oriented brochures at the annual AOTA conference.

Conclusions

Making Sense of Life Balance is an 8-week intervention to address perception of life imbalance for adults with sensory processing challenges. This intervention program seeks to increase self-efficacy and facilitate self-management of sensory processing challenges in effort to decrease unwanted consequences such as anxiety and improve perception of life balance and quality of life.

References

- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*(6), 893–897. <https://doi.org/10.1037/0022-006X.56.6.893>
- Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young children and families: A conceptual model. *Infants & Young Children, 9*(4), 23–35.
- Engel-Yeger, B., & Dunn, W. (2011). The relationship between sensory processing difficulties and anxiety level of healthy adults. *The British Journal of Occupational Therapy, 74*(5), 210–216.
[doi:10.4276/030802211X13046730116407](https://doi.org/10.4276/030802211X13046730116407)
- Engel-Yeger, B., & Shochat, T. (2012). The relationship between sensory processing patterns and sleep quality in healthy adults. *Canadian Journal of Occupational Therapy, 79*(3), 134–141.
- Frisch, M. B., Cornell, J., Villanueva, M., & Retzlaff, P. J. (1992). Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment, 4*(1), 92–101.
<https://doi.org/10.1037/1040-3590.4.1.92>
- Heinz, A., & Pentland, W. (2009). Professional coaching for life balance. In Matuska K. M., & Christiansen, C. (Eds.), *Life balance: Multidisciplinary theories and research*. (pp. 241–254). Thorofare, NJ : Bethesda, MD: SLACK Inc. ; AOTA Press.

- Kinnealey, M., & Fuiiek, M. (1999). The relationship between sensory defensiveness, anxiety, depression and perception of pain in adults. *Occupational Therapy International*, 6(3), 195–206. doi:10.1002/oti.97
- Kinnealey, M., Oliver, B., & Wilbarger, P. (1995). A phenomenological study of sensory defensiveness in adults. *The American Journal of Occupational Therapy*, 49(5), 444–451.
- Kinnealey, M., Riuli, V., & Smith, S. (2015, March). Case study of an adult with sensory modulation disorder. *Sensory Integration Special Interest Section Quarterly*, 38(1), 1–4.
- Lane, S. J., Roley, S. S., & Champagne, T. (2014). Sensory integration and processing. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's occupational therapy* (12th ed., pp. 816–868). Philadelphia: Lippincott Williams & Wilkins.
- Levit-Binnun, N., Szepeswol, O., Stern-Ellran, K., & Engel-Yeger, B. (2014). The relationship between sensory responsiveness profiles, attachment orientations, and anxiety symptoms: Sensory responsiveness, attachment, and anxiety. *Australian Journal of Psychology*, 66(4), 233–240. doi:10.1111/ajpy.12064
- Liedberg, G. M., Hesselstrand, M. E., & Henriksson, C. M. (2004). Time use and activity patterns in women with long-term pain. *Scandinavian Journal of Occupational Therapy*, 11(1), 26–35. <https://doi.org/10.1080/11038120410019081>

Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The General Self-Efficacy Scale:

Multicultural validation studies. *The Journal of Psychology, 139*(5), 439–457.

<https://doi.org/10.3200/JRLP.139.5.439-457>

Matuska, K. (2012a). Description and development of the Life Balance Inventory. *OTJR:*

Occupation, Participation and Health, 32(1), 220–228.

<https://doi.org/10.3928/15394492-20110610-01>

Matuska, K. (2012b). Validity evidence of a model and measure of life balance. *OTJR:*

Occupation, Participation and Health, 32(1), 229–237.

<https://doi.org/10.3928/15394492-20110610-02>

Meichenbaum, D. (1979). *Cognitive behavior modification: An integrative approach.*

New York, NY; Plenum Press

Pfeiffer, B., & Kinnealey, M. (2003). Treatment of sensory defensiveness in adults.

Occupational Therapy International, 10(3), 175–184.

Reitz, S. M. (2014). Health promotion theories. In B. A. B. Schell, G. Gillen, & M. E.

Scaffa (Eds.), *Willard & Spackman's occupational therapy* (12th ed., pp. 574–587). Philadelphia: Lippincott Williams & Wilkins.

Turner, K. A., Cohn, E. S., & Koomar, J. (2012). Mothering when mother and children

both have sensory processing challenges. *British Journal of Occupational Therapy, 75*(10), 449–455.

APPENDIX F: Fact Sheet



Making Sense of Life Balance: A coaching intervention for adults with sensory processing challenges

Catherine Min, MS, OTR
OTD Candidate

Sensory Processing Challenges for Adults

- **Sensory processing** is how individuals take in and respond to sensory information from their body and from the environment to participate in an activity (Lane, Roley & Champagne, 2014)
- **Adults with sensory processing challenges** may have difficulty with processing, regulating and organizing themselves in response to sensory stimuli, which may interfere with daily functioning and engagement in valued occupations

Dunn's Model of Sensory Processing Challenges (Dunn, 1997)		Behavioral Response	
		Passive	Active
Neurological Threshold	High	Poor Registration	Sensory Seeking
	Low	Sensory Sensitivity	Sensory Avoiding

The Problem

- There is limited understanding of how sensory processing challenges impact life balance for adults
- Sensory processing challenges are associated with depression, difficulty with valued relationships, anxiety, depression, higher stress levels, increased perception of pain, poor sleep quality
(Engel-Yeger & Dunn, 2011; Engel-Yeger & Shocat, 2012; Kinnealey & Fuiiek, 1999; Kinnealey, Koenig & Shocat, 2011; Kinnealey, Oliver & Wilbarger, 1995; Levit-Binnun, Szepsenwol, Tern-Eliran & Engel-Yeger, 2014; Pfeiffer & Kinnealey, 2003)
- Lack of coping strategies or use of ineffective coping strategies to address sensory processing challenges may lead to perception of life imbalance
- Life balance is correlated to well-being and life satisfaction; perception of life imbalance may be detrimental to health and well-being (Eakman, 2013)



The Solution: *Making Sense of Life Balance*

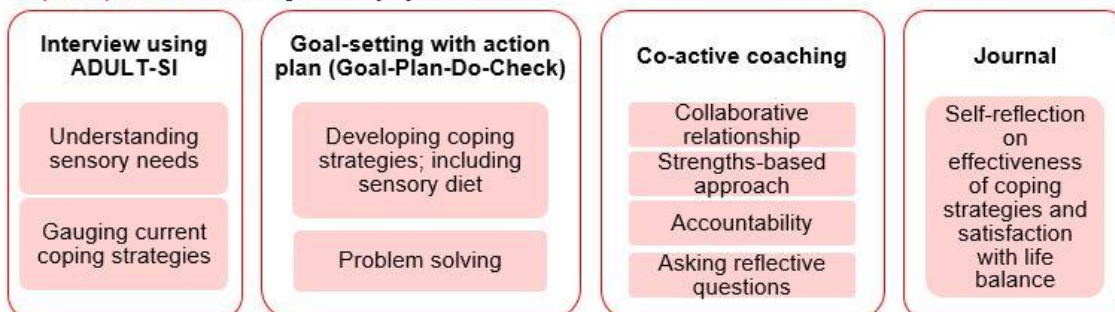
Making Sense of Life Balance is an 8-week intervention for adults with sensory processing challenges.

- During the first week, participants meet with the therapist in person for an interview. Subsequent sessions are held through telecommunication

Desired Outcomes of Making Sense of Life Balance



Key Components of Making Sense of Life Balance



(Heinz & Pentland, 2009; Liedberg, Hesselstrand & Henriksson, 2004; Meichenbaum, 1979; Pfeiffer & Kinnealey, 2003)

Occupational Therapists' Role in Promoting Life Balance

- Occupational therapists are well prepared to support quality of life and life balance
- *Making Sense of Life Balance* is a theoretically grounded and evidence-based intervention program that facilitates perception of life balance for adults with sensory processing challenges.
- Occupational therapists can coach individual with adults with sensory processing challenges to develop effective coping strategies to promote life balance.

References

- Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young children and families: A conceptual model. *Infants & Young Children, 9*(4), 23–35.
- Eakman, A. M. (2013). The meaningful activity wants and needs assessment: A perspective on life balance. *Journal of Occupational Science, 1*–18. doi:10.1080/14427591.2013.769405
- Engel-Yeger, B., & Dunn, W. (2011). Relationship between pain catastrophizing level and sensory processing patterns in typical adults. *The American Journal of Occupational Therapy, 65*(1), e1–e10. doi:10.4276/030802211X13046730116407
- Engel-Yeger, B., & Shochat, T. (2012). The relationship between sensory processing patterns and sleep quality in healthy adults. *Canadian Journal of Occupational Therapy, 79*(3), 134–141.
- Heinz, A., & Pentland, W. (2009). Professional coaching for life balance. In Matuska K. M., & Christiansen, C. (Eds.), *Life balance: Multidisciplinary theories and research*. (pp. 241–254). Thorofare, NJ: Bethesda, MD: SLACK Inc. ; AOTA Press.
- Kinnealey, M., & Fuiiek, M. (1999). The relationship between sensory defensiveness, anxiety, depression and perception of pain in adults. *Occupational Therapy International, 6*(3), 195–206. doi:10.1002/oti.97
- Kinnealey, M., Koenig, K. P., & Smith, S. (2011). Relationships between sensory modulation and social supports and health-related quality of life. *American Journal of Occupational Therapy, 65*(3), 320–327. doi:10.5014/ajot.2011.001370
- Kinnealey, M., Oliver, B., & Wilbarger, P. (1995). A phenomenological study of sensory defensiveness in adults. *The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association, 49*(5), 444–451.
- Lane, S. J., Roley, S. S., & Champagne, T. (2014). Sensory integration and processing. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's occupational therapy (12th ed., pp. 816–868)*. Philadelphia: Lippincott Williams & Wilkins.
- Levit-Binnun, N., Szepsenwol, O., Stern-Ellran, K., & Engel-Yeger, B. (2014). The relationship between sensory responsiveness profiles, attachment orientations, and anxiety symptoms: Sensory responsiveness, attachment, and anxiety. *Australian Journal of Psychology, 66*(4), 233–240. doi:10.1111/ajpy.12064
- Liedberg, G. M., Hesselstrand, M. E., & Henriksson, C. M. (2004). Time use and activity patterns in women with long-term pain. *Scandinavian Journal of Occupational Therapy, 11*(1), 26–35. <https://doi.org/10.1080/11038120410019081>
- Meichenbaum, D. (1979). *Cognitive behavior modification: An integrative approach*. New York, NY: Plenum Press
- Pfeiffer, B., & Kinnealey, M. (2003). Treatment of sensory defensiveness in adults. *Occupational Therapy International, 10*(3), 175–184.

BIBLIOGRAPHY

- American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, 68(Suppl.), S1–S48. <http://doi.org/10.5014/ajot.2014.682006>
- American Occupational Therapy Association. (2017). *Registration Rates*. Retrieved from <https://www.aota.org/Conference-Events/PastConferences/2017-conference/cost.aspx>
- Ayres, A. J. (1979). *Sensory integration and the child*. Los Angeles, Calif: Western Psychological Services.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215
- Bardhoshi, G., Duncan, K., & Erford, B. T. (2016). Psychometric meta-analysis of the English version of the Beck Anxiety Inventory. *Journal of Counseling & Development*, 94(3), 356–373. <https://doi.org/10.1002/jcad.12090>
- Beatty, L., & Lambert, S. (2013). Systematic review of an internet-based self-help therapeutic interventions to improve distress and disease-control among adults with chronic health conditions. *Clinical Psychology Review*, 33(4), 609–622. <https://doi.org/10.1016/j.cpr.2013.03.004>
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56(6), 893–897. <https://doi.org/10.1037/0022-006X.56.6.893>

- Ben-Avi, N., Almagor, M., & Engel-Yeger, B. (2012). Sensory processing difficulties and interpersonal relationships in adults: An exploratory study. *Psychology, 3*(1), 70–77. doi:10.4236/psych.2012.31012
- Blanche, E. I., Parham, D., Chang, M., & Mallinson, T. (2014). Development of an Adult Sensory Processing Scale (ASPS). *American Journal of Occupational Therapy, 68*, 531–538. <http://dx.doi.org/10.5014/ajot.2014.012484>
- Brindle, K., Moulding, R., Bakker, K., & Nedeljkovic, M. (2015). Is the relationship between sensory-processing sensitivity and negative affect mediated by emotional regulation? *Australian Journal of Psychology, 67*(4), 214–221. <http://doi.org/10.1111/ajpy.12084>
- Brown, C., Tollefson, N., Dunn, W., Cromwell, R., & Filion, D. (2001). The Adult Sensory Profile: Measuring patterns of sensory processing. *American Journal of Occupational Therapy, 55*, 75–82.
- Bruce, M. A., & Borg, B. (2002). Cognitive-behavioral frame of reference. *In Psychosocial frames of reference- Core for occupation-based practice.* (pp. 161–200) Thorofare, N.J.: Slack.
- Cha, E., Kim, K. H., Umpierrez, G., Dawkins, C. R., Bello, M. K., Lerner, H. M., ... Dunbar, S. B. (2014). A feasibility study to develop a diabetes prevention program for young adults with prediabetes by using digital platforms and a handheld device. *The Diabetes Educator, 40*(5), 626–637. <https://doi.org/10.1177/0145721714539736>

- Champagne, T., Koomar, J., & Olson, L. (2010, March). Sensory processing evaluation and intervention in mental health. *OT Practice 15*(5), CE-1–CE-8.
- CostHelper. (2017). *Graphic Designer Cost*. Retrieved from <http://smallbusiness.costhelper.com/graphic-designer.html>
- Davis, C. S., Mayo, J., Sikand, K., Kobre, M. & Dollard, N. (2007). A typology and narrative illustration of procedures for following a strengths-based approach in a children's community mental health system of care. In C. Newman, C. Liberton, K. Kutash, & R. Friedman (Eds.) *A System of Care for Children's Mental Health: Expanding the Research Base. Proceedings of the Research and Training Center for Children's Mental Health Annual Conference* (pp. 89–94). Tampa, Fl.
- Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young children and families: A conceptual model. *Infants & Young Children, 9*(4), 23–35.
- Dunn, W. (2001). The sensations of everyday life: Empirical, theoretical, and pragmatic considerations. *American Journal of Occupational Therapy, 55*(6), 608–620.
- Dunn, W., Cox, J., Foster, L., Mische-Lawson, L., & Tanquary, J. (2012). Impact of a contextual intervention on child participation and parent competence among children with autism spectrum disorders: A pretest–posttest repeated-measures design. *American Journal of Occupational Therapy, 66*, 520–528.
<http://dx.doi.org/10.5014/ajot.2012.004119>
- Dür, M., Steiner, G., Fialka-Moser, V., Kautzky-Willer, A., Dejaco, C., Prodinger, B., ... Stamm, T. (2014). Development of a new occupational balance-questionnaire:

- incorporating the perspectives of patients and healthy people in the design of a self-reported occupational balance outcome instrument. *Health and Quality of Life Outcomes*, 12(1), 45. doi:10.1186/1477-7525-12-45
- Eakman, A. M. (2015). The meaningful activity wants and needs assessment: A perspective on life balance. *Journal of Occupational Science*, 22(2), 210–227. doi:10.1080/14427591.2013.769405
- Engel-Yeger, B., & Dunn, W. (2011a). Relationship between pain catastrophizing level and sensory processing patterns in typical adults. *American Journal of Occupational Therapy*, 65(1), e1–e10.
- Engel-Yeger, B., & Dunn, W. (2011b). The relationship between sensory processing difficulties and anxiety level of healthy adults. *The British Journal of Occupational Therapy*, 74(5), 210–216. doi:10.4276/030802211X13046730116407
- Engel-Yeger, B., & Shochat, T. (2012). The relationship between sensory processing patterns and sleep quality in healthy adults. *Canadian Journal of Occupational Therapy*, 79(3), 134–141.
- Frisch, M. B., Cornell, J., Villanueva, M., & Retzlaff, P. J. (1992). Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment*, 4(1), 92–101. <https://doi.org/10.1037/1040-3590.4.1.92>

- Heinz, A., & Antolak, J. (2010). Group Coaching for Individuals with Multiple Sclerosis. *International Journal of MS Care*, 12(2), 59–63. <https://doi.org/10.7224/1537-2073-12.2.59>
- Heinz, A., & Pentland, W. (2009). Professional coaching for life balance. In Matuska K. M., & Christiansen, C. (Eds.), *Life balance: Multidisciplinary theories and research*. (pp. 241–254). Thorofare, NJ : Bethesda, MD: SLACK Inc. ; AOTA Press.
- Jerome, E. M., & Liss, M. (2005). Relationships between sensory processing style, adult attachment, and coping. *Personality and Individual Differences*, 38, 1341–1352.
- Khodabakhsh, S, Cheong, L. S., & Rosli, N. O. (2016). The relationship between sensory processing patterns and depression in adults. *Malaysian Online Journal of Counseling*, 3(1), 49–56.
- Kinnealey, M., & Fuiiek, M. (1999). The relationship between sensory defensiveness, anxiety, depression and perception of pain in adults. *Occupational Therapy International*, 6(3), 195–206. doi:10.1002/oti.97
- Kinnealey, M., Koenig, K. P., & Smith, S. (2011). Relationships between sensory modulation and social supports and health-related quality of life. *American Journal of Occupational Therapy*, 65(3), 320–327. doi:10.5014/ajot.2011.001370
- Kinnealey, M., Oliver, B., & Pfeiffer, B. *The development, reliability and validity of the ADULT- Sensory Interview* (unpublished manual 1995)

- Kinnealey, M., Oliver, B., & Wilbarger, P. (1995). A phenomenological study of sensory defensiveness in adults. *American Journal of Occupational Therapy, 49*(5), 444–451.
- Kinnealey, M., Riuli, V., & Smith, S. (2015, March). Case study of an adult with sensory modulation disorder. *Sensory Integration Special Interest Section Quarterly, 38*(1), 1–4.
- Lane, S. J., Roley, S. S., & Champagne, T. (2014). Sensory integration and processing. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's occupational therapy* (12th ed., pp. 816–868). Philadelphia: Lippincott Williams & Wilkins.
- Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine, 55*(3), 234–247.
- Levit-Binnun, N., Szepsenwol, O., Stern-Ellran, K., & Engel-Yeger, B. (2014). The relationship between sensory responsiveness profiles, attachment orientations, and anxiety symptoms: Sensory responsiveness, attachment, and anxiety. *Australian Journal of Psychology, 66*(4), 233–240. doi:10.1111/ajpy.12064
- Liedberg, G. M., Hesselstrand, M. E., & Henriksson, C. M. (2004). Time use and activity patterns in women with long-term pain. *Scandinavian Journal of Occupational Therapy, 11*(1), 26–35. <https://doi.org/10.1080/11038120410019081>
- Longhurst, L. (2006). The “Aha” moment in co-active coaching and its effects on belief and behavioural changes. *International Journal of Evidence Based Coaching and Mentoring, 4*(2), 61–73.

- Lorig, K., Ritter, P. L., Ory, M. G., & Whitelaw, N. (2013). Effectiveness of a generic chronic disease self-management program for people with type 2 diabetes: A translation study. *The Diabetes Educator, 39*(5), 655–663.
<https://doi.org/10.1177/0145721713492567>
- Lorig, K. R., Sobel, D. S., Stewart, A. L., Brown, B. W., Bandura, A., Ritter, P., ... Holman, H. R. (1999). Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization: A randomized trial. *Medical Care, 37*(1), 5–14.
- Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The General Self-Efficacy Scale: Multicultural validation studies. *The Journal of Psychology, 139*(5), 439–457.
<https://doi.org/10.3200/JRLP.139.5.439-457>
- Mantler, T., Irwin, J. D., Morrow, D., Hall, C., & Mandich, A. (2015). Assessing motivational interviewing via co-active life coaching on selected smoking cessation outcomes., *Addiction Research & Theory 23*(2), 131–142.
<https://doi.org/10.3109/16066359.2014.946410>
- Matuska, K. (2012a). Description and development of the Life Balance Inventory. *OTJR: Occupation, Participation and Health, 32*(1), 220–228.
<https://doi.org/10.3928/15394492-20110610-01>
- Matuska, K. (2012b). Validity evidence of a model and measure of life balance. *OTJR: Occupation, Participation and Health, 32*(1), 229–237.
<https://doi.org/10.3928/15394492-20110610-02>

- Matuska, K. (2014). The art and science of resilience. *OTJR: Occupation, Participation, Health*, 34(1), 2–3. doi:10.3928/15394492-20131211-01
- Matuska, K. & Barrett, K. (2014). Patterns of occupation. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's occupational therapy* (12th ed., pp. 163–172). Philadelphia: Lippincott Williams & Wilkins.
- Matuska, K., Bass, J., & Schmitt, J. S. (2013). Life balance and perceived stress: Predictors and demographic profile. *OTJR: Occupation, Participation, Health*, 33(3), 146–158. doi:10.3928/15394492-20130614-03
- Matuska, K., & Christiansen, C. (2008). A proposed model of lifestyle balance. *Journal of Occupational Science*, 15, 9–19.
- May-Benson, T. A. (2009, June 15). Occupational therapy for adults with sensory processing disorder. *OT Practice* 14(10), 15–19
- May-Benson, T. A., & Kinnealey, M. (2012). An approach to assessment and intervention for adults with sensory processing disorder. *OT Practice*, 17(17), CE–CE8.
- May-Benson, T. A., & Teasdale, A. (2015). Concurrent Validity of the Adult/Adolescent Sensory History (ASH). *American Journal of Occupational Therapy*, 69(Suppl. 1), 6911500193p1. <https://doi.org/10.5014/ajot.2015.69S1-PO6097>
- McCammon, S. L. (2012). Systems of care as asset-building communities: Implementing strengths-based planning and positive youth development. *American Journal of Community Psychology*, 49(3–4), 556–565. <https://doi.org/10.1007/s10464-012-9514-x>

- Meichenbaum, D. (1979). *Cognitive behavior modification: An integrative approach*. New York, NY; Plenum Press
- Newnham-Kanas, C., Irwin, J. D., Morrow, D., & Battram, D. (2011). The quantitative assessment of Motivational Interviewing using Co-active Life Coaching Skills as an intervention for adults struggling with obesity. *International Coaching Psychology Review*, 6(2), 211–228.
- Office Depot. (2017). Retrieved from <http://www.officedepot.com/a/design-print-and-ship/>
- Pearson, E. S., Irwin, J. D., Morrow, D., Battram, D. S., & Melling, C. W. J. (2013). The CHANGE Program: Comparing an interactive vs. prescriptive approach to self-management among university students with obesity. *Canadian Journal of Diabetes*, 37(1), 4–11. <https://doi.org/10.1016/j.jcjd.2012.12.002>
- Pfeiffer, B. A. (2012, June). Sensory hypersensitivity and anxiety: The chicken or the egg? *Sensory Integration Special Interest Section Quarterly*, 35(2), 1–4.
- Pfeiffer, B., & Kinnealey, M. (2003). Treatment of sensory defensiveness in adults. *Occupational Therapy International*, 10(3), 175–184.
- Reitz, S. M. (2014). Health promotion theories. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's occupational therapy* (12th ed., pp. 574–587). Philadelphia: Lippincott Williams & Wilkins.
- Reynolds, S., Glennon, T. J., Ausderau, K., Bendixen, R. M., Kuhaneck, H. M., Pfeiffer, B., Watling, R., Wilkinson, K., & Bodison, S. C. (2017). The Issue Is—Using a multifaceted approach to working with children who have differences in sensory

- processing and integration. *American Journal of Occupational Therapy*, 71, 7102360010. <https://doi.org/10.5014/ajot.2017.019281>
- Scholz, U., Gutiérrez-Doña, B., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, 18(3), 242–251.
- Sheldon, K. M., Cummins, R., & Kamble, S. (2010). Life balance and well-being: Testing a novel conceptual and measurement approach: Measuring life balance. *Journal of Personality*, 78(4), 1093–1134. doi:10.1111/j.1467-6494.2010.00644.
- Turner, K. A., Cohn, E. S., & Koomar, J. (2012). Mothering when mother and children both have sensory processing challenges. *British Journal of Occupational Therapy*, 75(10), 449–455.
- United States Department of Labor. (2017). *Occupational Employment and Wages, May 2016*. Retrieved from <https://www.bls.gov/oes/current/oes291122.htm>
- van Zandvoort M.M., Irwin, J.D. & Morrow, D. (2009). The impact of co-active life coaching on female university students with obesity. *International Journal of Evidence-Based Coaching and Mentoring*, 7(1), 104–118
- Williams, M. S., & Shellenberger, S. (1996). How does your engine run?: A leader's guide to the Alert Program for self-regulation. Albuquerque, NM: TherapyWorks, Inc.
- Zuzanek, J. (2009). Time use imbalance: Developmental and emotional costs. In Matuska K. M., & Christiansen, C. (Eds.), *Life balance: Multidisciplinary theories and*

research. (pp. 207–222). Thorofare, NJ : Bethesda, MD: SLACK Inc. ; AOTA Press.

CURRICULUM VITAE

